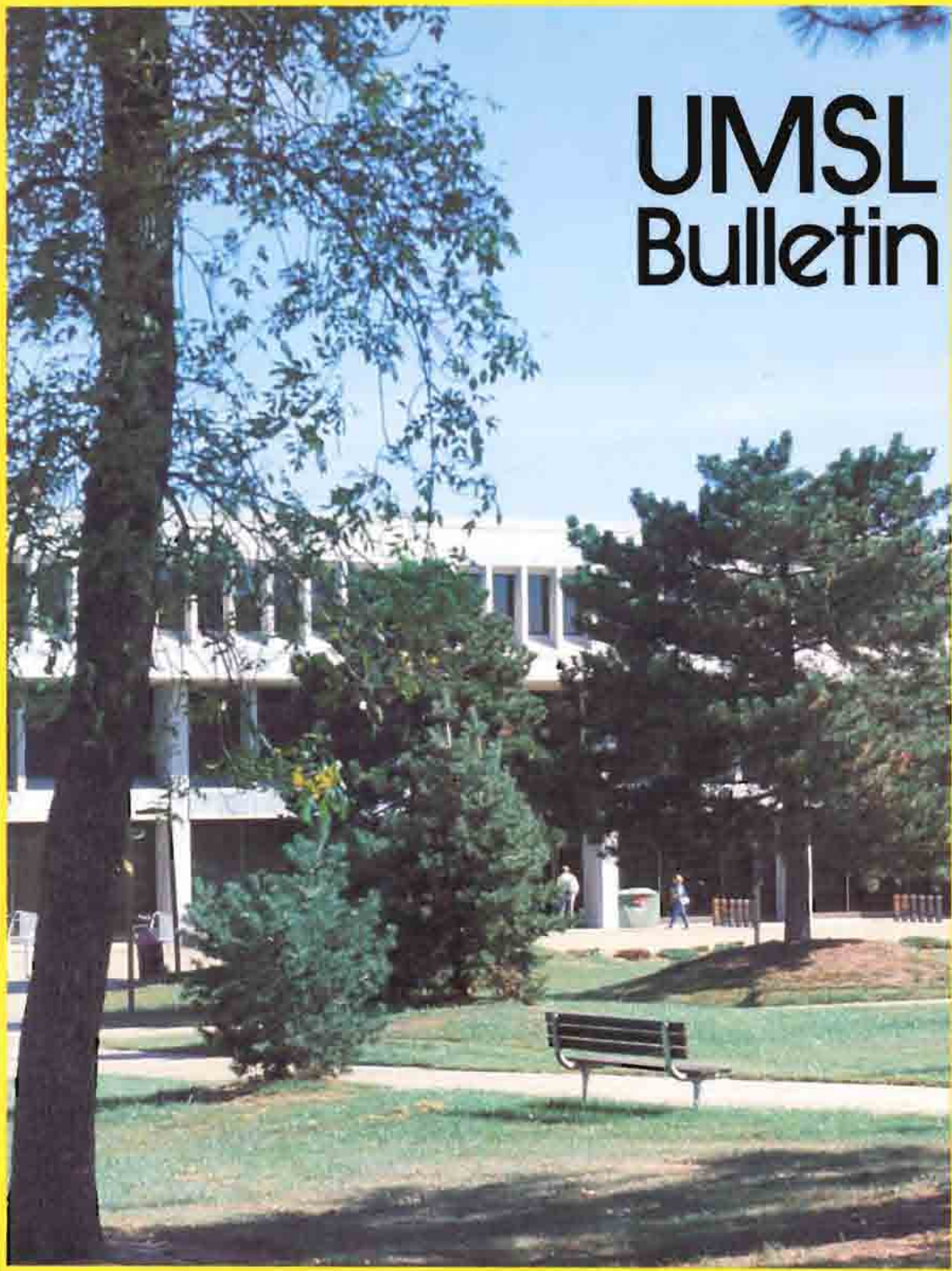


# UMSL Bulletin



**Description of Courses**  
University of Missouri-St. Louis

# Description of Courses 1986-87

**UMSL** University of Missouri-Saint Louis **USPS 996-420**

Volume 14 Number 3 March, 1986 General 1986 Series  
Published by the UMSL Publications Office, 8001 Natural Bridge  
Road, St. Louis, Missouri, 63121-4499. UMSL is published nine  
times a year as follows: three times in March; once in January,  
April, May, August, October, and November. Second class post-  
age paid at St. Louis, Missouri.

**POSTMASTER:** Send address changes to the University of  
Missouri-St. Louis, 8001 Natural Bridge Road, St. Louis, Missouri  
63121-4499.

## Preface

This publication includes all courses and their descriptions as listed by the University in May, 1985. All statements are subject to change at any time without prior notice. They are not to be regarded as offers to contract.

### **University Policy on Equal Opportunity**

The Curators of the University of Missouri do hereby reaffirm and state the policy of the University of Missouri on Equal Employment/Educational Opportunity. Equal Opportunity is and shall be provided for all employees and applicants for employment on the basis of their demonstrated ability and competence without discrimination on the basis of their race, color, religion, sex, national origin, age or disability. Equal opportunity is and shall be also provided for all students and applicants for Admission in compliance with existing legislation. The President of the University shall establish affirmative action procedures to implement this policy.

Inquiries regarding compliance with these regulations may be directed to the Office of Affirmative Action, the University of Missouri-St. Louis, St. Louis, Missouri 63121, (314) 553-5695.

Information regarding the provision of auxiliary aids and services to qualified disabled students can be found in the appendix of the *UMSL Bulletin*. Students considering such assistance should contact the Administrator for Special Student Programs, at 553-5211, for further details.

# Table of Contents

University Administration	4	Political Science	56
Guide to Course Lists	5	Ungrouped Courses	56
Breadth of Study Requirement and Eye Protection Law	5	Group I: Public Law	56
<b>College of Arts and Sciences</b>	<b>6-77</b>	Group II: American Politics	57
Administration of Justice	6	Group III: Public Policy and Administration	57
Anthropology	8	Group IV: Comparative Politics	58
Art	11	Group V: Theory and Methodology	58
Biology	14	Group VI: International Relations	59
Chemistry	19	Graduate Courses	60
Economics	22	Psychology	61
Geography	25	Social Work	66
Home Economics	25	Sociology	68
English	26	Speech Communication	72
Composition	26	<b>Honors Courses</b>	<b>75</b>
Language	27	<b>Interdisciplinary Courses</b>	<b>76</b>
Literature	27	<b>School of Business Administration</b>	<b>78-85</b>
Special Offerings	30	Business Administration	78
Library Science	30	Accounting (400-level)	82
History	31	Finance (400-level)	83
Mathematical Sciences	35	Management (400-level)	83
Mathematics	35	Marketing (400-level)	84
Computer Science	38	Quantitative Management Science	84
Probability and Statistics	39	<b>School of Education</b>	<b>86-105</b>
Modern Foreign Languages and Literatures	40	School-wide Courses	86
Chinese	40	Education (EDUC)	86
French	40	Behavioral Studies	88
German	41	Counselor Education (CNS ED)	88
Greek	42	Educational Psychology (ED PSY)	89
Hebrew	42	Educational Statistics and Research (ED S&R)	90
Italian	42	Evaluation and Measurement (EVL MS)	90
Japanese	42	Special Education (SPC ED)	91
Latin	42	Educational Studies	93
Portuguese	43	Adult Education (ADU ED)	93
Russian	43	Educational Administration (ED ADM)	94
Spanish	43	Educational Foundations (ED FND)	95
Music	45	Educational Technology (ED TEC)	96
Applied Music	45	Secondary Education (SEC ED)	97
Ensemble Performance	45	Elementary and Childhood Education	100
Music Education	45	Early Childhood Education (ECH ED)	100
Music History and Literature	46	Elementary Education (ELE ED)	101
Music Theory and Composition	47	Physical Education	104
Pedagogy	47	<b>Inter-School Graduate Studies</b>	<b>106</b>
Practicum	48	Public Policy Administration	106
Philosophy	49	<b>School of Nursing</b>	<b>107</b>
Physics	52	<b>School of Optometry</b>	<b>108</b>
Astronomy	52	<b>Reserve Officers Training Corps</b>	<b>110</b>
Atmospheric Science	52		
Engineering	52		
Geology	53		
Physics	53		

## Administration

### University of Missouri

#### Board of Curators

##### Terms Expire January 1, 1987

James Anderson, Springfield, Missouri

Doug Russell, Lebanon, Missouri

Tom K. Smith, Jr., President, St. Louis, Missouri

##### Terms Expire January 1, 1989

W.H. Bates, Kansas City, Missouri

Jeanne Epple, Columbia, Missouri

John P. Lichtenegger, Jackson, Missouri

##### Terms Expire January 1, 1990

Eva Louise Frazer, St. Louis, Missouri

Edwin S. Turner, Chillicothe, Missouri

Peter H. Raven, St. Louis, Missouri

#### Central Administration

C. Peter Magrath, President

Elmer Ellis, President Emeritus

James C. Olson, President Emeritus

Jay Barton, Vice President for Academic Affairs

James T. McGill, Vice President for Administrative Affairs

#### Chancellors

Marguerite R. Barnett, University of Missouri-St. Louis

Martin C. Jischke, University of Missouri-Rolla

George A. Russell, University of Missouri-Kansas City

Barbara S. Uehling, University of Missouri-Columbia

### University of Missouri-St. Louis

#### Chancellor

Marguerite R. Barnett

#### Vice Chancellors

Arthur C. MacKinney, Academic Affairs

John P. Perry, Administrative Services

L. "Sandy" MacLean, Student Affairs

Dennis Verity, Interim, University Relations

#### Deans of Schools and Colleges

E. Terrence Jones, College of Arts and Sciences

Donald H. Driemeier, School of Business Administration

William L. Franzen, School of Education

Joy E. Whitener, Evening College

Thomas E. Jordan, Graduate School

Jerry L. Christensen, School of Optometry

Shirley A. Martin, School of Nursing

## Guide to Course Lists

Courses offered and a general outline of course content are included in each departmental section of this booklet. The course descriptions are meant to provide students with pertinent information and in no way should be considered as offers to contract. The University reserves the right to cancel without notice any course listed in this *UMSL Bulletin: Description of Courses* or in the *Schedule of Courses* for any semester or to withdraw any courses which do not have adequate enrollment at the close of registration.

### Course Numbering

Each course bears a distinguishing number which identifies it within the department or academic unit and indicates, broadly, its rank. The numbering system is as follows:

**0 to 099**, nondegree credit

**1 to 99**, primarily for freshmen and sophomores.

**100 to 199**, primarily for upperclassmen, no graduate credit.

**200 to 299**, for undergraduates and appropriate professional and graduate students, except those whose graduate majors are in the department in which the course is given.

**300 to 399**, for undergraduate, appropriate professional, and graduate students without restriction as to students' graduate majors.

**400 to 499**, primarily for graduate and appropriate professional students in special programs; upperclass students are admitted to courses in this series only with the approval of the graduate dean.

**500 to 599**, for professional optometry students. Other students are admitted to courses in this series only with the approval of the Optometry Dean.

## Breadth of Study Requirement

Courses which fulfill the University's Breadth of Study requirements, as outlined in the Academic Policy section of the *UMSL Bulletin: Undergraduate/Graduate Catalogue*, are listed at the beginning of each departmental course section in this booklet.

Each list of course numbers is identified by one of the following breadth of study areas:

**[H]** Humanities requirement

**[SM]** Natural sciences and mathematics requirement

**[SS]** Social sciences requirement

### Eye Protection Law

It is now a law in the state of Missouri that every student, teacher, and visitor must wear approved eye protection devices when participating in or observing certain university courses. Definitely included in this act, which is posted along with University policy in selected buildings on this campus, are courses requiring chemical, physical, combined chemical-physical laboratories and shops, as well as certain vocational, technical, and industrial arts courses. Consult your instructors for exact requirements. Approved safety glasses and goggles must meet ANSI Standard Z87.1-1968 and are available from the UMSL Bookstore.

# Administration of Justice

Prerequisites may be waived by consent of the department or instructor.

The following courses fulfill the Social Sciences [SS] breadth of study requirements: 70, 71, 75, 90, 99, 101, 175, 180, 201, 202, 203, 205, 215, 225, 227, 250, 251, 260, 290, 310, 325, 327, 330, 340, 351, 360, 380, 395, 399, 400, 401, 403, 480.

## 70 Criminal Law and Procedure (3)

An analysis of substantive criminal law and its procedural aspects.

## 71 Evidence (3)

Fundamental questions of evidence and theory of proof, including hearsay, documentary proof, self-incrimination, relevance, and presumptions.

## 75 Crime and Punishment (3)

(Same as Sociology and Interdisciplinary 75.) An introduction to sociological and psychological explanations of crime and punishment. An examination of private and governmental responses to the threats of crime and delinquent behavior.

## 90 Freshman Seminar (3)

Prerequisite: Freshman standing and consent of instructor. Topics to be announced. Weekly seminars supplemented by individual conferences. Limited to twelve students.

## 99 The City (3)

(Same as Political Science, Sociology, and Interdisciplinary 99.) Consideration of economic factors, urban institutions, historical developments in urbanization, problems of the inner city, suburbia and the metropolitan area, ethnic groups, stratification, and psychological implications of urban living. This course is primarily for freshmen and sophomores. It is open to juniors and seniors with the instructor's permission.

## 101 Criminal Justice Processes and Institutions (3)

A survey of the historical development and the current status of American criminal justice. Processes, institutions, and significant problems of the various components will be analyzed.

## 175 Women, Crime and Society (3)

(Same as Sociology 175.) Prerequisite: Sociology 10 or consent of instructor. An examination of key issues in criminology from a feminist perspective. Topics include social origins of laws relating to women; quantitative and qualitative views of women's criminality; theories of women's criminality; women as crime victims; treatment of women in the correctional process; women personnel within the criminal justice structure.

## 180 Alcohol, Drugs and Society (3)

(Same as Sociology 180.) Prerequisite: Sociology 10 or Psychology 3. This course examines the medical, legal and social aspects of alcohol and drug use. Medical aspects considered include treatment approaches and the role of physicians in controlling such behavior. In the legal realm, past and present alcohol and drug laws are explored. Cultural and social influences on alcohol and drug use are discussed.

## 201 The Criminal Justice System: Conflicting Perspectives I (3)

Prerequisite: Administration of Justice 101. An examination of the conflicting and converging needs and skills of three social roles necessary for a sound criminal justice system in a democratic society. The objectives, activities, and skills of the citizen, criminal justice professional, and social scientist will be identified and analyzed.

## 202 The Criminal Justice System: Conflicting Perspectives II (3)

Prerequisite: Administration of Justice 201 or consent of instructor. An examination of competing social interests served by the criminal justice system, past and present. Attention will focus on the need for and the nature of a criminal law that serves the public interest and not private interests.

## 203 Regional Organization of Criminal Justice Resources (3)

Prerequisites: Administration of Justice 70 and 101. Crime and criminal justice resources in relation to the development of metropolitan regions. Congruent and incongruent patterns of criminal and delinquent activity and criminal justice organization. Policy and planning considerations.

## 205 The Juvenile Justice System (3)

Prerequisite: Administration of Justice 101 or consent of instructor. Intensive analysis of the social administration of juvenile justice within the United States. Particular emphasis will be placed on the decision-making process of police, court, and probation officials regarding apprehension and processing of juveniles. Recent Supreme Court decisions and citizen efforts to revise the juvenile code will also be examined.

## 215 Criminal Justice Data (3)

An analysis of data needs in criminal justice agencies. Emphasis will be placed upon data as it relates to administrative policy planning, and program evaluation requirements, as well as the ethical criteria for its release.

## 225 The Juvenile and the Law (3)

Prerequisite: Junior standing. A study of the relationship of the civil and administrative law as an instrument for the control and protection of juveniles. Subject matter will be discussed in relationship to the legally protected rights of juveniles.

## 227 Urban Law: Poverty and the Justice System (3)

Prerequisite: Administration of Justice 70 or equivalent, or consent of instructor. Examination of administrative regulations and the civil law process as it affects the life of the urban, rural, and the poor.

## 250 Police Administration (3)

Prerequisite: Administration of Justice 101 or consent of instructor. Organization and administration of police systems; peculiar characteristics of police organizations and police personnel, relation of police departments to other public agencies; control and responsibility of police departments. In general, the application of generalizations from public administration to police systems.

## 251 Special Administrative Problems in the Administration of Justice (1-6)

Prerequisite: Consent of instructor. Selected topics, approved by the faculty, to fill special agency educational needs. Offered only in special seminars, workshops, conferences, and institutions in cooperation with the Continuing Education-Extension Division.

# Administration of Justice

## 260 Police-Community Relations (3)

Prerequisite: Administration of Justice 101 or consent of instructor. An analysis of current police-community relations in large central cities, and a study of the development of police-community relations units. An analysis of the internal and external problems involved in a successful program development.

## 290 Special Readings (1-6)

Prerequisite: Consent of instructor. Individualized study, under regular faculty supervision, designed to meet particular educational needs of selected students.

## 310 Community Approaches to Prevention and Control of Crime and Delinquency (3)

Prerequisites: Administration of Justice 101 and senior standing or consent of instructor. An analysis of the rationale and the principles of community organizations as they seek to address the problems of crime and delinquency. Programs in the St. Louis metropolitan area will be used as case studies.

## 325 Criminal Law in Action (3)

Prerequisite: Administration of Justice 70 or equivalent, and senior standing or consent of instructor. An examination of the legal and social objectives of the criminal law and the diverse limitations on the exercise of police power.

## 327 Urban Judicial Systems (3)

(Same as Political Science 327.) Prerequisite: Political Science 11 or Administration of Justice 101 or consent of instructor. The study of the nature and function of local judicial systems. Consideration of key participants (legislators, prosecutors, defense counsel, judges) and processes (bail procedures, prosecutorial decision-making, adjudication, and sentencing behavior).

## 330 Correctional Institutions (3)

Prerequisites: Administration of Justice 101 and senior standing, or consent of instructor. The correctional setting as an aspect of the criminal justice system. An analysis of the administrative involvement and a study of the modes of organization and management which seem applicable to these types of settings.

## 340 Probation and Parole (3)

Prerequisite: Administration of Justice 101 and senior standing or consent of instructor. The historical development of the rehabilitative ideal of probation and parole. An analysis of the principles of probation and parole, both juvenile and adult.

## 351 Special Seminar on Problems in the Criminal Justice Process (1-6)

Prerequisite: Consent of instructor. Advanced seminar dealing with selected subjects approved by the faculty to fill special agency educational needs. Offered only in specially designed educational formats in cooperation with the Continuing Education-Extension Division.

## 360 Comparative Justice Systems (3)

Prerequisites: Administration of Justice 70 and 101 and senior standing. Analysis of the criminal justice systems of selected nations in an attempt to identify similarities and dissimilarities with American practice. Particular attention will be focused upon the police and corrections systems.

## 380 Seminar in Administration of Justice (3)

Prerequisites: Administration of Justice 70 and 101, and senior standing, or consent of instructor. Study of selected special problems in the administration of justice. (May be repeated once for credit.)

## 395 Field Placement (3)

Prerequisite: Sociology 30, Administration of Justice 70 and 101, or consent of instructor. Field placement under faculty supervision in administration of justice agencies. (Requires a two consecutive semester commitment.)

## 399 Independent Study and Research (3)

Prerequisites: Sociology 120, Administration of Justice 70 and 101, and senior standing, or consent of instructor. Directed research and reading. May involve the performance of a research task in cooperation with an operating criminal justice agency.

## 400 Proseminar in the Administration of Justice (3)

An examination of administration of justice concepts, institutions and issues from a variety of perspectives. This course will identify and discuss the major philosophical and theoretical underpinnings of the criminal justice system. It will provide a common foundation for graduate students interested in studying the justice system.

## 401 Applied Theory in the Administration of Justice (3)

This course will apply concepts and theories to specific problem areas in the administration of justice. It will examine efforts to deal with the problem of crime and discuss the relationship of those efforts to theory and philosophy in the administration of justice. In addition, the course will seek to identify successful programs and identify the reasons for such an outcome.

## 403 The Urban Police Function (3)

This course will be a historical, social and political examination of the urban police function. An examination of past and current problems of urban policing with the emphasis on problem-solving activities and programs. Special emphasis on the role of police in contemporary society.

## 480 Seminar in Administration of Justice (3)

This course will focus on a particular topic. An in-depth examination of that topic will follow. Sample topics include: drugs and the criminal justice system, the future of imprisonment, plea-bargaining, minorities and the administration of justice.



# Anthropology

The following courses fulfill the Social Sciences (SS) breadth of study requirements: 5, 11, 51, 101, 102, 108, 109, 111, 112, 121, 122, 123, 124, 125, 131, 132, 133, 134, 135, 141, 142, 143, 144, 160, 191, 201, 202, 203, 204, 205, 206, 207, 286, 301, 302, 308, 309, 310, 350, 391.

## 5 Human Origins (4)

(With laboratory.) A survey of the field of physical anthropology with emphasis upon the development of man as an animal. Will consider the genetic forces of evolution, fossil men, race formation, and the origin of culture from a scientific point of view.

## 11 Man, Culture, and Society (3)

A survey of types of societies—bands, tribes, chiefdoms, states, and peasantry, and of selected aspects of culture and social structure. Introduction to linguistics, social and cultural anthropology as scientific disciplines.

## 51 Introduction to Anthropological Linguistics (3)

Relation between man and language in synchronic and historical perspective. The design features of language, equality, diversity and relativity in structures and functions of language, including non-Western languages.

## 101 Ideas and Explanations in Anthropology (3)

An introduction to major developments in the anthropological explanation of social and cultural behavior. This course does **not** meet the specific requirements for the B.A. in anthropology. Students majoring in anthropology must register in Anthropology 301, Ideas and Explanations in Anthropology, Intensive.

## 102 Strategies in Social Organization (3)

An examination of the ways in which societies adapt to different natural and cultural environments. Explores examples from industrial and tribal societies to arrive at general principles concerning the ways societies organize to accomplish their goals. This course does **not** meet the specific requirements for the B.A. in anthropology. Students majoring in anthropology must register for Anthropology 302, Strategies in Social Organization, Intensive.

## 108 Practicum in Research Methods (3)

Training in fieldwork techniques including participant observation, formal interviewing, survey interviewing, and other techniques used by social scientists. This course does **not** meet the specific requirements for the B.A. in anthropology. Students majoring in anthropology must register in Anthropology 308, Practicum in Research Methods, Intensive.

## 109 Field Study in Archaeology (3-6)

Prerequisite: Consent of instructor. This course is designed to introduce students to field methods in archaeology and to the methods of recording, storing, analyzing, and reporting archaeological findings. Experience is gained through participation in a field research project including excavation and survey projects. Emphasis is placed upon research design and implementation and upon the use of archaeological data in describing and explaining human behavior.

## 111 Contrastive Analysis (3)

Prerequisite: One course in linguistics. Examination of two models—structural linguistics and transformational grammar—for the purpose of formulating a contrastive grammar of a Western and non-Western language.

## 112 Language and Culture (3)

Prerequisite: One course in linguistics. The relationship between language and culture. Works of Sapir, Whorf, Lee and others will be considered.

## 121 Modern Aztec and Maya (3)

A survey of Indian cultures in Mexico and Guatemala. The course focuses on modern communities after a brief survey of the conquest and colonial experiences as they affected Indian communities. Satisfies the non-Euro-American requirement.

## 122 Indians of North America (3)

A survey of the aboriginal cultures of North American Indians, including prehistory of the area, the ethnographic and linguistic groupings, and the social organization and cultural systems of North American groups. This course satisfies the non-Euro-American requirement.

## 123 Cultures of Asia (3)

A survey of the cultures of Asia including the prehistory of the area, the ethnographic and linguistic groupings, and the social organization and cultural systems of these groups. This course satisfies the non-Euro-American requirement.

## 124 Cultures of Africa (3)

A basic ethnographic survey of African cultures, with attention to social groupings, tribalism, religion, language and social change, and the ecological relationship between man and nature. This course satisfies the non-Euro-American requirement.

## 125 World Cultures (3)

An ethnographic survey of the major culture areas of the world (Africa, Asia, North and South America, Europe, and Oceania). Satisfies the non-Euro-American requirement.

## 131 Archaeology of Missouri (3)

An introduction to the prehistoric Indian cultures of Missouri and adjacent areas from 20,000 B.C. to the coming of Europeans. Examines the development of prehistoric cultures in Missouri from small bands of hunters to agricultural city builders. Discusses the decline of indigenous cultures as they came into contact with European civilization. Satisfies the non-Euro-American requirement.

## 132 Archaeology of North America (3)

In this course, the archaeological record of cultural development throughout prehistoric North America is examined. Topics of discussion include the origins of human culture in North America, the process of prehistoric cultural development in the different regions of the continent, and archaeological approaches to explaining the behavior of North America's prehistoric inhabitants. This course satisfies the non-Euro-American requirement.

# Anthropology

## 133 World Prehistory (3)

An introduction to the prehistoric cultures of Asia, Africa, Europe, and the Americas from the Paleolithic Age to the establishment of civilization. Examines the rise of complex societies leading to civilization in the different areas of the world, concentrating on social and ecological conditions contributing to their development and on comparisons between civilizations. This course satisfies the non-Euro-American requirement.

## 134 The Inca, Aztec, and Maya (3)

A survey of the cultural evolution of Meso-America and Andean South America, from the early hunters to the high civilizations. The course will conclude with the sixteenth-century Spanish conquest of these civilizations. Satisfies the non-Euro-American requirement.

## 135 Indians of South America (3)

Examination of the social and cultural development of South American Indians from the earliest ancestors of the Inca to twentieth-century tribes of the Amazon. The focus is on culture change and the rich cultural diversity encountered as one ranges from the high Andes to the grassy Pampas, from the world's driest desert to its largest tropical forest. Satisfies the non-Euro-American requirement.

## 141 Sexual Behavior (3)

Description and analysis of sex roles in different cultures including band, tribal, peasant, and state-level societies. Cultural bases of behavior such as "machismo" and female assertiveness. This course satisfies the non-Euro-American requirement.

## 142 The Culture of Cities (3)

A comparative analysis of the cultural roles of urban centers and the processes of urbanization in non-Western and Western societies, past and present. A consideration of urban influences on rural America and the traditional peasant and primitive peoples of Africa, Asia, and Latin America.

## 143 Nonverbal Behavior (3)

Cross-cultural analysis of (a) body management in conscious and unconscious communication (kinesics) and (b) non-verbal behavior, which channels internal and interpersonal tension (personal growth). The course will examine uniformity and variation across cultures.

## 144 Religion, Magic and Science (3)

A consideration of the roles of religion, magic and science in culture and social organization.

## 160 Professional Anthropology: Medical (3)

An examination of the growing interaction between anthropology and medicine, and the increasing use of anthropologists in medical and health-care settings. In addition to teaching current theory in medical anthropology, the course focuses on anthropologically-based skills essential to those working in health-related fields.

## 191 Current Issues in Anthropology (1-4)

Prerequisite: Anthropology 11 or consent of instructor. Selected topics in social, cultural, and physical anthropology, with emphasis on current issues and trends in the field of anthropology. May be repeated. Anthropology majors should register in Anthropology 391.

## 201 Comparative Economic Behavior (3)

Prerequisite: One course in anthropology, or Sociology 10, or Economics 40, or Economics 51. An introduction to the range of economic organizations found in the world. Anthropological models of production and exchange. The notion of "rationality" as applied to non-Western economic systems. The contribution of anthropology to the understanding of economic development. This course satisfies the non-Euro-American requirement.

## 202 Politics, Symbolism and Culture (3)

Prerequisite: One course in anthropology or political science. A survey of political organizations and processes with emphasis on native and non-Western cultures. Included are topics such as strategies for obtaining and maintaining power, ethnicity, tribalism, and the relationship of ideology to politics.

## 203 The Mind of Man: Culture and Cognition (3)

Prerequisite: One course in anthropology or Sociology 10 or Psychology 3. An introduction to psychological anthropology focusing on cultural influences on cognition and perception. Theories of "primitive mind" will be reviewed in historical perspective, and cross-cultural research in perception, learning, and cognition considered. Recent studies of sociocultural systems and cognitive styles will be examined and their implications for education explored.

## 204 Culture and Personality (3)

Prerequisite: One course in anthropology or Sociology 10 or Psychology 3. Analysis of behavior from the standpoint of interaction between psychological, sociological, and cultural systems.

## 205 Introduction to Models in the Social Sciences (3)

(Same as Sociology, Political Science and Interdisciplinary 205.) Prerequisite: Anthropology 11 or Sociology 10 or Political Science 11, or consent of instructor. The course will focus on explaining social and cultural behavior. Elementary models of decision making, exchange and adaptation will be covered. Computer processing of data to test empirical hypotheses will be introduced.

## 206 Applied Anthropology (3)

Prerequisite: One course in anthropology or Sociology 10 or Psychology 3. A description and analysis of the methods, principles and use of anthropology in solution of problems associated with the changing conditions of our times. The course will examine a wide variety of cross-cultural case studies.

# Anthropology

## **207 Culture Change (3)**

Prerequisite: One course in anthropology or sociology or history. An intensive investigation into the elements and processes of culture change with regard to specific theories of culture change. The course examines the relationship between microchange in primitive and modern complex societies.

## **240 Play: Psychological and Anthropological Perspectives (3)**

See Psychology 240.

## **286 The Arts in Society (3)**

(Same as Sociology 286.) Prerequisite: Sociology 10 or Anthropology 11. The relationship of artists, writers, and musicians, their traditions and modes of artistic expression to variant social structures and institutions, and social pressures and rewards.

## **301 Ideas and Explanations in Anthropology, Intensive (3)**

Prerequisite: One course in anthropology. Major developments in anthropological explanations of social and cultural behavior through intensive reading and discussion of source materials. Non-majors may register in Anthropology 101.

## **302 Strategies in Social Organization, Intensive (3)**

Prerequisite: One course in anthropology. An intensive examination of the ways in which societies adapt to different natural and social environments. Explores examples from industrial and tribal societies to arrive at general principles concerning the ways societies organize to accomplish their goals. Non-majors may register for 102.

## **308 Practicum in Research Methods, Intensive (3)**

Prerequisite: One course in cultural anthropology or Sociology 10 or Economics 40 or 51 or Political Science 11. Methods in field archaeology and laboratory analysis. Emphasis techniques including participant observation, formal interviewing, survey interviewing, and other techniques used by social scientists. Non-majors may register in 108.

## **309 Field Study in Archaeology (3-6)**

Prerequisite: Consent of instructor. This course is for advanced students. It is designed to introduce students to advanced methods in field archaeology and laboratory analysis. Emphasis is placed on sampling, the use of theory in guiding field and laboratory work, advanced field techniques, and specialty analysis. Opportunities are provided for the development of field and laboratory leadership skills. Independent research is encouraged.

## **310 Laboratory Methods in Archaeology (3)**

Prerequisite: Anthropology 109 or 309 or consent of instructor. This is a course in basic laboratory analysis and curation methods. The emphases are: 1) mastery of general lab methods and procedures, and 2) development of independent analysis skills in one or more specialty areas such as lithics, ceramics, graphics, paleobotany, experimental analysis, and soils. Purchase of individual supplies not to exceed \$10.

## **350 Special Study (1-10)**

Prerequisite: Consent of instructor. Independent study through readings, reports, or field research.

## **391 Current Issues in Anthropology (1-4)**

Prerequisite: Anthropology 11 or consent of instructor. Selected topics in social, cultural, and physical anthropology, with emphasis on current issues and trends in the field of anthropology. May be repeated. (Non-majors may register in Anthropology 191.)

## Art

Courses in this section are grouped as follows: Art History and Art Studio.

Prerequisites may be waived by consent of instructor. For the nonmajor, any number of studio courses will be accepted as electives.

The following courses fulfill the Humanities [H] breadth of study requirements: ART HISTORY: 5, 15, 16, 17, 18, 19, 65, 79, 90, 105, 176, 215, 225, 235, 245, 255, 258, 259, 265, 275, 290, 315, 325, 326, 335, 345, 356, 357, 390, 395.

## Art History

### 5 Introduction to Art (3)

An introduction to major historical movements in Western art.

### 15 Primitive/Tribal Arts (3)

A survey of the art of tribal people of Africa, Oceania and the Americas from prehistoric times through the present. The relationship of art to religion, myth, festival, and social life will be considered, as well as the effects of acculturation on the arts. This course fulfills the study requirement for non-Euro-American.

### 16 North American Indian Art (3)

A detailed survey of the arts of North America from prehistoric times to the present. Cultures to be covered include: Moundbuilders, Northeast, Navajo, Pueblo peoples, Northwest Coast, and Eskimo. The relationship of art to religion, dance, philosophy, and social life will be explored. This course fulfills the non-Euro-American study requirement.

### 17 African Art (3)

A survey of the tribal and traditional arts of Black Africa. The function and context of art among specific peoples such as the Yoruba, Dan, Dogon, Kuba, and Kongo will be discussed. Emphasis will be placed on dance, festival, and religion as the primary contexts of African art. Fulfills the non-Euro-American study requirement.

### 18 Survey of Oriental Art (3)

The study of architecture, sculpture, and painting of India, China, Japan, and Southeast Asia, emphasizing art as a universal language that furthers our understanding of radically different cultures. This course fulfills the non-Euro-American study requirements.

### 19 Pre-Columbian Art of Mexico and Central America (3)

A survey of the arts of native peoples of Middle America before the coming of the Spaniards in 1519. The cultural context and meaning of sculpture, painting, architecture, and ritual among the Olmec, Maya, Aztec, and other tribes. This course fulfills the non-Euro-American study requirement.

### 65 Photography and Society (3)

(Same as Interdisciplinary 65). A study of photography as a means of information and expression, as an influence on culture and as a reflection of concepts in politics, science, morality and art. This course counts toward the major.

### 79 Special Topics in Art History (1-3)

Selected topics in art history. This course may be repeated for credit.

### 90 Freshman Seminar (3)

Prerequisite: Freshman standing and consent of instructor. Topics to be announced. Weekly seminars supplemented by individual conferences.

### 105 Art Masterpieces (3)

Prerequisite: Art 5. Intensive studies of selected major monuments and works of major artists from throughout the history of art with special attention to the particular social and cultural factors surrounding their creation.

### 176 Women and the Visual Arts (3)

No prerequisite. Art 5 or Women's Studies recommended. Selected topics concerning women as creators, users, and subject matter of art. Great women artists in the Western world will be studied, as well as women weavers, potters, and sculptors in tribal society.

### 215 Classical Art and Archaeology of Greece and Rome (3)

Prerequisite: Art 5. A general survey of the development of material culture in Greece and Rome from the earliest times through the Hellenistic period and the Roman Empire.

### 225 Medieval Art (3)

Prerequisite: Art 5. The art and architecture of the Middle Ages from the early Christian era through the late Gothic period.

### 235 Renaissance Art (3)

Prerequisite: Art 5. Artists and architects in fourteenth, fifteenth and sixteenth-century Europe. Special attention will be given to innovations in Italy and their influence throughout Europe.

### 245 Baroque Art (3)

Prerequisite: Art 5. Art and architecture in both northern and southern Europe from 1600 to 1750 with emphasis on the contributions of individual artists.

### 255 Modern Art (3)

Prerequisite: Art 5. European art of the nineteenth and twentieth centuries.

### 258 American Art (3)

Prerequisite: Art 5. A survey of the art of the United States, both as an extension of the European tradition and for its original contributions.

### 259 Modern Architecture (3)

Prerequisite: Art 5. A brief history and analysis of modern architecture, investigations of technological process, urban planning, and the dominating social attitudes which govern architectural development.

### 265 History of Photography (3)

Prerequisite: Art 5 or consent of department. A study of photography: its historical development, an examination of it as an art medium, and its influence on the development of modern art.

### 275 The Art of Print (3)

Prerequisite: Art 5. Dealing with the history of print forms: woodcuts, etchings, engravings, lithographs, silkscreens, monotypes, and mixed media. Special emphasis will be given to the importance of prints to the art and artists of our time.

### 290 Special Study (1-10)

Prerequisite: Junior or senior standing and consent of department and instructor. Independent study through readings, reports or field research.

### 295 Sophomore/Junior Seminar(3)

Prerequisite: Art 5 and consent of instructor. Reading, discussion, and writing on topics to be announced. Course may be repeated with consent of instructor.

# Art

## 303 Media and Technique in Art History (2)

Prerequisite: Consent of instructor. Technical demonstration of and research into various materials and media used by the artist.

## 315 Studies: Tribal Arts (3)

Prerequisite: One of the following: Art 15, 16, 17 or 19; or permission of instructor. Intensive study of the arts of several tribal groups. Inquiry into relationship between art and culture by means of an examination of myth, literature, festival, and social life. Seminar format. May be repeated for credit with permission of adviser.

## 325 Early Christian Art and Archaeology (3)

Prerequisite: Art 215, or consent of adviser. The origins and development of Christian imagery prior to the fourth century, the Constantinian epoch, and Byzantine developments to the death of Justinian. Attention will be paid to works of art and to the entire material culture of early Christianity.

## 326 Monasteries, Cathedrals, and Preaching Churches (3)

Prerequisite: Art 215 or consent of adviser. A study of chief monuments and characteristics of later medieval art, emphasizing their Christian institutional contexts.

## 335 Artists and Theories of the Renaissance (3)

Prerequisite: Art 235 or consent of adviser. Studies of selected fourteenth, fifteenth and sixteenth-century artists (e.g. Giotto, Donatello, Jan Van Eyck, Leonardo, Dürer, Michelangelo, Brueghel, etc.) and the ideas which are especially important in their work.

## 345 Age of Grandeur: Perspectives in Seventeenth and Eighteenth-Century Art (3)

Prerequisite: Art 245 or consent of instructor. A study of selected topics in Baroque and Rococo art. The content of the course will vary, focusing on single areas, such as the Baroque in Rome, or on major artists; such as Bernini, Rubens and Rembrandt. May be repeated for credit with permission of instructor and adviser.

## 356 Nineteenth-Century Art (3)

Prerequisite: Art 255 or consent of adviser. Studies of selected formal and theoretical aspects of nineteenth-century European art. Typical topics: Neoclassicism, Realism, Impressionism. May be repeated for credit with consent of instructor.

## 357 Twentieth-Century Art (3)

Prerequisite: Art 255 or consent of adviser. A study of major stylistic and conceptual trends in European and American art of the twentieth century. May be repeated for credit with consent of instructor.

## 365 Seminar in Photographic Studies (3)

(Same as Interdisciplinary 365.) Advanced special topics in photographic studies.

## 390 Special Study (1-10)

Prerequisites: Junior/senior standing and consent of department chairperson and instructor. Independent study through readings, reports, or field research.

## 395 Senior Art History Seminar (3)

Prerequisite: Senior standing in art history or consent of instructor. Intensive reading, discussion, and writing on topics to be announced.

# Art Studio

## 2 Introduction to Studio Art (3)

An introduction to drawing, painting and design in a beginning studio environment. This course is designed to provide basic skills and understanding of studio experience for the non-Art major.

## 30 Ceramics I (3)

An introduction to basic methods and theory of ceramics including work with hand-built construction, wheel techniques and glazing. Lab fee required.

## 40 Basic Drawing I (3)

An introduction to drawing through the study of figure, object, and environment.

## 42 Figure Drawing I (3)

Basic studies of the human form and anatomy from the model in a variety of drawing media. Lab fee required.

## 50 Basic Design I (3)

Studio problems in the creative use and integration of the elements of two-dimensional design: line, form, space, texture, and color.

## 60 Photography I (3)

An introduction to the techniques and aesthetics of black and white photography: the camera and the darkroom. One hour lecture and two and one-half hours laboratory meetings weekly. Students must provide a camera with adjustable speeds and aperture and pay for their darkroom materials. Lab fee required.

## 74 Special Topics in Studio (1-3)

Selected topics in studio studies. This course may be repeated for credit.

## 134 Art Activities for Elementary School (3)

(Same as ELE ED 179.) A study of art principles and laboratory experiences with various media and materials. Stresses curriculum planning and development of the elementary school program in art.

## 140 Basic Drawing II (3)

Prerequisite: Art 40. The development of drawing skills through continued observation and problems of invention. A further exploration of varied drawing materials and techniques including graphite, charcoal, conte crayon, and inks.

## 142 Figure Drawing II (3)

Prerequisite: Art 42. Continuation of Figure Drawing I. Lab fee required.

## 150 Basic Design II (3)

An introduction to three dimensional design. The study of structure-space relationships through basic composition problems. Studio experiments with paper, plexiglas, lightweight wood, metal, linear media, and other materials.

## 160 Photography II (3)

Prerequisite: Art 60. Continuation of Photography I at the intermediate level. Lab fee required.

## 210 Graphic Design I (3)

Prerequisites: Art 50, 140 or consent of instructor. Introductory studio problems in layout, lettering, and design with typographic elements.

# Art

## 211 Graphic Design II (3)

Prerequisite: Art 210 or consent of instructor. Continuation of Graphic Design I.

## 250 Composition (3)

Prerequisite: Art 50 and 150. An investigation of the use of formal design elements as used in historic and contemporary art. Weekly studio problems and discussions will concentrate on skills, application, and unifying effects of compositional elements on a variety of visual art forms.

## 260 Photo: Color Printing (3)

Prerequisite: Art 60 or equivalent. The course will introduce students to Cibachrome and Type C color printing techniques. A portfolio of fifteen prints will be produced by the end of the course. Students are required to furnish their own papers. Registration limited to fifteen students.

## 270 Printmaking: Relief I (3)

Prerequisite: Art 50, 140 or consent of instructor. An introduction to relief printmaking technique, materials and theory. The course will include work in linoleum, wood, and other relief materials. Lab fee required.

## 271 Printmaking: Relief II (3)

Prerequisite: Art 270 or consent of instructor. A continuation of Art 270. Lab fee required.

## 272 Printmaking: Lithography I (3)

Prerequisites: Art 50, 140 or consent of instructor. An introduction to printmaking skills and theory in stone and plate lithography. Studio problems in the use of materials and equipment. Attention will be given to individual development. Lab fee required.

## 273 Printmaking: Lithography II (3)

Prerequisite: Art 272. Continuation of Art 272. Lab fee required.

## 274 Printmaking: Photo Lithography I (3)

Prerequisite: Art 60 or departmental consent. An introduction to printmaking skills and theory in stone and plate lithography with particular emphasis on the photographic applications of the process. Some attention will also be given to commercial application of the medium. Studio problems in the use of materials and equipment. Lab fee required.

## 280 Painting I (3)

Prerequisites: Art 50, 140 or consent of instructor. An introduction to the use of oil and/or acrylic painting media. Studio problems to develop technical and expressive skills on various surfaces.

## 281 Painting II (3)

Prerequisite: Art 280 or consent of instructor. Continuation of basic studio problems in painting media.

## 283 Watercolor Painting (3)

Prerequisites: Art 50 and 140. Beginning problems in watercolor painting. Includes the study of traditional and contemporary approaches to color, color techniques and treatment of papers.

## 310 Advanced Graphic Design (3)

Prerequisites: Art 210 and 211. Advanced studio problems to further the understanding of design and its relationship to typographic elements, illustration, and communication. The course will encourage both conceptual and technical development of the designer. May be repeated for credit.

## 334 Contemporary Art Education: Craft and Theory (1-2)

Prerequisite: Upper-division standing or consent of instructor. Intensive study for advanced students and art teachers, emphasizing specialized techniques and innovative concepts. Topics to be announced. May be repeated for credit.

## 340 Advanced Drawing (3)

Prerequisites: Art 40 and 140. This course offers studio problems designed to further the development of drawing skills in various media. Emphasis will be given to the study of drawing as an independent art form. Limited color will also be introduced. May be repeated for credit.

## 342 Advanced Figure Drawing (3)

Prerequisites: Art 42 and 142. Advanced study of the human form and anatomy from the model in a variety of drawing media. May be repeated for credit. Lab fee required.

## 350 Advanced Design (3)

Prerequisites: Art 50 and 150. Advanced studio problems in design materials. Use of two-dimensional and three-dimensional mixed media. Experimental use of materials and media will be introduced. May be repeated for credit. Lab fee required.

## 360 Advanced Photography (3)

Prerequisite: Art 160. Advanced studio problems in photography. Concentration on techniques and esthetics. May be repeated for credit. Lab fee required.

## 370 Advanced Relief Printmaking (3)

Prerequisites: Art 270 and 271. Advanced problems in relief printmaking. Work in wood and mixed materials. Development of skills and esthetic judgements in the media. May be repeated for credit with consent of instructor.

## 372 Advanced Lithography (3)

Prerequisites: Art 272 and 273. Continuing problems in lithography with problems in black and white, photolithography and/or color. May be repeated for credit. Lab fee required.

## 380 Advanced Painting (3)

Prerequisite: Art 281 or consent of instructor. Advanced studio problems in painting media. Attention paid to individual development of theory, expression, and technique. May be repeated for credit.

## 390 Special Study (1-10)

Prerequisites: Junior/senior standing and consent of department chairperson and instructor. Independent study through readings, reports, or field research.

## 393 Senior Studio Seminar (1)

Prerequisite: Senior standing. Weekly critiques and discussions of technical and professional issues. Includes preparation for senior exhibition.

## Biology

Prerequisites may be waived by consent of the department or instructor. Some courses as indicated in the course description may be taken concurrently with the listed offering. Consult your adviser for further information.

The following courses fulfill the Natural Sciences and Mathematics [SM] breadth of study requirements: 1, 3, 10, 90, 110, 113, 114, 115, 116, 118, 120, 140, 150, 210, 212, 213, 215, 216, 218, 220, 222, 224, 226, 235, 237, 246, 250, 252, 254, 260, 262, 264, 266, 270, 276, 278, 280, 282, 285, 286, 305, 306, 307, 308, 310, 311, 313, 314, 315, 317, 319, 320, 322, 326, 330, 332, 334, 336, 338, 342, 344, 346, 348, 350, 352, 354, 356, 360, 364, 366, 370, 372, 376, 378, 380, 381, 382, 383, 384, 389, 390, 392, 395, 396, 398, 403, 442, 474, 485, 489, 490, 492.

### 1 General Biology (3)

Emphasis on fundamental principles of biology. Biology 1 can be applied toward fulfillment of the general education requirement in science. Biology 1 does not satisfy the prerequisite requirements of other courses in biology at the 200 level or above. Students who plan to pursue a career in medicine or one of the medical-oriented professions should enroll in Biology 10 rather than Biology 1. Three hours of lecture per week.

### 3 General Biology Laboratory (2)

Prerequisite: Biology 1 (may be taken concurrently). Laboratory course to accompany Biology 1. Biology 3 can be used to fulfill the general education requirements in a laboratory science. Biology 3 does not meet the prerequisite requirements for other courses in biology. Three and one-half hours of laboratory per week.

### 10 Introductory Biology (5)

Prerequisite: Mathematics 02 and English 09 or equivalent. A one-semester prerequisite for students intending to major in biology or take biology courses at the 200 level or above. This course offers an introduction to some of the biological properties and relationships of organisms, both plant and animal. The laboratory work emphasizes an experimental approach to biological processes. Three hours of lecture, three and one-half hours of laboratory, and one hour of discussion per week.

### 90 Freshman Seminar (3)

Prerequisite: Freshman standing and high-school biology. Topic to be announced for each session. Weekly seminars and individual conferences. Section limited to twelve to fifteen students.

### 110 Human Biology (3)

Prerequisite: Biology 1 or 10. Lectures and readings concerned with the reproduction, development, genetics, functional anatomy, behavior, ecology, and evolution of the human species. Three hours lecture per week.

### 111 Issues in Geriatric Health Care (2)

(Same as Nursing 111.) A course designed to acquaint the student with aspects of chronic disease frequent in later life, as well as a synopsis of biological aging processes. Disease symptomatology, aspects of health maintenance and medical intervention with an older adult population will be discussed. In addition, issues in health-care delivery will also be explored.

### 113 Human Physiology and Anatomy I (4)

Prerequisite: Biology 1 or its equivalent. The basic aspects of the structure of the healthy human body and how it functions. Special emphasis is on how the human body adapts itself to its environment and how changes affect physiological activities. Three hours of lecture and two hours of laboratory per week.

### 114 Human Physiology and Anatomy II (4)

Prerequisite: Biology 113. A continuation of Biology 113. A study of the basic aspects of human physiology and anatomy. Three hours of lecture and two hours of laboratory per week.

### 115 Human Heredity and Evolution (3)

Prerequisite: Biology 1 or 10. The study of heredity and evolution with special reference to human populations. Three hours of lecture per week.

### 116 General Microbiology (3)

Prerequisite: Biology 1 or its equivalent. A survey of microbial structure, genetics, and physiology. Special emphasis will be placed on the transmission and control of such organisms as they relate to the maintenance of human health. Three hours lecture per week.

### 118 General Microbiology Laboratory (2)

Prerequisite: Biology 116. Standard techniques for identification, growth, and control of microorganisms. Three and one-half hours of laboratory per week.

### 120 Environmental Biology (3)

Prerequisite: Biology 1 or 10. An examination of the biological basis of current environmental problems, with emphasis upon resources, energy, pollution, and conservation. Three hours of lecture per week.

### 140 Female Sexuality (3)

(Same as Psychology 140.) Prerequisites: Psychology 3 and Biology 1 or 10. This course will present a biological-psychological orientation toward the study of female sexuality. Topics include: sexual anatomy, hormonal influences on sexual behavior, psychosexual development, sexual attraction and relationships, sexual response and dysfunction, menstruation, pregnancy, menopause, reproductive health issues, and social issues in sexuality.

### 150 Plants and Civilization (3)

Prerequisite: Biology 1 or 10. A study of man's use and dependency on plants. Primary topics of discussion will center on the origin of agriculture and its influence on the development of nations, the origin and evolution of food crops, drug and medicinal plants, and problems in feeding the world's population. Three hours of lecture per week.

### 210 Cell Structure and Function (3)

Prerequisites: Biology 10 and Chemistry 11 (or Chemistry 1 plus 9). General cell biology, stressing cell structure and ultrastructure, as related to cell function. Three hours of lecture per week.

### 212 Histology and Microtechniques (4)

Prerequisites: Biology 10 and Biology 210 (may be taken concurrently). The basic principles and techniques of histology. Two hours of lecture per week and four hours of laboratory. (Additional lab hours arranged.)

### 213 Vertebrate Physiology (3)

Prerequisites: Biology 10 and Chemistry 11 (or Chemistry 1 plus 9). Basic functional aspects of organ systems in relation to the physiochemical properties of protoplasm. Three hours of lecture per week.

### 215 Vertebrate Physiology Lab (2)

Prerequisites: Biology 213 (may be taken concurrently). Instrumental and experimental studies in physiology. Three and one-half hours of laboratory per week.

### 216 Microbiology (3)

Prerequisites: Biology 10 and Chemistry 11 (or Chemistry 1 plus 9). Study of microorganisms, their metabolism, genetics, and their interaction with other forms of life. Three hours of lecture per week.

### 218 Microbiology Laboratory (2)

Prerequisite: Biology 216 (may be taken concurrently). Experimental studies and procedures of microbiological techniques. Three and one-half hours of laboratory per week.

# Biology

## 220 General Ecology (3)

Prerequisite: Biology 10. An examination of the relationships between living organisms and their environment. Three hours of lecture per week.

## 222 General Ecology Laboratory (2)

Prerequisites: Biology 220 required (may be taken concurrently); a general statistics course strongly recommended. An analysis of factors influencing the abundance and distribution of living organisms. Three and one-half hours of laboratory per week.

## 224 Genetics (3)

Prerequisites: Biology 10 and Chemistry 11 (or Chemistry 1 plus 9). Fundamental principles of inheritance, including classical genetic theory as well as recent advances in the molecular basis of heredity. Three hours of lecture per week.

## 226 Genetics Laboratory (2)

Prerequisite: Biology 224 (may be taken concurrently). Laboratory to accompany Biology 224. Three and one-half hours of laboratory per week.

## 235 Development (3)

Prerequisite: Biology 10. Basic principles of development from the point of view of growth, morphogenesis, and differentiation. Three hours of lecture per week.

## 237 Development Laboratory (2)

Prerequisite: Biology 235 (may be taken concurrently). Laboratory to accompany Biology 235. Three and one-half hours of laboratory per week.

## 246 Introduction to Evolution (3)

Prerequisite: Biology 10. Introduction to the theory, events, and processes of organic evolution.

## 250 Biology of Plants (3)

Prerequisite: Biology 10. General survey of the plant groups from algae through angiosperms. Morphology, reproduction, and central physiological concepts unique to the plant kingdom will be discussed. Three hours of lecture per week.

## 252 Biology of Plants Laboratory (2)

Prerequisite: Biology 250 (may be taken concurrently). Examination of representatives of the plant kingdom and experimentation in plant physiology. Three and one-half hours of laboratory per week.

## 254 General Plant Physiology and Development (3)

Prerequisite: Biology 10, Chemistry 11 (or Chemistry 1 and 9). An examination of photosynthesis, water relations, development, and response to environmental stress in plants. Three hours of lecture per week.

## 260 Vertebrate Biology (3)

Prerequisite: Biology 10. Development, structure, function, interrelationships, and zoogeography of vertebrate animals with particular attention to phylogenetic aspects. Three hours of lecture per week.

## 262 Vertebrate Biology Laboratory (2)

Prerequisite: Biology 260 (may be taken concurrently). Laboratory to accompany Biology 260. Morphological analysis and systematic survey of major vertebrate groups. Overview of the vertebrate life forms and their adaptations to habitats and resources. Three and one-half hours of laboratory per week.

## 264 Invertebrate Biology (3)

Prerequisite: Biology 10. Development, structure, function, and interrelationship of invertebrate animals with particular attention to phylogenetic aspects. Three hours of lecture per week.

## 266 Invertebrate Biology Laboratory (2)

Prerequisite: Biology 264 (may be taken concurrently). Laboratory to accompany Biology 264. Dissection and analysis of invertebrates with an emphasis on structure and function. Three and one-half hours of laboratory per week.

## 270 Introduction to Parasitology (3)

Prerequisites: Biology 10 and Chemistry 11. A general parasitology course stressing identification, life cycles, ecology, and general physiology of parasites of medical and veterinary importance. Modern aspects of experimental parasitology and immunoparasitology will be addressed.

## 276 Biological Chemistry (3)

Prerequisites: Chemistry 261 and Biology 10. The chemistry and function of the living cell and its constituents, and the interactions and conversions of intracellular substances. Three hours of lecture and one hour of discussion per week.

## 278 Biological Chemistry Laboratory (2)

Prerequisite: Biology 276 (may be taken concurrently). Experiments designed to illustrate biochemical principles and modern biochemical procedures. Three and one-half hours of laboratory per week.

## 280 Animal Behavior (3)

Prerequisite: Biology 10. The study of invertebrate and vertebrate behavior, including developmental, genetic, and ecological aspects of behavior; behavior interactions within and between populations. Three hours of lecture per week.

## 282 Animal Behavior Laboratory (2)

Prerequisite: Biology 280 (may be taken concurrently). Observational and experimental studies of animal behavior in the field and laboratory. Three and one-half hours of laboratory per week.

## 285 Methods of Teaching Biology in Secondary Schools (3)

(Same as SEC ED 245). Prerequisites: SEC ED 213 and a near-major in biology. A study of the scope and sequence of the life-science courses in the school curriculum, with emphasis on the selection and organization of materials and methods of instruction and evaluation. To be taken concurrently with student teaching.

## 286 Laboratory in Teaching the Life Sciences (2)

(Same as SEC ED 244). Prerequisite: SEC ED 213. Discussion, development, utilization, and evaluation of equipment materials and techniques applicable to instruction in the life sciences. To be taken concurrently with Biology 285 or SEC ED 245.

## 300 Radiation Safety in Biological Research (2)

Prerequisite: Consent of instructor. A description of the basic principles of radiation safety and the more important numerical data upon which the practice of radiation safety is based. Topics include interaction of radiation with matter, biological effects of radiation, operation of field and laboratory instruments, and control of exposure. Both ionizing and non-ionizing radiation will be discussed. Two hours of lecture/demonstration per week.



# Biology

## 305 Morphology of Nonvascular Plants (3)

Prerequisite: Biology 250 or consent of instructor. An intensive study of algae through the mosses and liverworts, stressing relationships between the groups. Field studies and phytoecology stressed. Three hours of lecture per week.

## 306 Morphology of Vascular Plants (3)

Prerequisite: Biology 250 or consent of instructor. An intensive study of ferns through angiosperms, stressing relationships between the groups. Field studies and phytoecology stressed. Three hours of lecture per week.

## 307 Nonvascular Plant Laboratory (2)

Prerequisite: Biology 305 (may be taken concurrently). Laboratory to accompany Biology 305. Three and one-half hours of laboratory per week.

## 308 Vascular Plant Laboratory (2)

Prerequisite: Biology 306 (may be taken concurrently). Laboratory to accompany Biology 306. Three and one-half hours of laboratory per week.

## 310 Cell Physiology (3)

Prerequisite: Biology 276 (Biology 210 recommended). A study of cellular functions and their relationship to the structural and chemical properties of cellular components. Areas discussed: the cell and its environment, energy flow, exchange of materials across membranes, information transfer within and between cells, and cellular aspects of movement. Three hours of lecture per week.

## 311 Physiology of Aging (3)

Prerequisite: Biology 10, Biology 213 or equivalent or consent of instructor. An overview of the aging process in animal populations with special emphasis on physiological changes that occur with human aging. Current theories as to the mechanism of aging are considered and critically evaluated in view of recent research findings. Premature aging diseases and age-related diseases are discussed. Three hours of lecture per week.

## 313 Comparative Animal Physiology (3)

Prerequisite: Biology 213. The unity and diversity of physiological mechanisms found throughout the animal kingdom. Three hours of lecture per week.

## 314 Environmental Physiology (3)

Prerequisite: Biology 213. Physiological responses of animals to environmental changes. Adaptation of organisms to various environments. Three hours of lecture per week.

## 315 Comparative and Environmental Physiology Laboratory (2)

Prerequisite: Biology 313 or 314. An open-ended laboratory course to accompany either Biology 313 or 314.

## 317 Immunobiology (3)

Prerequisites: Biology 276 and Chemistry 261. The fundamental principles and concepts of immunology and immunochemistry. Emphasis on the relation of immunological phenomena to biological phenomena and biological problems. Three hours of lecture per week.

## 319 Immunobiology Laboratory (2)

Prerequisite: Biology 317 (may be taken concurrently). Basic experimental procedures in immunology. Introduction to experimental evidence underlying concepts of immunology. Three and one-half hours of laboratory per week.

## 320 Neurophysiology (3)

Prerequisite: Biology 213 or consent of instructor. A study of cellular neurophysiology including initiation, propagation, and transmission of nervous signals. Three hours of lecture per week.

## 322 Neurophysiology Laboratory (2)

Prerequisites: Biology 320 (may be taken concurrently) and consent of instructor. Experiments designed to accompany Biology 320. Techniques and special research problems emphasized.

## 326 Molecular Biology (3)

Prerequisites: Biology 224 and Biology 276. A discussion of the current concepts of molecular biology as they apply to understanding genetic regulation of DNA, RNA, and protein synthesis and function in the cell. Three hours of lecture per week.

## 330 Advanced Development (3)

Prerequisite: Biology 235. A discussion of experimental approaches as applied to the analysis of development. Three hours of lecture per week.

## 332 Advanced Development Laboratory (2)

Prerequisite: Biology 330 (may be taken concurrently). Instruction and practice in the application of experimental techniques to the study of development. Three and one-half hours of laboratory per week to be arranged.

## 334 Virology (3)

Prerequisites: Biology 216 and Biology 224. A comparative study of the structure, reproduction, and genetics of viruses. Three hours of lecture per week.

## 336 Virology Laboratory (2)

Prerequisites: Biology 218 or equivalent and Biology 334 (may be taken concurrently). Laboratory to accompany Biology 334. Three and one-half hours of laboratory per week.

## 338 Microbial Genetics (3)

Prerequisites: Biology 216 and Biology 224. The principles and mechanisms of inheritance and transfer of genetic material in microorganisms. Includes the study of mutation, gene transfer, and genetic manipulation of microorganisms. Three hours of lecture per week.

## 342 Population Biology (3)

Prerequisite: Biology 224 (Biology 220 recommended). The structure, operation, and evolution of populations. Three hours of lecture per week.

## 344 Population Biology Laboratory (2)

Prerequisite: Biology 342 (may be taken concurrently). Laboratory to accompany Biology 342. Three and one-half hours of laboratory per week and/or field studies to be arranged.

## 346 Evolution (3)

Prerequisites: Biology 224 and Chemistry 261. The course and mechanisms of organic evolution, covering topics ranging from biochemical evolution to comparative anatomy and population genetics. Three hours of lecture per week.

## 348 Animal Societies and Aggregations (3)

Prerequisites: Biology 220, 280, or 242 and junior standing. Studies of natural selection and evolution with specific reference to animal groups. Critical examination of group selection, altruism, and kin selection. Survey of social insects and vertebrate societies. Two hours of lecture, one hour of discussion per week.

## 350 Plant Physiology (3)

Prerequisites: Biology 250 and 276. An examination of the physiological processes associated with plant growth and development. Three hours of lecture per week.

# Biology

## 352 Plant Physiology Laboratory (2)

Prerequisite: Biology 350 (may be taken concurrently). Laboratory to accompany Biology 350. Three and one-half hours of laboratory per week.

## 354 Entomology (3)

Prerequisites: Biology 10, ten hours of biology, and upper-division standing. Development, structure, function, behavior and ecology of insects, including a systematic survey of the orders of Insecta. Three hours of lecture per week.

## 356 Entomology Laboratory (2)

Prerequisite: Biology 354 (may be taken concurrently). Laboratory to accompany Biology 354. Studies of the morphology, physiology, and behavior of insects to give a sampling of biological studies of the class Insecta. Formation of a collection of insects, comprising a systematic survey of orders and principal families, will be an integral part of the course and will require additional time beyond the official lab hours. Three and one-half hours of lab per week.

## 360 Techniques in Electron Microscopy (5)

Prerequisites: Biology 210 and consent of instructor. Discussion of electron microscopy and associated techniques. Students will learn techniques associated with the preparation of materials for electron microscopy and learn to operate and perform minor servicing of the electron microscope. Two hours of lecture per week and seven hours of laboratory per week to be arranged.

## 364 Adaptive Radiation of the Vertebrates (3)

Prerequisites: Ten hours of biology and upper division standing. An examination of the adaptive radiation and consequent physiology, behavior and ecology of the vertebrates. Three hours of lecture per week.

## 366 Adaptive Radiation of the Vertebrates Laboratory (2)

Prerequisite: Biology 364 (may be taken concurrently). Study of the biological characteristics of vertebrate animals conducted in the laboratory and the field. Three and one-half hours of laboratory or field studies per week, or three weeks daily during the intersession.

## 370 General and Comparative Endocrinology (3)

Prerequisite: Biology 213 (Biology 276 recommended). A survey of chemical coordinating mechanisms with special emphasis on the evolution of hormonal control systems. Three hours of lecture per week.

## 372 General and Comparative Endocrinology Laboratory (2)

Prerequisite: Biology 370 (may be taken concurrently). An introduction to techniques and procedures used in endocrine research. Three and one-half hours of laboratory per week.

## 376 Advanced Biological Chemistry (3)

Prerequisite: Biology 276. Topics include control of cellular metabolism, membrane transport mechanisms of action of enzymes and hormones, and enzyme kinetics. Three hours of lecture per week.

## 378 Advanced Biological Chemistry Laboratory (2)

Prerequisite: Biology 278 or consent of instructor. Independent projects related to analytical and metabolic control, using advanced analytical and synthetic procedures. Three and one-half hours of laboratory per week.

## 380 Advanced Animal Behavior (3)

Prerequisite: Biology 280 (Biology 220 recommended). Advanced topics in animal behavior with an emphasis on ecological and evolutionary aspects of behavior. Topics will include the role of behavior in population regulation, habitat selection and spacing, feeding and predator-prey interactions, the ecology of social systems, competition, and the evolution of behavioral isolating mechanisms. Three hours of lecture per week.

## 381 Biosystematics (3)

Prerequisite: Biology 220. Mechanisms of speciation, hybridization, polyploidy, and other evolutionary phenomena utilizing current and classical literature in systematics. Three hours of lecture per week.

## 382 Advanced Animal Behavior Laboratory (2)

Prerequisite: Biology 380 (may be taken concurrently). Advanced observational and experimental studies of animal behavior in the field and laboratory. Three and one-half hours of laboratory per week.

## 383 Biosystematics Laboratory (2)

Prerequisite: Biology 381 (may be taken concurrently) or equivalent. Techniques in the analysis of systematic and evolutionary questions. Three and one-half hours of laboratory per week.

## 384 Behavioral Genetics (3)

Prerequisites: Biology 224 and 280 or equivalent. The genetic analysis of behavioral characteristics. Three hours of lecture per week.

## 389 Senior Seminar (2)

Prerequisite: Senior standing. Required of biology majors. Presentation of selected papers by students.

## 390 Research (1-3)

Prerequisites: Consent of the Biology 390 course coordinator. Generally restricted to junior or senior standing. Research (laboratory and/or library) in an area selected by the student in consultation with and under the supervision of a faculty research adviser. Credit arranged. Course may be repeated for a total of up to five credit hours. No more than two credit hours may be applied toward the minimum number of biology course credits for the major in biology.

## 392 Selected Topics (1-10)

Prerequisites: Junior standing and consent of instructor. Selected topics in biology. The topics will vary each semester. Topics offered for the following semester will be available in the departmental office. Credit arranged. May be taken more than once for credit.

## 395 Field Biology (2-5)

Prerequisites: Three biology courses and consent of instructor. Intensive study of the flora and fauna of selected areas of the North American continent including a ten-day field trip during spring recess and associated laboratory work. The area studied will be announced in the schedule of courses. Note: There is a specific fee charged for this course.

## 396 Marine Biology (3)

Prerequisite: Biology 264 (Biology 266 recommended). A survey of the major groups of marine plants and animals and their interactions in the various North American marine communities. Three hours of lecture per week.

## Biology

### 398 Marine Biology Laboratory (2)

Prerequisite: Biology 396 (may be taken concurrently) and consent of instructor. Intensive laboratory and field study of selected North American marine communities. Consult the instructor for area to be visited. Students must pay their own travel and living expenses.

### 401 Current Topics in Biology (1)

Prerequisite: Graduate standing. An introduction to advanced topics in biology as seen through the eyes of the faculty. Faculty members will discuss current research in their area of interest and will review research being conducted in the department. One and one-half hours of lecture and discussion per week. Required of all graduate students.

### 402 Principles of Biological Research (3)

Prerequisite: Graduate standing. The course will include lectures, student presentations, and some laboratory demonstrations. Students will compile bibliographies, evaluate technical methods, plan a research project, author a grant proposal, prepare data for computer analysis, write an abstract, write an outline for a journal paper, and learn to present information under conditions similar to those at a meeting of a professional society. Three hours of lecture per week.

### 403 Biology Colloquium (1)

Prerequisite: Biology 401. Presentation of papers by students, faculty, and invited speakers. One hour per week. May be repeated for a maximum of 3 credit hours.

### 417 Advanced Immunology (3)

Prerequisite: Biology 317, Immunobiology. Advanced consideration of techniques of measuring antigen-antibody interaction; immunogenetics as applied to cellular immunity and transplantation; evolution of the immune response. Three hours of lecture per week.

### 442 Population and Community Ecology (3)

Prerequisite: Biology 220 or 342 or their equivalents. Studies of structure and organization of natural communities stressing the abundance and distribution of species, the regulation of species diversity, and the evolution of demographic parameters in populations. Three hours of lecture per week.

### 474 Hormones, Pheromones, and Behavior (3)

Prerequisites: Biology 213 and 280 required, 370 recommended. This course will survey the hormonal and pheromonal control of behavior in both invertebrates (annelids, arthropods and molluscs) and vertebrates (from fish to primates). Particular attention will be given to organizational and activational effects of hormones on sexual, parental, and aggressive behaviors. Interactions between hormonal, pheromonal, and neural control of behavior will be discussed. Three hours of lecture per week.

### 485 Problems in Teaching College Biology (3)

(Same as ADU ED 435.) Prerequisites: Teaching experience, thirty semester hours in biology and consent of instructor. Basic philosophies underlying undergraduate biology education at the college level will be presented and examined with concern for establishment of an individual philosophy in the prospective college teacher. Teaching techniques suitable for college-level instruction will be considered with respect to current research findings.

### 486 Techniques in Teaching Biology for Graduate Students (2)

(Same as SEC ED 486.) Prerequisites: Graduate standing and teaching assignment. Discussion and practice of techniques specific to instruction in the life sciences. Consideration will be given to teaching strategies, curriculum design, evaluation, instrumentation, and student-teacher interactions. Recommended for all graduate students with teaching assistantships.

### 489 Graduate Seminar (2)

Presentation and discussion of various research problems in biology. Graduate student exposure to the seminar process.

### 490 Graduate Research in Biology (1-10)

Research in area selected by student in consultation with faculty members. May be taken to a maximum of ten hours.

### 492 Topics in Biology (2-5)

In-depth studies of selected topics in contemporary biology. May be repeated. Three hours of lecture per week.

# Chemistry

Prerequisites may be waived by consent of the department or instructor. Some courses as indicated in the course description may be taken concurrently with the listed offering. Consult your adviser for further information.

The following courses fulfill the Natural Sciences and Mathematics [SM] breadth of study requirements: 1, 2, 3, 4, 9, 10, 11, 12, 13, 122, 202, 231, 232, 233, 234, 261, 262, 263, 264, 289, 290, 310, 324, 325, 331, 333, 336, 341, 342, 343, 352, 361, 362, 363, 366, 371, 372, 373, 374, 380, 381, 414, 415, 416, 417, 431, 433, 434, 436, 439, 441, 442, 443, 449, 463, 464, 465, 468, 469, 490.

## 1 General Chemistry 1 (3)

Prerequisite: Mathematics 02 or equivalent (may be taken concurrently). A broad introductory survey of chemical principles. Chemistry 1 plus Chemistry 9 are equivalent to Chemistry 11. This alternative may be attractive to students who are not mathematically prepared for Chemistry 11. Chemistry 1 and 2 will ordinarily satisfy chemistry requirements in nursing, forestry, physical therapy, and related professions. No student may take both Chemistry 1 and 10 for credit. Chemistry majors may not include both Chemistry 1 and 11 in the 120 hours required for graduation. Three hours of lecture per week.

## 2 General Organic Chemistry (3)

Prerequisite: Chemistry 1. A short course in organic chemistry with biochemical applications. Recommended for students in nursing, forestry, physical therapy, and related professions. This course should not be taken by majors in the physical or biological sciences. Chemistry majors may not include Chemistry 2 in the 120 hours required for graduation. Three hours of lecture per week.

## 3 General Chemistry Laboratory (2)

Prerequisite: Chemistry 1 or 10 (may be taken concurrently). Experiments to acquaint students with chemistry in the laboratory. No student may take both Chemistry 3 and Chemistry 9 for credit.

## 4 Laboratory in General Organic Chemistry (2)

Prerequisite: Chemistry 2 (may be taken concurrently). Experiments to introduce the student to organic and biochemistry. These will include studies of the properties of organic compounds and introduce students to methods of synthesis and analysis.

## 9 General Chemistry II (3)

Prerequisites: Chemistry 1 (or equivalent and consent of instructor) and Mathematics

40 (may be taken concurrently). Additional work on the topics of Chemistry 1, with emphasis on quantitative material. Introduction to the chemical laboratory. Chemistry 1 plus Chemistry 9 is equivalent to Chemistry 11 for science majors. Chemistry majors who receive credit for Chemistry 1 and 9 may not also include Chemistry 10 or 11 in the 120 hours required for graduation. No student may take both Chemistry 3 and 9 for credit. Two hours of lecture per week, three and one-half hours of lab or one hour of discussion on alternate weeks.

## 10 Chemistry in Society (3)

A survey of chemistry and its relevance to contemporary problems, including an introduction to important chemical principles. Laboratory experiments are designed to complement the lectures. Chemistry 10 does not satisfy the prerequisite of any course. No student may take both Chemistry 1 and 10 for credit. Chemistry majors may not include Chemistry 10 in the 120 hours required for graduation. Two hours of lecture per week; two hours of lab and one hour of discussion on alternate weeks.

## 11 Introductory Chemistry I (5)

Prerequisite: Mathematics through college algebra and trigonometry (may be taken concurrently). Presents an introduction to the fundamental laws and theories of chemistry. Laboratory experiments are designed to demonstrate some aspects of qualitative and quantitative analysis and to develop skills in laboratory procedures. Chemistry majors may not include both Chemistry 1 and 11, nor both Chemistry 10 and 11 in the 120 hours required for graduation. Three hours of lecture and one hour of discussion per week; one hour of laboratory-lecture and three hours of laboratory per week.

## 12 Introductory Chemistry II (5)

Prerequisite: Chemistry 11 or advanced placement. Lecture and laboratory are a continuation of Chemistry 11. Three hours of lecture and one hour of discussion per week; one hour laboratory-lecture and three hours of laboratory weekly.

## 13 Special Topics in Introductory Chemistry (1-5)

Prerequisite: Consent of instructor. A lecture or laboratory course to assist transfer students in meeting the requirements of Chemistry 11 and 12.

## 122 Quantitative Analysis (3)

Prerequisite: Chemistry 12. Principles and practice of elementary quantitative analytical chemistry. Laboratory work will

emphasize instrumental techniques, electrochemistry, and some spectrophotometry. One and one-half hours of lecture and four and one-half hours of laboratory weekly.

## 202 Introduction to Chemical Literature (1)

Prerequisite: Chemistry 262 (may be taken concurrently). The course will familiarize the student with the literature of chemistry and its use. One hour of lecture per week.

## 231 Physical Chemistry I (3)

Prerequisites: Chemistry 122 and Mathematics 201 (may be taken concurrently), and Physics 111 (or equivalent). Principles of physical chemistry including thermodynamics, theory of gases, phase equilibria, kinetics, crystal structure, spectroscopy, and quantum mechanics. Three hours of lecture per week.

## 232 Physical Chemistry II (3)

Prerequisite: Chemistry 231. Continuation of Chemistry 231. Three hours of lecture per week.

## 233 Laboratory in Physical Chemistry I (2)

Prerequisite: Chemistry 231 (may be taken concurrently). Experiments designed to illustrate principles introduced in Chemistry 231. One hour of lecture and four and one-half hours of laboratory per week.

## 234 Laboratory in Physical Chemistry II (2)

Prerequisites: Chemistry 232 (may be taken concurrently) and Chemistry 233. Experiments designed to illustrate principles introduced in Chemistry 232. One hour of lecture and four and one-half hours of laboratory per week.

## 261 Structural Organic Chemistry (3)

Prerequisite: Chemistry 12. An introduction to the structure, properties, synthesis, and reactions of aliphatic and aromatic carbon compounds. Three hours of lecture per week.

## 262 Organic Reactions (3)

Prerequisite: Chemistry 261. A systematic study of organic reactions and their mechanisms; organic synthetic methods. Three hours of lecture per week.

## 263 Techniques of Organic Chemistry (2)

Prerequisite: Chemistry 261 or consent of instructor. An introduction to laboratory techniques and procedures of synthetic organic chemistry. One hour of lecture and four and one-half hours of laboratory per week.

# Chemistry

## 264 Synthetic and Analytical Methods of Organic Chemistry (2)

Prerequisites: Chemistry 262 (may be taken concurrently) and Chemistry 263. Advanced techniques: synthesis, separation, and identification of organic compounds by classical and instrumental techniques. One hour of lecture and four and one-half hours of laboratory per week.

## 280 Methods of Teaching Chemistry in Secondary Schools (3)

(Same as SEC ED 240). Prerequisite: SEC ED 213 and a near-major in the subject. A study of the scope and sequence of the science courses in the school curriculum, with emphasis on the selection and organization of materials and methods of instruction and evaluation. To be taken concurrently with student teaching.

## 289 Seminar (1-2)

Prerequisite: Chemistry 202 (may be taken concurrently). Presentation of papers by students, faculty, and invited speakers. All majors must enroll for credit during their senior year. If taken during the day, the student must enroll for two semesters, one credit per semester. If taken in the evening, the student must enroll for one semester, and will receive two credits.

## 290 Chemical Research (1-10)

Prerequisite: Consent of instructor. Independent laboratory and library study, in conjunction with faculty member, of fundamental problems in chemistry.

## 310 History of Chemistry (3)

Prerequisite: Chemistry 12 or consent of instructor. The development of chemistry, including early theories of matter, alchemy, iatrochemistry, the period of Lavoisier, and selected topics from the nineteenth and twentieth centuries. Three hours of lecture per week.

## 324 Instrumental Analysis (3)

Prerequisite: Chemistry 233. Modern instrumental methods, including nuclear magnetic resonance, electron spin resonance, mass spectrometry, spectrophotometry, x-ray diffraction and others. Two hours of lecture and three and one-half hours of laboratory per week.

## 325 Qualitative Organic Analysis (3)

Prerequisite: Chemistry 264. Laboratory and instrumental methods for the systematic identification of organic compounds. One hour of lecture and seven hours of laboratory per week.

## 331 Advanced Physical Chemistry (3)

Prerequisite: Chemistry 232. Study of advanced theoretical and experimental problems in modern physical chemistry.

Selected topics such as statistical mechanics, properties of solids, reaction dynamics, molecular orbital theory, and spectroscopic methods may be included. Three hours of lecture per week.

## 333 Thermodynamics (3)

Prerequisite: Chemistry 232. Selected advanced topics including solid-state, non-equilibrium, and statistical thermodynamics. Three hours of lecture per week.

## 336 Introduction to Quantum Chemistry (3)

Prerequisite: Chemistry 232 or consent of instructor. A brief but quantitative introduction to the application of quantum mechanics to problems in chemistry, covering the uncertainty principle, operators, solution of Schrodinger's equation for simple systems, perturbation theory, variation methods, interaction of radiation with matter, atomic and molecular structure, and theory of collisions. Three hours of lecture per week.

## 341 Inorganic Chemistry I (3)

Prerequisites: Chemistry 232 and 262 (may be taken concurrently). A systematic study of the structure and properties of the elements and their compounds, with emphasis on the correlation of chemical properties with theoretical concepts. Three hours of lecture per week.

## 342 Inorganic Chemistry II (3)

Prerequisite: Chemistry 341. Continuation of Chemistry 341 with emphasis on such topics as metals, non-aqueous solvents, chemical dynamics, organometallic chemistry, chemistry of the less common elements and certain frontier areas. Three hours of lecture per week.

## 343 Inorganic Reactions (2)

Prerequisite: Chemistry 341 (may be taken concurrently). The more sophisticated techniques of physical and analytical chemistry will be used to study inorganic compounds and their reactions. One hour of lecture and four and one-half hours of laboratory per week.

## 352 Nuclear Chemistry (3)

Prerequisite: Chemistry 232. Properties of radioactive nuclei, nature of radioactivity, nuclear reactions, and applications of nucleonics to chemistry. Three hours of lecture per week.

## 361 Advanced Organic Chemistry (3)

Prerequisite: Chemistry 262. Contemporary developments in the study of the structure of carbon compounds and the mechanism of their reactions. Selected topics such as

natural products, heterocyclic compounds, stereochemistry, aromaticity, reaction intermediates, and photochemistry will be included. Three hours of lecture per week.

## 362 Spectroscopic Identification of Organic Compounds (3)

Prerequisite: Chemistry 264. An applied approach to the use of spectroscopic techniques in organic chemistry. Topics to include integrated applications of infrared and Raman spectroscopy, nuclear magnetic resonance ( $^{13}\text{C}$  and  $^1\text{H}$ , cw and pu) and mass spectroscopy for the purpose of elucidating the structure of organic compounds. Three hours of lecture per week.

## 363 Advanced Organic Synthesis (2)

Prerequisite: Chemistry 264. Advanced synthetic methods of organic chemistry. One hour of lecture and seven hours of laboratory per week.

## 366 Physical Organic Chemistry (3)

Prerequisites: Chemistry 262 and 232 (may be taken concurrently). Advanced topics in the theory of organic chemistry, including conformational analysis, reaction kinetics and mechanisms, and transition state theory. Three hours of lecture per week.

## 371 Biochemistry (3)

Prerequisite: Chemistry 263. The isolation, chemical characterization, and function of the structural and catalytic components of living cells and subcellular particles. Three hours of lecture per week.

## 372 Advanced Biochemistry (3)

Prerequisite: Chemistry 371. Selected advanced topics in the chemistry of life processes. Three hours of lecture per week.

## 373 Biochemical Techniques (2)

Prerequisite: Chemistry 371 (may be taken concurrently). Laboratory study of biochemical processes in cellular and subcellular systems with emphasis on the isolation and purification of proteins (enzymes) and the characterization of catalytic properties. One hour of lecture and three and one-half hours of laboratory per week.

## 374 Advanced Biochemistry Laboratory (2)

Prerequisites: Chemistry 372 and 373 (latter may be taken concurrently). Continuation of Chemistry 373. Laboratory to accompany Chemistry 372. One hour of lecture and three and one-half hours of laboratory per week.

# Chemistry

## 380 The Teaching of Chemistry in Colleges and Universities (1)

Prerequisite: Consent of instructor. A study of the history of the teaching of chemistry and the methods of instruction and evaluation used in the discipline.

## 381 Special Topics (1-10)

Prerequisite: Consent of instructor. A reading and seminar course in selected advanced topics.

## 414 Molecular Spectroscopy (3)

Prerequisite: Chemistry 232. A broad treatment of the interaction of electromagnetic radiation with matter, emphasizing the unity of such interactions. Interpretation of molecular structure in terms of molecular, electronic and geometric structure and dynamics. Description and interpretation of physical techniques applied to chemistry. Three hours of lecture per week.

## 415 Organometallic Chemistry (3)

Prerequisite: Consent of instructor. A systematic study of the compounds containing a carbon-metal or a carbon-metalloid bond. Emphasis will be placed upon the structural types and chemical reactivity of this class of compounds. Topics will also include the role of organometallic compounds in synthesis and their catalytic behavior. Three hours of lecture per week.

## 416 Chemical Applications of Group Theory (3)

Prerequisite: Chemistry 232. A brief introduction to the fundamental relationships of group theory. Application of group theory to molecular orbital theory, molecular vibrations, and molecular spectra. Three hours of lecture per week.

## 417 Environmental Chemistry (3)

Prerequisite: Consent of instructor. Selected topics in the chemistry of the environment including air and water pollution. Subjects to be discussed include photochemical smog, gaseous and particulate contamination, biodegradability of chemicals, and chemical effects of contaminants on living species. Three hours of lecture per week.

## 419 Advanced Reading in Chemistry (1)

Prerequisite: Admission to the Ph.D. Program. Reading and examinations in the sub-disciplines of chemistry. Enrollment must begin after completion of any course deficiencies.

## 431 Advanced Chemical Calculations (3)

Prerequisites: Mathematics 201 and Chemistry 232. Advanced application of analytical techniques to chemical problems; complex variables, linear algebra, and series techniques. Three hours of lecture per week.

## 433 Statistical Mechanics (3)

Prerequisites: Chemistry 333 and Chemistry 431. Consideration of topics of chemical-physical interest including thermophysical properties of fluids and solids, Fermi-Dirac and Bose-Einstein fluids, theory of fluctuations, and irreversible processes. Three hours of lecture per week.

## 434 Interaction of Electromagnetic Radiation and Matter (3)

Prerequisite: Chemistry 436. Treatment of the theoretical description of interaction between atoms and molecules and electromagnetic fields. Includes such topics as electromagnetic field theory, spin systems in electromagnetic fields, time-dependent perturbation theory, emission and absorption of radiation, and selected applications to chemical and physical systems. Three hours of lecture per week.

## 436 Quantum Chemistry II (3)

Prerequisites: Chemistry 336 and 431. Advanced theoretical concepts; angular momentum, atomic and molecular structure. Three hours of lecture per week.

## 439 Special Topics in Physical Chemistry (1-1)

Prerequisite: Consent of instructor. Selected topics in physical chemistry. May be taken more than once for credit.

## 441 Typical Element Chemistry (3)

Prerequisite: Chemistry 342. Chemistry of the main group elements and their compounds including such topics as electron deficient compounds, acids, bases and non-aqueous solvents, catenation and inorganic polymers, the solid state, organo-typical element chemistry and energetics. Three hours of lecture per week.

## 442 Coordination Chemistry (3)

Prerequisite: Chemistry 342. The chemistry of the coordination compounds of the transition metals including such topics as kinetics and mechanisms of reaction, stereochemistry, ligand field theory, stability and organotransition element chemistry. Three hours of lecture per week.

## 443 Physical Inorganic Chemistry (3)

Prerequisites: Chemistry 342, 414, and 416. Study of physical concepts with emphasis on physical methods applied to inorganic systems, spectral and magnetic properties

of coordination compounds, and application of bonding theories to inorganic chemistry. Three hours of lecture per week.

## 448 Problem Seminar in Inorganic Chemistry (1)

Prerequisite: Consent of the inorganic chemistry staff. Problems from the current literature, presentations, and discussions by faculty and students.

## 449 Special Topics in Inorganic Chemistry (1-3)

Prerequisite: Consent of instructor. Selected topics in inorganic chemistry. May be taken more than once for credit.

## 463 Stereochemistry (3)

Prerequisite: Chemistry 361 or 366. A study of molecular geometry and relationships in space between atoms and groups in a molecule. Topics to be covered include optical isomerism, conformational analysis, asymmetric synthesis, and topology. Three hours of lecture per week.

## 464 Organic Photochemistry (3)

Prerequisites: Chemistry 361 and Chemistry 366. A study of the synthetic and theoretical aspects and applications of light induced reactions. Topics to be covered include primary photo-physical processes, reaction types, and photosensitization. Three hours of lecture per week.

## 465 Chemistry of Natural Products (3)

Prerequisite: Chemistry 361. The chemistry and physiological action of natural products: methods of isolation, determination of structures, synthesis, and biosynthesis. Three hours of lecture per week.

## 468 Problem Seminar in Organic Chemistry (1-3)

Prerequisite: Consent of the organic chemistry staff. Problems from the current literature, presentations, and discussions by faculty and students. Up to three credits may be applicable in the M.S. or Ph.D. degree program.

## 469 Special Topics in Organic Chemistry (3)

Prerequisite: Consent of instructor. Advanced topics of special current interest. May be taken more than once for credit.

## 489 Chemistry Colloquium (1)

Presentation of papers by students, faculty and invited speakers. One hour per week.

## 490 Graduate Research in Chemistry (1-10)

## Economics

Courses in this section are grouped as follows: Economics; Geography; and Home Economics.

Prerequisites may be waived by consent of the department.

The following courses fulfill the Social Sciences [SS] breadth of study requirements: 40, 51, 52, 214, 215, 216, 220, 221, 230, 231, 238, 239, 240, 241, 242, 243, 250, 251, 253, 256, 260, 261, 270, 287, 301, 302, 304, 305, 306, 317, 321, 331, 350, 351, 355, 356, 357, 363, 364, 365, 366, 389; GEOGRAPHY: 101, 102, 211.

## Economics

### 40 Introduction to the American Economy (3)

Introduction to economic analysis and problems through an examination of the development and operations of the American economy; study of its evolution, institutions, and principal problems. Economics 40 does not substitute for Economics 51 or 52.

### 51 Principles of Microeconomics (3)

Prerequisite: Mathematics 30 or 40. Introduction to the determinants of household demand, production and cost, and market prices. Applies the principles of individual decision-making behavior to understanding goods, services, and resource markets.

### 52 Principles of Macroeconomics (3)

Prerequisite: Economics 51. Introduction to the determination of levels of and changes in aggregate income, output, employment, and prices. Applies economic principles of choice to the formulation and achievement of public policies that affect national employment, income distribution, and economic growth.

### 214 Economics of the Environment (3)

Prerequisite: Economics 51. Study of the physical and biological environment as the ultimate economic resource; economic and scientific basis and implications of environmental use; analysis of water, air, and solid waste discharges as well as environmental and organismic disruption, deterioration, and depletion; costs of environmental contamination and maintenance; conservation and restoration; environmental planning and policy.

### 215 Economics of Energy (3)

Prerequisite: Economics 51. Analytical, institutional, and empirical study of world production and use of energy from primary sources to retail markets. Focus on supply and demand, technology, market organization and operations environmental impact, and public policy.

### 216 Public Finance (3)

Prerequisite: Economics 51. The nature and scope of public finance. Analysis of expenditure, revenue, and financial administration of the government, with emphasis on current problems.

### 220 Money and Banking (3)

Prerequisite: Economics 51; Economics 52 recommended. Factors influencing bank reserves and the money supply. Ability of the Federal Reserve System and the Treasury to control these factors. Introduction to monetary theory: integration of monetary phenomena with national income theory. Analysis of current policy issues.

### 221 Financial Markets and Institutions (3)

(Same as Business 221.) Prerequisites: Economics 51 and 52. Demand, supply, and flow of funds in the macro-financial system, determinants of the structure of interest rates, the impact of monetary and other governmental policies on interest rates, securities, prices, and flows of funds. Examines types and historical development of financial intermediaries, including their regulatory environment, decision-making within individual intermediaries, and how their portfolio decisions affect flows of funds in the economy.

### 230 International Economic Analysis (3)

Prerequisite: Economics 40 or 51 or 52. Elementary trade and payments analysis; balance of payments, international economic problems; concentration on fundamentals of analysis and problems.

### 231 International Finance (3)

Prerequisite: Economics 40 or 51 or 52. Introduction to international monetary systems; foreign exchange markets; financing of international transactions; the international position of the dollar.

### 238 The World Economies of Today (3)

Prerequisite: Economics 40 or 51 or 52. Comparative study of economic organization, growth, and welfare in different national economies, such as the United States, the Soviet Union, and France.

### 239 The Soviet Economy (3)

Prerequisite: Economics 40 or 51 or 52. Intensive analysis of the Soviet economy as a case study in central planning. Growth and development of the Soviet economy in historical perspective, and prospects for future evolution and structural change.

### 240 Economic Development (3)

Prerequisite: Economics 40 or 51 or 52. Survey of economic growth as applied to underdeveloped countries. Analysis of development policies with emphasis on specific case studies.

### 241 American Economic Development (3)

Prerequisite: Economics 40 or 51 or 52. Economic analysis and interpretation of the evolution of the principal developments, institutions, and structural characteristics of the economic system of the United States.

### 242 European Economic Development (3)

Prerequisite: Economics 40 or 51 or 52. Economic analysis and interpretation of the evolution of the principal developments, institutions, and structural characteristics of the economic systems of Europe.

### 243 Latin American Economic Development (3)

Prerequisite: Economics 40 or 51 or 52; or consent of instructor. Economic analysis and interpretation of the evolution of the principal developments, institutions, and structural characteristics of the economic systems of Latin America.

### 250 Intermediate Economic Theory: Macroeconomics (3)

Prerequisites: Economics 51 and 52. Study of national income, expenditure, and the forces determining the level of economic activity. Special emphasis on the theory of income determination and its application to public policy.

### 251 Intermediate Economic Theory: Microeconomics (3)

Prerequisites: Economics 51 and 52. Analysis of prices in terms of equilibrium of the business firm and consumer demand in markets of varying degrees of competition.

### 253 Managerial Economics (3)

(Same as Business Administration 253.) Prerequisites: Economics 51 and either Mathematics 80 or 101. Application of microeconomic theory to the decision-making process in the business firm. Discussion of cost behavior, price and output determination under various competitive conditions, as well as factors affecting wages, interest and profits.

## Economics

### 256 The Consumer and the Economy (3)

Prerequisite: Economics 51. This course will present a brief sketch of the historical development of consumption patterns in the United States and their interaction with methods of market competition. Theories of consumer behavior, including economic behavior and cultural approaches to consumption decisions, will be evaluated. The course will examine problems of consumer choice and the management of personal finances in today's economy. Topics to be considered include budgeting, the use of credit, improving buying practices, savings, insurance, and personal investment planning. The course will analyze ways in which the consumer function can be performed more efficiently, including the development of consumer education and the role of government in consumer protection.

### 260 Labor Economics (3)

Prerequisite: Economics 40 or 51 or 52. Forms of labor organization, state and federal labor legislation and policies of labor unions. Emphasis on an application of economic theory to the relations of labor and business.

### 261 The Economics of Poverty and Income Maintenance (3)

Prerequisite: Economics 51 or permission of instructor. Considers the problems of defining and measuring poverty as well as competing views of its causes. Examines the incentive effects of government transfer programs for the family's economic decisions, with emphasis on labor market behavior. Topics will include unemployment insurance, AFDC, food stamps, and negative income tax schemes.

### 270 Urban and Regional Economics (3)

Prerequisite: Economics 40 or 51 or 52. A survey of factors affecting the location of economic activity, industrial diversity, determinants of urban growth, the role of urban public economy, and the management of the urban environment.

### 287 The World Food Problem (3)

(Same as Interdisciplinary 287.)

Prerequisite: Economics 40 or 51, or consent of instructor. An introduction to the world's food problem and an examination of the economic and political problems in distributing basic foodstuffs among the earth's people.

### 301 The Urban Environment and Planning (3)

Prerequisite: Junior standing or twelve hours in social science. A survey of the development of urban America and the associated crises, and of the origins and early practice of planning, and the role of the profession in modern society. Federal and state programs that affect urban development through the planning profession, and current changes in the practice of planning.

### 302 Planning Processes in the Urban Economy (3)

Prerequisite: Economics 51. Economic techniques and criteria used in planning and evaluating programs and projects for the urban economy, including costing, cost-benefit and cost effectiveness, and information control systems. Special attention will be given to St. Louis area studies for schools, transportation, public facilities, economic development, and social services delivery.

### 304 Survey Research Practicum (3)

(Same as Political Science 304 and Sociology 304). Prerequisites: Junior standing and consent of instructor. The execution of a sample survey, including establishing study objectives, sampling, questionnaire construction, interviewing, coding, data analysis, and presentation of results.

### 305 Macroeconomics for the School Curriculum (1-3)

Prerequisite: Junior standing. Analysis of forces affecting the national economy, with emphasis on income determination, employment, money and banking, and international trade and finance. Special reference to topics included in elementary and secondary school social science curricula. Economics 305 may not be used by Economics majors to meet degree requirements.

### 306 Microeconomics for the School Curriculum (1-3)

Prerequisite: Junior standing. Analysis of market forces, with emphasis on business firms, households, and productive-factor markets, price determination, and resource allocation. Special reference to topics included in elementary and secondary school social science curricula. Economics 306 may not be used by Economics majors to meet degree requirements.

### 310 Economic Issues for the School Curriculum (1-3)

Prerequisites: Junior standing and consent of instructor. An analysis of selected economic issues appropriate to instruction in secondary and elementary schools. May be taken more than once for credit, provided the topic of the course is different each time. May not normally be used by economics majors to meet degree requirements.

### 317 Public Finance: State and Local (3)

Prerequisites: Economics 51 and 52. A study of expenditure, taxation, and financial administration of state and local governments, with emphasis on problems of current interest. Special attention given to research methods, as well as financial relations between various levels of government.

### 321 Money (3)

Prerequisites: Economics 52 and 220. Demand for money; determination of interest rates, prices and income; decision-making under conditions of uncertainty; term structure and interest rates. Other topics of mutual interest.

### 331 International Economic Analysis: Finance (3)

Prerequisites: Economics 231 or 250. Provides advanced study of the foreign sector in the theory and methods of international macroeconomics; income determination and trade balance; devaluation; international linkages; global monetary theory.

### 350 Special Readings (1-6)

Prerequisites: Consent of instructor; grade point of 3.0 or higher in Economics. Unscheduled, independent directed readings on topics mutually acceptable to student and instructor. Maximum credit limited to six hours.

### 351 Mathematical Economics (3)

Prerequisites: Economics 251 and Mathematics 101. Introduction to the development and use of mathematical models in economics. Decision and game theory. Selected topics in mathematical economics.

### 355 Business and Government (3)

Prerequisite: Economics 51. Relations between business firms and government at all levels. Questions of regulation, public ownership, guidelines, and competition considered.



## Economics

### 356 Industrial Organization (3)

Prerequisite: Economics 51. A theoretical and empirical analysis of the actions of firms under alternative forms of market organization. The role of economies of scale, product differentiation, mergers, and advertising in affecting industry structure, and the impact of the resulting industry structure on pricing, output, promotion, and technology decisions of firms.

### 357 Government Regulation and Antitrust Policy (3)

Prerequisite: Economics 51. Evaluation of the use of antitrust policy and government regulatory agencies to improve the performance of industrial markets. Course will include discussion of antitrust cases and analysis of the economic impact of deregulatory initiatives in the airline, trucking, railroad, and telecommunications industries.

### 363 Adjustment of Labor Disputes (3)

Prerequisite: Economics 51 or equivalent. The principles of conflict resolution, including government techniques such as mediation, fact finding, arbitration, injunction, and seizure. Application of these techniques under the Taft-Hartley Act and Railway Labor Act. Case studies of industries including coal, oil, railroads, steel, and aerospace. A detailed examination of the operations of the labor market under non-competitive conditions.

### 364 Manpower Policies (3)

Prerequisite: Economics 51 or 52. Analysis of the allocation of human resources with emphasis on the economic theory of labor markets in both the short and the long run. Discussion of the operation of the labor market in specific occupations.

### 365 Economic Statistics and Econometrics (3)

(Same as Public Policy Admin. 365.) Prerequisites: Economics 51 and 52 or Business Administration 410; and Mathematics 31 or 132 or Business Administration 131 or 481 or Public Policy Administration 401; and Mathematics 80 or 101; or equivalents. An introduction to statistical methods used in economic and public policy research. The course covers the use of the general linear regression model with emphasis given to statistical problems that arise in the context of data collected under non-experimental conditions. Material is limited to single-equation models.

### 366 Econometrics (3)

Prerequisite: Economics 365. This course presents useful extensions to the general linear regression model, such as simultaneous equation, distributed lag, and simulation models. It also provides practical experience in the development of an econometric research project.

### 368 Analysis of Business Conditions (3)

(Same as Business 368.) Prerequisite: Economics 220. Discussion of factors affecting economic conditions, short-term fluctuations in business activity, and plans and policies for economic stabilization. Emphasis on problems and techniques of forecasting aggregate and industry demand.

### 380 History of Economic Thought (3)

Prerequisites: Economics 51 and 52. The evolution of economic thought from the ancients through post-Keynesian theory.

### 401 Macroeconomic Analysis (3)

Prerequisite: Economics 250 or equivalent. Aggregate economic theory, including analysis of the determinants of income, output, employment, and prices. Employment and price-level effects of consumer and investment demand, the money supply and interest rates, and government policies.

### 402 Microeconomic Analysis (3)

Prerequisite: Economics 251 or equivalent. A rigorous, basic survey of microeconomic comparative statics. Detailed examination of demand and supply, product and factor markets. Partial equilibrium in competitive, imperfectly competitive and monopolistic markets.

### 420 Advanced Topics in Quantitative Economics and Policy (3)

Prerequisites: Regular graduate student status and consent of graduate student coordinator. Concepts and problems in quantitative economics and policy. Offered in alternate years.

### 421 Public Sector Microeconomics (3)

Prerequisite: Economics 251. Survey of economics of bureaucracy, fiscal federalism, entrepreneurship in non-profit organizations, benefit cost analysis, tax welfare, property rights, and externalities.

### 430 International Trade (3)

Prerequisites: Economics 251 or Business Administration 410. This course will survey recent literature and problems in international trade. It will consist of a brief but intensive study of the modern theories of international trade and the discussion of related selected topics. These topics will include tariff and non-tariff barriers to trade, the European Economic Community, trade and development, multinational enterprises, and international factor movements.

### 431 International Monetary Analysis (3)

Prerequisite: Economics 250 or Business Administration 411. Application of macroeconomic theory to the international monetary system. Topics include the balance of payments, exchange rates, international linkages, world inflation, capital flows, and the gold standard.

### 450 Topics in Managerial Economic Analysis (3)

Prerequisite: Economics 251, or Business Administration 410, or consent of instructor. Application of economic theory and methodology to decision-making problems faced by both public and private institutions. Of primary concern is the use of basic microeconomic models and methods of analysis in demand, cost, profitability, pricing, and investment problems.

### 460 Structure and Performance of United States Industry (3)

Prerequisite: Economics 251 or 410. An analysis of the functioning of business firms under alternative market arrangements. Topics include: the theory and measurement of monopoly power and the role of economies of scale, product differentiation, and entry conditions in affecting this power; the impact of market power on the price setting behavior, advertising and promotional strategies, and technological innovation of firms; the role of government policy in promoting or preventing competition among firms.

### 470 Advanced Topics in Urban Economics (3)

Prerequisites: Regular graduate student status and consent of graduate student coordinator. Concepts and problems in urban economics. Offered in alternate years.

## Economics

### 480 Public Policy Issues in Human Resources (3)

Prerequisite: Economics 251 or Business 410. Problems of human resources and development of human capital, including measurement of economic growth and the contribution of education and training to that growth; the nature of poverty and methods to alleviate it; health economics as a form of investment and of consumption.

### 492 Seminar in Economic Research I (3)

Prerequisites: Regular graduate student status and consent graduate student coordinator. Research methods applied to economics. Develop efficiency and skill in conducting research and report writing.

### 493 Seminar in Economic Research II (3)

Prerequisite: Economics 492. Continuation of Economics 492.

## Geography

### 101 Introduction to Geography (3)

Prerequisite: Mathematics 02 or equivalent. An introduction to geography as a social science. The identification and explanation of order in the human landscape. A survey of the social, political, economic, and psychological factors which influence geographic patterns.

### 102 World Regions (3)

Prerequisite: Geography 101 recommended. Survey of the major regions of the world. Designed to give the student an awareness of the character of each of these major regions through the interrelationships of the various attributes of place.

### 210 Urban Geography (3)

Prerequisite: Sophomore standing. An in-depth examination of urban growth, the location and basis of cities, and the internal spatial structure of cities provide the main topics of consideration. In addition, contemporary urban problems including zoning, urban renewal, blight, the journey to work and shop, pollution, etc., are discussed with a spatial emphasis.

### 211 Location Theory (3)

Prerequisites: Mathematics 80 or 101 and Economics 51. A survey of industrial location theory, agriculture location theory, and central place theory; programming formulations of location models; spatial competition; location-allocation problems; and non-economic approaches to locational analysis.

### 220 Social Geography (3)

Prerequisite: Sophomore standing. Topics presented in a spatial (geographic) framework include the diffusion of innovations, population (distribution, problems, and solutions), settlement patterns, migration, poverty, and urban-social problems (e.g., race and residential choice).

## Home Economics

### 83 Clothing Selection (3)

Study of line, form, space, color, and texture in selection of clothing as related to the individual. There will be wardrobe planning of men's, women's, and children's wear, as well as appropriate projects, field trips, and guest speakers.

### 130 Nutrition in Health (3)

A study of dietary nutrients essential for health, proper selection of foods to provide them, and current issues affecting them.

### 177 Community Nutrition (3)

Current issues and resources in nutrition. National nutrition policy, economic aspects of the food supply, nutrition-related roles of public agencies, selected nutrition programs, and community resources are emphasized.

### 181 History of Fashion and Costume (3)

An illustrated lecture presentation to gain insight into fashion as a kaleidoscopic portrayal of society and idiomatic style changes from ancient Egypt to the present. The course will cover the history of fashion as a definitive subject and will describe how costume reflects social, cultural, and political events of each period.

### 186 Fashion Merchandising (3)

A survey course of fashion merchandising with emphasis on retail principles, operations, and practices in the many sectors of fashion marketing. Specific application through case studies, problems, and field projects may be included.

### 330 Child Nutrition (3)

Prerequisite: Home Economics 130 or instructor's permission. A study of nutrition related to the major periods of development: (fetal, infant, childhood, and adolescent).

## English

Courses in this section are grouped as follows: Composition; Language; Literature; Special Offerings; and Library Science.

English 10, Composition, or its equivalent, is a general prerequisite for all English courses numbered 131 and above. This, and other specific prerequisites, may be waived by consent of the department.

The following courses fulfill the Humanities [H] breadth of study requirements:  
COMPOSITION: 103, 104, 105, 302, 303, 304. LANGUAGE: 220, 322. LITERATURE: 12, 13, 17, 32, 70, 120, 123, 124, 125, 126, 127, 128, 131, 132, 133, 134, 135, 171, 172, 225, 280, 321, 323, 324, 325, 332, 337, 338, 339, 342, 345, 375, 376, 383, 384, 385, 386. SPECIAL OFFERINGS: 90, 250, 390.

### Composition

#### 09 Basic Writing (3)

A review of elementary principles of writing expository prose. Special attention is given to sentence clarity, organization, the clear and orderly development of ideas, and good diction. The course does not fulfill the university requirement in communicative skills. **No credit toward any degree.** The course meets three hours a week.

#### 10 Freshman Composition (3)

Prerequisite: Satisfactory performance on Essay Proficiency Test or grade of C or better in English 09. Theory and practice of writing exposition. Course does not count toward the major in English.

#### 11 Freshman Composition for International Students (3)

Prerequisite: Essay proficiency test or a TOFEL score of 500 or above. Theory and practice of writing expository American prose. Special attention is given to verb tenses, idioms, articles, and syntax. Does not count toward the major in English. This course substitutes for English 10 in all University requirements.

#### 65 Honors Exposition (3)

Prerequisite: Honors qualification on essay proficiency test. May not be taken in addition to English 10. Practice in expository writing, with readings in literature and related fields on topics to be announced each semester. Does not count toward the major in English.

#### 103 Poetry Writing (3)

Prerequisite: English 10 or equivalent. Theory and practice of poetry writing.

#### 104 Short Story Writing (3)

Prerequisite: English 10 or equivalent. Theory and practice of writing the short story.

#### 105 Play Writing (3)

Prerequisite: English 10 or equivalent. Theory and practice of writing plays.

#### 210 Advanced Expository Writing (3)

Prerequisite: English 10 or equivalent and junior standing or consent of department. Development of the writer's style and critical and analytical capabilities. Course offers an introduction to research methods and fulfills the University requirement for a junior-level course in communicative skills. For English majors this course is a prerequisite or co-requisite for 300-level English courses. May not be taken on the satisfactory/unsatisfactory option.

#### 211 Advanced Expository Writing for International Students (3)

Prerequisite: English 11 or equivalent. This course will develop the student's style and critical-analytical abilities in contemporary American English writing. The course will also offer an introduction to formal research and documentation methods for preparing papers in a variety of fields. Additional emphasis will be placed on improving the student's reading abilities, both in comprehension and vocabulary, through subject matter taken from arts and sciences, technical, and business fields. (May not be taken on the satisfactory/unsatisfactory option.) Course satisfies the junior level communicative skills requirement.

#### 212 Business Writing (3)

Prerequisite: English 10 or equivalent and junior standing or consent of department. The major elements of business writing. Writing assignments include business correspondence (inquiry, complaint, employment letters, etc.), reports (informal, travel, periodic, etc.), proposals (sales, etc.), analysis (marketing research, etc.), and writing for house organizations (company newsletters, etc.). Emphasis is placed on clarity, conciseness, organization, format, style, and tone. The course includes an introduction to research methods and documentation. All readings are selected from business material. Fulfills the University requirement for a junior-level course in Communicative Skills, subject to the approval of the student's major department. May not be taken on the satisfactory/unsatisfactory option.

#### 213 Technical Writing (3)

Prerequisite: English 10 or equivalent and junior standing or consent of department. The major elements of industrial technical writing. Writing assignments include technical definitions, abstracts and summaries, mechanism descriptions, instructions, process analyses, technical reports and proposals. Emphasis is placed on clarity, conciseness, organization, format, style, and tone. The course includes an introduction to research methods and documentation. All readings are selected from industrial material. Fulfills the University requirement for a junior-level course in Communicative Skills, subject to the approval of the student's major department. May not be taken on the satisfactory/unsatisfactory option.

#### 214 News Writing (3)

Prerequisite: English 10 or equivalent. (Same as Speech 116). An introduction to news writing and reporting. Course covers basic components of news, reporting principles, and newswriting style and structure. Daily writing assignments include coverage of speeches, meetings and interviews, accidents, deaths, courts, sports, consumer affairs, and government. Emphasis on clarity, accuracy, and speed.

#### 215 Feature Writing (3)

Prerequisite: English 10 or equivalent. Study of freelance and staff-written magazine or newspaper feature articles. Emphasis on relationship between types of publication and article content, research methods, and writing style. Frequent short assignments—journal entries, interviews, library projects, article critiques, and market reports—lead to production of full-length feature articles.

#### 300 Writing in the Professions (3)

Prerequisite: Completion of UMSL junior-level requirement in Communication Skills. A reading and writing course (1) to analyze and imitate the ways that writers in the arts and humanities, sciences, and business adapt their on-paper personalities, topics, organizations, and styles to achieve different aims or address different audiences and (2) to speculate what finished texts imply about how different writers and disciplines see the world.

#### 302 Writing Literary Criticism (3)

Prerequisite: English 210 or equivalent as judged by instructor. Intensive training in the writing of literary criticism, with some attention to the bibliography and to methods of research in literature. Recommended for all English majors.

## English

### 303 Advanced Poetry Writing (3)

Prerequisite: English 210 or its equivalent as judged by instructor. Workshop in poetry writing.

### 304 Advanced Fiction Writing (3)

Prerequisite: English 210 or its equivalent as judged by instructor. Workshop in fiction writing.

### 305 Writing for Teachers (3)

(Same as SEC ED 305.) Prerequisite: English 210 or a comparable course in advanced composition. Designed for prospective as well as inservice teachers, the course includes: (1) writing—short papers to be shared in workshop groups; (2) reading—current theory and research on writing and the implications for teachers; (3) teaching—classroom activities that foster growth in writing.

### 313 Advanced Business and Technical Writing (3)

Prerequisite: English 210 or its equivalent as judged by instructor. An advanced, project-oriented course to produce substantial, multifaceted business and technical writing projects (e.g. reports, manuals, proposals) that demonstrate the ability to handle complex assignments requiring initiative, independent judgment, and good writing skills.

### 316 Gateway Writing Project (1-6)

(Same as SEC ED 316.) An intensive course in the writing process and the writing curriculum, designed for experienced teachers. Readings of current theory and research will be related to participants' experience as writers and as teachers. Topics may vary. May be repeated for credit. No more than six hours may be applied toward the M.Ed.

### 319 Editing (3)

Prerequisites: English 210 or its equivalent as judged by instructor; English 22 or 322. Introduction to the language and processes of editing. Includes copy editing, the study of style manuals and an overview of the production process. Counts toward requirement for the Writing Certificate.

### 320 Independent Writing Project (3)

Prerequisite: English 210 or its equivalent as judged by instructor. Course limited to students who are completing their certificates in writing. May be taken concurrently with the final course in the certificate sequence. Students work individually with the instructor to complete an extensive writing project.

### 491 Theories of Writing (3)

An analysis of major modern theories in composition.

## Language

### 22 Traditional Grammar (3)

An introduction to the basic terms and concepts of traditional grammar, beginning with the parts of speech and moving to more complex structures such as participles, gerunds, and clauses. Includes introduction to conventions of formal usage. May not count toward the six hours in linguistics and grammar required for secondary certification.

### 220 Development of the English Language (3)

An historical survey of the English language with primary emphasis on the development of modern English from earlier periods of the language.

### 221 American Dialects (3)

A study of dialects in the United States, including regional and social variation, formal and informal styles, the concept of a standard dialect, and the use of dialect in literature.

### 322 Modern English Grammar (3)

A detailed study of modern English sentence structure in terms of current theories of linguistic description, with special emphasis on transformational grammar.

## Literature

### 12 Literary Types (3)

The student is introduced to the various literary types, including poetry, drama, fiction, and the essay.

### 13 Topics in Literature (3)

This course will introduce the student to selected literary topics and/or genres. Each semester the department will announce topics and course content. Topics such as alienation, justice, and the absurd, and genres such as science fiction and contemporary drama are typical possibilities.

### 14 Short Subjects (1)

A course on special limited subjects in literature, language, or writing. Content will vary from semester to semester. Subject matter may include, for example, Shakespeare's sonnets, the novels of Tolkien, Wertmuller's films, or any other topics suitable for treatment in a one-hour course. Since the topics of English 14 may change each semester, the course may be repeated for credit if the topics are substantially different.

### 17 American Literary Masterpieces (3)

An introduction to major themes and works in American literature from the nineteenth century to the present. Selected works from Hawthorne, Poe, Melville, Whitman, Twain, James, Frost, Hemingway, Faulkner, O'Connor, Plath, and Bellow.

### 32 Western Literary Masterpieces (3)

(Same as Honors 32.) Prerequisite: Enrollment in University Honors Program. Discussions based on the careful reading of significant creative works that form part of the literary heritage of Western civilization from antiquity to the present day.

### 70 Afro-American Literature (3)

A survey of prose, poetry, and drama by black Americans from the period of enslavement through the Negro Renaissance to the present.

### 120 Classical Literature in Translation (3)

The civilization of ancient Greece and Rome as reflected by their major creative writers in some of their principal works: the epics of Homer and Vergil; the plays of Aeschylus, Sophocles, Euripides, Aristophanes, Plautus, Terence, and Seneca; the lyrics of Sappho and Catullus; the satire of Petronius; and Ovid's rendering of the classical myths.

### 123 Jewish Literature (3)

This course will examine the traditional Jewish literature of the Bible and later legends found in the Talmud and Midrash and will also consider later phases of Jewish literature, both sacred and secular. These will include medieval folklore and Hasidic tales.

### 124 Literature of the New Testament (3)

A comprehensive understanding of the New Testament, its literary background, and significance for Western civilization.

### 125 Literature of the Old Testament (3)

Prerequisite: Sophomore standing or consent of instructor. A comprehensive understanding of the Old Testament, its literary background, and significance for Western civilization.

### 126 Continental Medieval Masterpieces in Translation (3)

A survey of the masterworks of the early and later Middle Ages, to include the *Divine Comedy*, *Nibelungenlied*, *Song of Roland*, *El Mio Cid*, selections from Chretien de Troyes, Boccaccio's *Decameron*, and Machiavelli's *The Prince*.

## English

### 127 Survey of European Literature From 1650 to the Second World War (3)

Works of continental writers such as Moliere, Goethe, Dostoevsky, Ibsen, and Kafka, read in translation.

### 128 The Contemporary World in Literature (3)

Selected American, British and Continental literature since the second World War.

### 131 English Literature I (3)

The development of English literature from the Middle Ages through the eighteenth century. Reading and analysis of representative works of selected major writers.

### 132 English Literature II (3)

The development of English literature during the nineteenth and twentieth centuries. Reading and analysis of representative works of selected major writers.

### 133 Introduction to Poetry (3)

A close study of poems, with special emphasis on the varieties of poetic form, and the means of interpretation and evaluation. The works studied will be primarily English and American, and from at least three different centuries.

### 134 Introduction to Drama (3)

A close study of major dramatic works in various modes, to introduce the student to the forms and techniques of dramatic literature. The works studied will be primarily English and American, and from at least three different centuries.

### 135 Introduction to Fiction (3)

A close study of major prose fiction, with particular attention to the varieties of fictional forms and techniques. The works studied will be primarily English and American, and from at least three different centuries.

### 171 American Literature I (3)

Representative selections from American authors from the middle of the seventeenth century to the middle of the nineteenth century.

### 172 American Literature II (3)

Representative selections from American authors from the middle of the nineteenth century to the present.

### 225 Themes and Forms in Literature (3)

The study of particular literary ideas, modes, and genres, and their significance. Topics announced in advance by the department. Since the topics of English 225 may change each semester, the course may be repeated for credit if the topics are substantially different.

### 280 Topics in Women and Literature (3)

An examination of the role of women in literature, either as figures in literary works or as writers. Specific topics to vary from semester to semester. Since the topics of English 280 may change each semester, the course may be repeated for credit if the topics are substantially different.

### 321 Literary Criticism (3)

Historical survey of the principles of literary criticism from Plato to the present.

### 323 Continental Fiction (3)

Prerequisites: Two college courses in literature. The development of the European novel in the nineteenth and twentieth centuries. Representative works of writers such as Balzac, Flaubert, Dostoevsky, Tolstoy, Kafka, and Proust, read in translation.

### 324 Chaucer (3)

The course concentrates on the poetry of Geoffrey Chaucer, including the *Canterbury Tales*, early poetic works, and the *Troilus and Cressida*. All readings are in the original Middle English.

### 325 Medieval English Literature (3)

A survey of old and middle English literature from *Beowulf* to Malory's *Morte d'Arthur*, exclusive of Chaucer. All works are read in modern English translations.

### 332 Elizabethan Poetry and Prose (3)

Spenser, Sidney, Wyatt, and other poets of the latter sixteenth century. The origin and development of prose fiction.

### 337 Shakespeare: Tragedies and Romances (3)

The development of Shakespeare's concept of tragedy and tragicomedy from *Titus Andronicus* to *The Tempest*. The plays will be related to the social and literary milieu of the period.

### 338 Shakespeare: Comedies and Histories (3)

Shakespeare's early work for the theatre with some attention to the sonnets and longer poems. An historical background for a study of all the plays, including discussions of Elizabethan society, the world of the stage and Shakespeare's biography.

### 339 Tudor and Stuart Drama (3)

A survey of the dramatic writings of the period from the interludes of John Heywood to the closing of the theatres in 1642, with particular attention to the plays of Marlowe, Jonson, Webster, and Ford. Though Shakespeare will not be studied in this course, connections between his works and those of his contemporaries will be discussed.

### 342 Early Seventeenth-Century Poetry and Prose (3)

Donne, Jonson, Marvell, Bacon, and other poets and essayists of the Metaphysical, Cavalier, and Baroque schools, exclusive of Milton.

### 345 Milton (3)

All the minor poems and the three longer poems with some attention to the major prose, Milton and his relation to the politics, theology, and literature of the seventeenth century.

### 346 Restoration and Eighteenth-Century Drama (3)

The principal tragedies and comedies from Dryden to Sheridan, including the plays of Congreve, Farquhar, Rowe, Gay, Fielding, and Goldsmith, among others.

### 352 Age of Dryden and Pope (3)

The beginnings of English neo-classic literature in the Restoration and its development through the first half of the eighteenth century, focusing on Dryden, Swift, and Pope.

### 353 Age of Johnson (3)

The breakdown of the neoclassic spirit and the introduction of the "new" poetry and novel. Consideration of Fielding, Johnson, Thompson, Young, Goldsmith, Sheridan, and others.

# English

## 364 The Eighteenth-Century English Novel (3)

The origins and early development of the English novel, from Defoe to Jane Austen.

## 365 The Nineteenth-Century English Novel (3)

The later development of the English novel, from Scott to Conrad.

## 368 Early Romantic Poetry and Prose (3)

The English romantic movement with special emphasis on the early writers—Blake, Wordsworth, and Coleridge. Additional readings in selected prose writers and minor poets.

## 369 Later Romantic Poetry and Prose (3)

The English romantic movement with special emphasis on the later writers—Byron, Shelley, and Keats. Additional readings in selected prose writers and minor poets.

## 371 Prose and Poetry of the Victorian Period (3)

Critical readings of selections from Tennyson, Browning, Arnold, and others, in addition to selections from the major prose writing.

## 372 The Later Nineteenth Century (3)

Poetry, drama and fiction of the period between 1870 and the first World War: Hardy, Hopkins, Conrad, Shaw, Wilde, Yeats, and others.

## 373 Selected Major American Writers I (3)

American literature of the nineteenth century: Emerson, Thoreau, Hawthorne, Melville, Whitman, and others.

## 374 Selected Major American Writers II (3)

American literature of the late nineteenth and early twentieth centuries: James, Twain, Stephen Crane, Dreiser, and others.

## 375 American Fiction to World War I (3)

Development of the novel and short story in America.

## 376 Modern American Fiction (3)

The novel and short story in America since World War I. There may be some attention to British and continental influences.

## 383 Modern British Fiction (3)

Critical reading and analysis of British fiction of the twentieth century. There may be some attention to American and continental influences.

## 384 Modern Poetry (3)

Critical reading and analysis of poetry of the late nineteenth and early twentieth centuries: Yeats, Eliot, Frost, Williams, and others.

## 385 Modern Drama (3)

British, American, and European drama of the last one hundred years: the well-made play, the problem play, verse drama, new definitions of tragedy, the angry theater, theater of the absurd.

## 386 Poetry Since World War II (3)

Reading and analysis of contemporary poetry.

## 400 Introduction to Graduate Study in English (3)

A course especially designed to prepare students to perform effectively in graduate classes in English. The course is concerned with basic bibliographical tools; terminology, both technical and historical; various approaches to the study of literature, such as intrinsic analysis of a literary work, the relationships of biography to literary study, and the relevance of other disciplines (psychology or philosophy, for example) to literature; the writing of interpretive and research essays. Throughout the semester a balance between criticism and research is maintained.

## 410 Modern Linguistics (3)

Prerequisite: None. A study of selected topics in the structure of the English language, combining readings in current linguistics publications with original research.

## 415 Literary Criticism (3)

An examination of selected theories of literature.

## 420 Old English (3)

Elements of old English grammar and exercises from Anglo-Saxon literature.

## 421 Studies in Middle English Literature (3)

Special topics in English literature before 1500.

## 430 Renaissance Literature (3)

Special topics in English literature from 1500 to 1660.

## 450 Eighteenth-Century Literature (3)

Studies in Augustan poetry and prose, including drama and fiction, with emphasis on background and major figures.

## 460 Studies in Poetry (3)

Study of a few selected British and American poets.

## 465 Studies in Fiction (3)

Study of a few selected British and American novelists and short story writers.

## 467 Studies in Drama (3)

Study of a few selected British and American dramatists.

## 470 Nineteenth-Century Literature (3)

Special topics in English romanticism, in Victorian life and thought, and in the development of the novel and of poetry between 1797 and 1914.

## 475 American Literature Before 1900 (3)

Selected American writers or topics from the Colonial period to 1900.

## 476 Twentieth-Century American Literature (3)

Selected American writers or topics from 1900 to the present.

## English

### **480 Twentieth-Century British Literature (3)**

Selected British and Commonwealth writers of the twentieth century.

### **495 Seminar in Special Topics (1-3)**

Special topics which are not covered in other graduate-level English courses.

### **497 Independent Reading (1-3)**

Directed study in areas of English for which courses are not available.

### **499 Master's Essay (3)**

Preparation of a concise essay equivalent in length to a substantial article in which the students demonstrate their ability to do research, to offer perceptive criticism and evaluation, and to write clearly and effectively.

## Special Offerings

### **250 Special Studies (1-3)**

Prerequisite: A course in the area of proposed work and consent of instructor. Individual work, with conferences adjusted to needs of the student. May not be used to meet specific English department distribution and language requirements. May be repeated for a maximum total of four hours credit.

### **262 The Curriculum and Methods of Teaching English (3)**

(Same as SEC ED 232.) Prerequisites: SEC ED 213 and a near-major in the subject. Study of the scope and sequence of the English courses in the school curriculum, with emphasis on the selection and organization of materials and methods of instruction and evaluation. Attention is also directed toward learning the techniques and research tools of the scholar in the field of English. To be taken concurrently with student teaching.

### **390 Seminar (3)**

Prerequisite: Consent of instructor. Intensive reading, critical discussion, and writing on topics to be announced each semester. Since the topics of English 390 may change each semester, the course may be repeated for credit if the topics are substantially different. Enrollment limited to twelve students.

## Library Science

### **220 Introduction to Cataloguing (3)**

Cataloguing books using Anglo-American cataloguing rules and the Dewey classification. Does not count toward the major in English.

### **221 Selection and Acquisition of Library Materials (2)**

Introduction to types of materials in library; their source of supply, evaluation, selection sources, as well as acquisitions routines and procedures. Does not count toward the English major.

### **222 Introduction to Reference (3)**

Introduction to reference materials and procedures, including automated reference sources. Does not count toward English major.

### **223 Administration of School Libraries/Media Centers (3)**

Operational objectives and functions of school learning resource centers, including physical facilities and personnel standards. Does not count toward the English major.

# History

The following courses fulfill the Social Sciences [SS] breadth of study requirements: 3, 4, 6, 31, 32, 33, 61, 62, 71, 72, 81, 82, 100, 101, 103, 105, 107, 112, 113, 120, 130, 144, 155, 162, 204, 252, 272, 281, 282, 300, 301, 302, 303, 304, 305, 306, 311, 314, 320, 321, 327, 330a, 330b, 330c, 330d, 330e, 330f, 330g, 330h, 331a, 331b, 331c, 331d, 331e, 332a, 332b, 332c, 332d, 332e, 333a, 333b, 333c, 333d, 333e, 361, 362, 371, 390.

### 3 American Civilization (3)

Evolution of the cultural tradition of the Americas from the earliest times to the mid-nineteenth century, with emphasis on the relationship of ideas and institutions to the historical background. Course fulfills the state requirement.

### 4 American Civilization (3)

Continuation of History 3 to the present. Course fulfills the state requirement. Either History 3 or 4 may be taken separately.

### 6 Honors American Civilization (3)

A single-semester survey of American history from the seventeenth century to the present. Tailored to students in the Sophomore Honors Program. The course satisfies the state requirement.

### 31 Topics in European Civilization: Emergence of Western Europe to 1715 (3)

Lectures and discussions on the development of Western European society and tradition from approximately 1000 to 1715.

### 32 Topics in European Civilization: 1715 to the Present (3)

Lectures and discussions on the development of Western European society and tradition from 1715 to the present.

### 33 Western Civilization (3)

(Same as Honors 33.) Prerequisite: Enrollment in the Pierre Laclède Honors Program. A survey of major topics in the history of Western civilization from the Ancient World to the twentieth century will be presented with emphasis upon discussion of readings in original documents and excerpts from major works of the past in all fields.

### 61 East Asian Civilization (3)

The development of Asian civilization from earliest times to the Manchu conquest.

### 62 East Asian Civilization (3)

Continuation of History 61 with emphasis on the Asian response to the Western incursion. Either History 61 or 62 may be taken separately.

### 71 Latin American Civilization (3)

A survey of selected topics important in the development of Latin America from pre-Columbian times to the twentieth century.

### 72 Mexican Civilization (3)

This course will focus on the history and culture of Mexico from the Aztecs to the mid-twentieth century. Among the topics to be covered are: the Aztecs, Cortez and the Conquest of Mexico, colonial institutions and culture, the obtaining of political independence, disorder and dictatorship in the nineteenth century, the Mexican Revolution, contemporary Mexico. This course meets the non-Euro-American requirement.

### 81 African Civilization to 1800 (3)

Introduction to African cultural history from the emergence of early man to the abolition of the Atlantic slave trade.

### 82 African Civilization Since 1800 (3)

Survey of African initiative and response in the period spanning the loss and reassertion of independence. History 81 or 82 may be taken separately.

### 100 Topics in History (1-3)

A seminar on special topics in history to be determined by the field and interests of the instructor.

### 101 History of Women in Comparative Cultures (3)

An introduction to the historical development of women's status in a variety of cultures and periods within the areas of Africa, Europe, the Far East, Latin America, and the Middle East. The course analyzes women's political, economic, familial, and sexual roles and the economic, demographic, ideological, and political forces which promoted change and continuity in those roles. This course meets the non-Euro-American requirement.

### 103 Sport and Society (3)

The course looks at organized sport in Western society as a form of social history. Some attention is paid to the period from early Olympic games through the end of the eighteenth century. The major part of the course deals with the role of organized team sport in post-industrial (since 1870) Great Britain and the United States. It also attempts to compare the social structure and values of the two societies.

### 105 History of the Family in the United States (3)

This course explores changes in American families during the past three centuries in terms of their size and structure; the economic and psychological needs they filled; the values, skills and roles they imparted; and the ways in which responsibilities and power were allocated among members.

### 107 History of Missouri (3)

Lecture and readings. Seventeenth-century Spanish and French explorations and interaction with the Indians; settlement and organization of the Louisiana territory; lead mining and the fur trade; the Louisiana Purchase; the Missouri territory; the struggle for statehood and slavery; antebellum politics; banking and internal improvements; westward expansion; Civil War and reconstruction; post-war agrarian politics, industrialization; Irish, German, and southern European immigration; the Progressive reforms—political and economic changes; and twentieth-century social changes and political developments.

### 109 War and Society in the Modern World: 1415 to the Present (3)

A survey of Western military history and its effect on the social, political, and economic structures of society.

### 112 United States Diplomatic History (3)

An analysis of the development, formulation, and implementation of the United States foreign policy, including the role of the president, Congress, Department of State, and other agencies. Reference will be made to the interdependence of domestic and foreign problems and policies.

### 113 American Military History (3)

A study of American military institutions from colonial times to the present. The impact of the military upon American social, political and economic life, as well as civilian attitudes toward the services.

### 120 Black History in the United States (3)

The experience of black people in America from the period of the slave trade to the twentieth century, beginning with the areas and cultures of West Africa. The development and importance of slave trade, the institutionalization of slavery; black resistance to bondage; the role of blacks during the Civil War and reconstruction period; the rise of segregation and disfranchisement of blacks; the testing of laws; and the protest and revolutionary movements of today.



# History

## 130 Ancient Civilization (3)

Selected topics in the history of the Ancient Near East, Greece, and Rome.

## 144 Christianity: Jesus to Martin Luther (3)

A review of the main trends of doctrinal and institutional development in the Christian church from the origins of the religion until the Protestant Reformation, stressing the Western Catholic tradition.

## 155 Slavic Civilization (3)

The historical development of the Western Slavs (Poles, Czechs, and Slovaks), the Southern Slavs (Croats, Serbs and Bulgarians), and the Eastern Slavs (Russians and Ukrainians). The course covers the history of the Slavic peoples from the beginnings to the present day. Emphasis is placed on the triumph of national consciousness (nineteenth century), independence (1918-45), and the Communist era (1945 to the present).

## 162 The Chinese Revolution: Readings in Chinese Literature (3)

An introduction to the Chinese revolution in modern times to cover its historical and social roots, the passions and the theories used by revolutionaries. Since literature both reflects and is used in the revolutionary process, systematic readings will be directed to biographies, short stories, novel selections, poems, travelogues, and essays. To be supplemented with movie films and slide studies.

## 168 Photohistory (3)

American life from 1839 to the present as recorded by the camera; the role of photography in the development of modern American culture; techniques for the interpretation of photographic documents. The course format includes lectures, discussions, and independent research.

## 204 The History of the American Labor Movement (3)

A survey course on the history of the American labor movement from Colonial America until the present, this course will focus both on the institutional history of the American labor movement and on the social history of working people in America. Emphasis upon the development of labor-management relations, personnel work, and ethnic, racial and sexual differences in the work force.

## 252 The World of Islam (3)

Prerequisite: Junior standing or consent of instructor. The development of Islam as a religion and a civilization will be traced from Arabian origins to its present position as the

major religion of Africa and Asia. Special emphasis on the Islamic state, Sufi mysticism, the Shariah and the Muslim confrontation with modernization. This course fulfills the non-Euro-American requirement.

## 255 Curriculum and Methods of Teaching History and Social Studies (3)

(Same as SEC ED 255.) Prerequisites: SEC ED 213 and a near-major in the subject. A study of the scope and sequence of the history and social studies courses in the school curriculum, with emphasis on the selection and organization of materials and methods of instruction and evaluation. Attention is also directed toward learning the techniques and research tools of the scholar in the field of history and social studies. May not be counted toward a major in history. To be taken concurrently with student teaching.

## 272 History of Latin America: Since 1808 (3)

Emphasis on the attainment of political independence and social, political, and economic developments of the nineteenth and twentieth centuries in Latin America.

## 281 West Africa Since 1800 (3)

Analysis of change in the savanna/forest societies occasioned by Islamic reform and the end of the slave trade, the imposition of colonial rule and African response, growth of nationalist protest, and post-independence development.

## 282 Crisis in Southern Africa (3)

Historical roots of apartheid and black nationalism in South Africa and Rhodesia/Zimbabwe. Foundation of white African societies, Khoisan resistance, the Mfecane and African state formation, the mineral revolution, colonialism versus autonomy, and the current confrontation of rival ideologies.

## 300 Selected Topics in History (3)

Prerequisite: Junior standing or consent of instructor. A course on special topics in history to be determined by the field, availability of instructors and interest of students. The course may be repeated for credit with the consent of the instructor.

## 301 United States History: Colonial America to 1763 (3)

Prerequisite: Junior standing or consent of instructor. English background of colonization; rise of distinctive New England and Southern societies; English colonial policy to the Peace of Paris.

## 302 United States History: Revolution and the New Nation 1763 to 1815 (3)

Prerequisite: Junior standing or consent of the instructor. The American Revolution and the creation of the new nation. The young republic and the development of the first American party system.

## 303 United States History: Nationalism and Sectionalism 1815 to 1860 (3)

Prerequisite: Junior standing or consent of the instructor. The Era of Good Feelings, the Age of Jackson, manifest destiny, the political and social developments of the antebellum period relating to the growth of sectionalism and the developing antislavery crusade.

## 304 United States History: 1860-1900 (3)

Prerequisite: Junior standing or consent of the instructor. The Civil War, Reconstruction, industrial and urban expansion and their impact on American life.

## 305 United States History: 1900-1940 (3)

Prerequisite: Junior standing or consent of the instructor. The economic, political, and social developments and crises of the mature industrial United States. The growing importance of foreign relations.

## 306 United States History: 1940 to the Present (3)

Prerequisite: Junior standing or consent of instructor. The economic, political, and social developments and crises of post-industrial United States. The role of foreign affairs in American life.

## 311 Topics in American Constitutional History (3)

Prerequisite: Junior standing or consent of instructor. Origins and development of the principal institutions and ideas of the American constitutional system; the role of the Constitution and the Supreme Court in the growth of the nation; important Supreme Court decisions; great American jurists and their impact upon the law; historical background to current constitutional issues.

## 314 American Foreign Relations Since 1941 (3)

Prerequisite: Junior standing or consent of instructor. A study of the change in American foreign relations since Pearl Harbor. Particular attention to the Truman Doctrine, the Cold War, the Vietnam War, and normalization with China.

# History

## 320 History of Feminism in Western Society (3)

Prerequisite: Junior standing or consent of the instructor. History of feminist movement and feminist thought on status of women, family, work, and sexuality in the United States, Great Britain, Western Europe, and Russia, as well as the relationship between feminist theory and the feminist movement.

## 321 History of Women in the United States (3)

Prerequisite: Junior standing or consent of the instructor. Development of women's economic, political, and social role in the United States with special emphasis on the nineteenth and twentieth centuries; women and work; women and the family; women and reform movements; women and education; feminist theorists and activists; images of women.

## 327 History of the American South (3)

Prerequisite: Junior standing or consent of the instructor. Southern society and culture and the South's relationship with the nation.

## 330a The Ancient World: Israel (3)

Prerequisite: Junior standing and consent of instructor. Survey of Israel's history from the formation of the people to the final revolt under Simon Bar Kochba (132-135 C.E.).

## 330b The Ancient World: History of Greece to the End of the Hellenistic Period (3)

Prerequisite: Junior standing or consent of instructor. A survey lecture course, beginning with the Aegean in the Bronze Age; Hellenic Civilization from the eighth through the fifth centuries B.C.; the Hellenistic World down to the first century B.C.

## 330c The Ancient World: Rome (3)

Prerequisite: Junior standing or consent of instructor. Survey of Roman history from its beginnings to 565 A.D.

## 330d History of the Church: Early Christianity (3)

Prerequisite: Junior standing or consent of the instructor. Brief introduction to Jewish, Greek, and Roman antecedents, Christian beginnings, and the emergence of Christian traditions, to the council of Nicea (325 A.D.).

## 330e History of the Church: The Middle Ages (3)

Prerequisite: Junior standing or consent of the instructor. A topical study of the Christian church in Europe as an autonomous and central institution from the sixth century through the reformation crisis. Special attention will be given to the relations between the church and the secular world, and the contributions of medieval Christianity to the development of European institutions and ideas.

## 330f Medieval England (3)

Prerequisite: Junior standing or consent of the instructor. A brief summary of the Anglo-Saxon heritage and the impact of the Norman Conquest, followed by an investigation of the institutional, social and legal evolution of the realm of England. English development will be viewed in its European context.

## 330g Europe in Early Middle Ages (3)

Prerequisite: Junior standing or consent of the instructor. The end of the Roman Empire as a universal entity; the successor states of the Mediterranean and Northern Europe; the emergence of a Western Christendom under the Franks; the development of feudal states; the Gregorian reforms; the Crusades; the revival of education and learning in the twelfth century.

## 330h Europe in the High and Late Middle Ages (3)

Prerequisite: Junior standing or consent of the instructor. Medieval society at its political, economic, and intellectual zenith; the crisis of the later Middle Ages; the papal schism and the development of national particular churches within Catholicism; and the rise of estate institutions.

## 331a The Age of the Renaissance (3)

Prerequisite: Junior standing or consent of the instructor. The Italian and Northern Renaissance as a distinct age; political, socio-economic, intellectual, religious, and artistic movements attending the decline of medieval society, and the transition to the early modern period.

## 331b The Age of Reformation (3)

Prerequisite: Junior standing or consent of the instructor. Religious, intellectual, political, and socio-economic developments of the sixteenth century.

## 331c Yorkist and Tudor England (3)

Prerequisite: Junior standing or consent of instructor. The turmoil over the monarchy and consolidation of the Tudor dynasty. A study of the English Reformation and the political and economic changes of the sixteenth century.

## 331d Material Life in Pre-Industrial Europe, 1350-1850 (3)

Prerequisite: Junior standing or consent of instructor. The course centers on the daily life of Europeans in the years prior to the Industrial Revolution. Nutrition, health, housing, and patterns of energy consumption are examined. Special attention is devoted to agriculture, but the development of metallurgy, shipbuilding, and the cloth trade are stressed together with the financial and commercial mechanisms that supported them. The evolution of social and political structures in response to changes in the conditions of material life are analyzed in detail.

## 331e Stuart England (3)

Prerequisite: Junior standing or consent of instructor. A study of the English revolutions, religious controversy, and the rise of parliamentary power; the social and economic changes of the century; and the role played by England in the European struggles of the period.

## 332a History of Spain (3)

Prerequisite: Junior standing or consent of the instructor. A survey of Spanish history from the fifteenth century to the present, emphasizing its period of imperial greatness and examining the effects of empire on national development.

## 332b Russian History to 1917 (3)

Prerequisite: Junior standing or consent of instructor. This course will emphasize the history of Russia from the Napoleonic Wars to the Revolution of 1917, including social and economic modernization and the development of the bureaucratic state, foreign policy and maintenance of the empire, rise and development of liberal reform and revolutionary movements, and the revolution of 1917.

# History

## 332c Modern France: to 1870 (3)

Prerequisite: Junior standing or consent of instructor. French history during the period in which she was the greatest power in Europe. Topics discussed include the monarchy during the "Old Regime", the Enlightenment, the French Revolution, the Napoleonic wars, nineteenth century instability and revolution, daily life and popular culture, and the economic development of France.

## 332d The Rise of the Modern British State (3)

Prerequisite: Junior standing or consent of instructor. A political, social, and economic study of Great Britain from 1714 to the present day. Particular attention will be given to the topics of revolution, reform, and the welfare state.

## 332e Europe From the French Revolution to World War I, 1789-1914 (3)

Prerequisite: Junior standing or consent of instructor. The major political, social, economic, and diplomatic developments in Europe from the origins of the French Revolution to World War I. Topics include the French Revolution, Napoleon, the Concert of Europe, the Industrial Revolution, the unification of Germany and Italy, the Bismarckian system, the growth of socialism, and the origins of World War I.

## 333a Contemporary France: Since 1870 (3)

Prerequisite: Junior standing or consent of instructor. The history of Republican France. Topics discussed include the creation of a liberal-democratic government; the scandals and crises of the Third Republic; the Dreyfus affair; the rise of imperialism, socialism, and feminism; the impact of World War I, the popular front, defeat, collaboration, and resistance during World War II; and the re-establishment of France as an important power.

## 333b Germany in the Modern Age (3)

Prerequisite: Junior standing or consent of instructor. The course deals with whether or not the Third Reich should be considered the culmination of German history. Problems of national unification, economic development, representative government, and cultural modernism will be considered.

## 333c History of Russia From 1917-Present (3)

Prerequisite: Junior standing or consent of the instructor. The nature and results of the Bolshevik revolution (October 1917). Topics include Lenin as a ruler, War Communism, and NEP; the struggle for power and the triumph of Stalin, 1924-1930; collectivization of agriculture and industrialization; Stalinist foreign policy, the Second World War, and the Cold War; and continuity and change in post-Stalinist Russia.

## 333d Europe in the Twentieth Century (3)

Prerequisite: Junior standing or consent of the instructor. The impact of World Wars I and II and the search for equilibrium.

## 333e Contemporary Europe, 1939-Present (3)

Prerequisite: Junior standing or consent of instructor. A survey of the main social, economic, political, military, and cultural trends since the onset of World War II.

## 361 Modern Japan: 1850 to Present (3)

The economic, social, and political development of modern Japan.

## 362 Modern China: 1800 to Present (3)

The economic, social, and political development of modern China.

## 371 History of Latin America: To 1808 (3)

Latin America from the American civilizations to 1808, stressing social, political, and economic institutions in the Spanish colonies.

## 390 Special Readings (1-10)

Prerequisite: Consent of the instructor. Independent study through readings, reports, and conferences.

## 393 Senior Seminar (3)

Prerequisite: Consent of department. Required for all senior history majors who are candidates for graduation with honors. Recommended for all history majors planning to attend graduate school. Directed readings, research, and writing.

## 405 Introduction to Historical Agencies (3)

A survey of the varieties, purposes, and functions of historical agencies in American culture. To be team-taught by members of the department and adjunct faculty from area historical agencies.

## 410 Studies in Historical Agencies (3)

Specialized studies in various aspects of historical agency activity, such as museology, archives and manuscripts, site interpretation, and historic preservation. Specific topics will be announced each semester; the course may be repeated for credit if the topic is not a duplication of a course taken previously.

## 415 Practicum in Historical Agencies (1-6)

Participation as a staff worker in the practical operation of an historical agency in the St. Louis metropolitan area. Students will design their programs in consultation with the department and the staff of the participating historical agency.

## 419 Readings in East Asian History (3 or 5)

Directed readings and writing on selected topics and areas in East Asian history.

## 430 Readings in European History (3 or 5)

Directed readings and writing on selected topics and areas in European history.

## 450 Readings in American History (3 or 5)

Directed readings and writing on selected topics and areas in American history.

## 460 Readings in Latin American History (3 or 5)

Directed readings and writing on selected topics and areas in Latin American history.

## 470 Readings in African History (3 or 5)

Directed readings and writing on selected topics and areas in African history.

## 490 Thesis Seminar (2-6)

Thesis research and writing on a selected topic in history.

# Mathematical Sciences

Courses in this section are grouped as follows: Mathematics; Computer Science; and Probability and Statistics.

All introductory courses in the mathematical sciences other than Mathematics 02a, require as a prerequisite a satisfactory score on the Mathematics Placement Test. The dates on which this test is administered are given in the *Schedule of Courses*. Placement into the introductory courses (other than Math 02a, b and c) assumes a mastery of approximately one and one-half years of high-school algebra.

A minimum grade of C shall be required to meet the prerequisite requirement for any course except with permission of the department.

Prerequisites may be waived by consent of department.

The following courses fulfill the Natural Sciences and Mathematics [SM] breadth of study requirements: MATHEMATICS: 15, 30, 40, 50, 80, 101, 102, 151, 175, 201, 202, 203, 245, 250, 301, 303, 304, 306, 310, 311, 320, 321, 323, 324, 327, 335, 340, 341, 345, 350, 355, 358, 362, 364, 366, 367, 380, 402, 410, 411, 416, 417, 418, 420, 421, 430, 431, 442, 443, 448, 470, 471, 480, 481. COMPUTER SCIENCE: 22, 122, 222, 226, 240, 241, 272, 312, 322, 328, 329, 332, 370, 373, 376, 379. PROBABILITY AND STATISTICS: 31, 132, 232, 320, 321, 326, 330, 331, 333.

## Mathematics

### 02a Fundamentals of Algebra I (2)

Concepts and algorithms of arithmetic and an introduction to elementary algebra. No credit toward any degree.

### 02b Fundamentals of Algebra II (2)

Prerequisite: Mathematics 02a or a satisfactory score on the mathematics placement examination. Development of the basic concepts and techniques of elementary algebra. Topics covered include linear equations, system of linear equations, inequalities, operations on polynomials, and factoring. No credit toward any degree.

### 02c Fundamentals of Algebra III (2)

Prerequisite: Mathematics 02b or a satisfactory score on the mathematics placement examination. A continuation of Mathematics 02b. Topics covered include operations on fractions, exponents, radicals, and quadratic equations. No credit toward any degree.

### 03 Trigonometry (2)

Prerequisite: One and one-half units of high-school algebra or Mathematics 02. This is a remedial course in trigonometry designed for the student who intends to study calculus and has not had high-school trigonometry. It is recommended that this course be taken concurrently with Mathematics 30. No credit toward any degree. (Note: Students wishing to take this course may find it advisable to contact the associate chairperson of the department.)

### 15 Mathematics: Ideas and Structures (3)

Prerequisite: A satisfactory score on the mathematics placement examination. An introduction to the spirit of mathematics and to modern mathematical thought. Course is designed for the student who does not intend to major in mathematics or science.

### 30 College Algebra (4)

Prerequisites: A satisfactory score on the mathematics placement examination and either three units of high-school mathematics or the equivalent. Topics in algebra and probability, polynomial functions, the binomial theorem, logarithms, exponentials, and solutions to systems of equations. Credit not granted for both Mathematics 30 and 40. Mathematics 40 is recommended for mathematics and science majors.

### 40 Pre-Calculus Mathematics (5)

Prerequisites: Three units of high-school mathematics including one and one-half units of algebra and a satisfactory score on the mathematics placement examination. Topics from algebra and trigonometry for the student who plans to take further work in mathematics. Polynomial functions, the binomial theorem, mathematical induction, and the logarithmic, exponential, trigonometric and inverse trigonometric functions.

### 50 Structure of Mathematical Systems I (3)

Prerequisite: 45 hours of college credit and a satisfactory score on the mathematics placement examination. A study of mathematical systems, elementary logic, natural numbers, and sets and construction of the integers. Credit will be granted only toward the B.S. in Education degree in Early Childhood Education, Elementary Education, and Special Education.

### 80 Analytic Geometry and Calculus I (5)

Prerequisites: Mathematics 40 or four units of high-school mathematics covering the equivalent material and a satisfactory score on the algebra-trigonometry placement examination. Introduction to analytic geometry, differential calculus, and integral calculus. Mathematics 80, 175, 201 form the calculus sequence.

### 101 Survey Calculus (4)

Prerequisite: Mathematics 30 or 40 or a satisfactory score on the mathematics placement examination. Introduction to plane analytic geometry and study of the basic techniques of differential and integral calculus with application to various areas. No credit for mathematics majors. Credit not granted for both Mathematics 80 and 101.

### 102 Finite Mathematics I (4)

Prerequisite: Same as for Mathematics 101. Introductory logic and set theory, partitions and counting problems, elementary probability theory, stochastic processes, Markov chains, vectors and matrices, linear programming, and game theory.

### 132 Applied Statistics I

See Statistics 132 in Probability and Statistics section that follows.

### 151 Structure of Mathematical Systems II (3)

Prerequisite: Mathematics 50. A continuation of Mathematics 50 to include a study of the rational and real number systems. An intuitive study of elementary geometry. Introduction to the deductive theory of geometry. Credit will be granted only toward the B.S. in Education degree in Early Childhood Education, Elementary Education, and Special Education.

### 175 Analytic Geometry and Calculus II (5)

Prerequisite: Mathematics 80. Selected topics from plane analytic geometry and calculus.

### 201 Analytic Geometry and Calculus III (5)

Prerequisite: Mathematics 175. Solid analytic geometry and selected topics in calculus.

# Mathematical Sciences

## 202 Linear Algebra and Differential Equations (3)

Prerequisite: Mathematics 201. Linear algebra of finite dimensional vector spaces, linear maps, matrices, determinants, linear differential equations of first order, linear differential equations with constant coefficients, variation of parameters, and Wronskians.

## 203 Finite Mathematics II (3)

Prerequisite: Mathematics 102. A continuation of Mathematics 102. Linear programming and game theory, application of combinatorial mathematics. A student cannot receive credit for both Mathematics 203 and Business Administration 375.

## 245 Matrix Algebra With Applications (3)

Prerequisite: Mathematics 30 or 40. An introduction to matrices and linear algebra with applications. Topics will include operations with matrices, inversion of matrices, solutions of systems of equations, determinants, and eigenvalues.

## 250 Introduction to Modern Mathematics (3)

Prerequisite: Mathematics 201. Set algebra, equivalence relations, partitions, functions, and development of algebraic and topological properties of the real numbers.

## 301 Differential Equations (3)

Prerequisite: Mathematics 250. A theoretical approach to ordinary differential equations intended for the student majoring in mathematics. Existence of solutions of linear differential equations and systems of differential equations.

## 303 Applied Mathematics II (3)

Prerequisite: Mathematics 202 or 301. Topics chosen from Fourier series, special functions, partial differential equations, and boundary value problems.

## 304 Applied Mathematics III (3)

Prerequisite: Mathematics 202 or 250. Matrices and characteristic values, vector analysis, analytic functions of a complex variable, Taylor and Laurent series, residues, and conformal mapping.

## 306 Applied Differential Equations (3)

Prerequisite: Mathematics 202. Series solutions to ordinary differential equations, numerical methods, Laplace transforms, differential systems, stability, applications to physics, engineering, and biology.

## 310 Advanced Calculus I (3)

Prerequisite: Mathematics 250 or consent of the department. Limits, continuity and differentiability of functions of one and several variables, sequences and series, and Riemann Stieltjes integral.

## 311 Advanced Calculus II (3)

Prerequisite: Mathematics 310. Continuation of Mathematics 310.

## 316 Functions of a Complex Variable (3)

Prerequisite: Mathematics 202 or 250. Complex numbers and their geometrical representation, point sets, analytic functions of a complex variable, complex integration, Taylor and Laurent series, residue theorem, conformal mapping.

## 320 Mathematical Statistics I (3)

See Statistics 320 in Probability and Statistics section that follows.

## 321 Mathematical Statistics II (3)

See Statistics 321 in Probability and Statistics section that follows.

## 323 Numerical Analysis I (3)

Prerequisites: Mathematics 202 or concurrent enrollment and a knowledge of FORTRAN. Solutions of equations, interpolation and approximation, numerical differentiation and integration, and numerical solution of initial value problems in ordinary differential equations. Selected algorithms will be programmed for solution on computers.

## 324 Numerical Analysis II (3)

Prerequisite: Mathematics 323 or consent of instructor. Topics chosen from: the numerical solution of systems of linear equations; the eigenvalue/eigenvector problem; numerical solution of Partial Differential Equations (PDE); numerical solution of stiff Ordinary Differential Equations (ODE); boundary value problems; sparse matrix methods; approximation theory; optimization theory; digital filters; integral equations.

## 327 The Calculus of Variations (3)

Prerequisites: Mathematics 202 and 310. Methods for optimizing functionals and their application. The Euler-Lagrange condition. Hamilton's principle, two dimensional variational problems, and isoperimetric problems. Approximate methods for the solution of variational problems.

## 335 Theory of Numbers (3)

Prerequisite: Mathematics 250 or consent of department. Properties of integers, multiplicative functions, congruences, primitive roots, and quadratic residues.

## 340 Introduction to Abstract Algebra I (3)

Prerequisite: Mathematics 250 or consent of the department. Introduction to groups, rings, and fields with emphasis on groups and rings.

## 341 Introduction to Abstract Algebra II (3)

Continuation of Mathematics 340 with emphasis on fields.

## 345 Linear Algebra (3)

Prerequisites: Mathematics 202 and 250. Topics selected from vector spaces, bases, linear transformations, matrices, canonical forms, eigenvalues, hermitian and unitary matrices, inner product spaces, and quadratic forms.

## 350 Special Readings (1-10)

Prerequisites: Mathematics 250 and consent of instructor.

## 355 Discrete Mathematics (3)

Prerequisite: Mathematics 250. General counting methods including the use of binomial coefficients, and generating functions, difference equations, graph theory, and properties of trees. Possible additional topics selected from proof of computer program properties, finite-state machines, grammars, and first-order logic.

## 358 Mathematical Logic (3)

Prerequisite: Mathematics 250 or Philosophy 260 or consent of the department. A study of the logic of mathematics by the axiomatic method, with a development of the propositional calculus and restricted predicate calculus emphasizing its application to the foundations of mathematics.

## 362 Projective Geometry (3)

Prerequisite: Mathematics 250 or consent of the department. Analytic approach to the study of projective spaces. Theorems of Desargues, Pascal and Brianchon. Projective properties of conics.

## 364 Introduction to Differential Geometry (3)

Prerequisite: Mathematics 250. Geometry of curves and surfaces in Euclidean three-space. Calculus on a surface. Intrinsic geometry of surfaces.

## 366 Foundations of Geometry (3)

Prerequisite: Mathematics 250 or consent of department. A development of portions of Euclidean geometry from a selected set of axioms, including a discussion of consistency, independence, categoricity, and completeness of the axioms.

# Mathematical Sciences

## 367 Introduction to Non-Euclidean Geometry (3)

Prerequisite: Mathematics 250 or consent of the department. A summary of the history of the non-Euclidean geometries and a study of hyperbolic plane geometry.

## 380 Introduction to Topology (3)

Prerequisite: Mathematics 250 or consent of the department. A study of topological spaces, including the concepts of limit, continuity, connectedness, compactness, etc. Special emphasis placed on, and examples taken from, the space of real numbers.

## 402 Applied Mathematics I (3)

Fourier series and integrals, Laplace transforms, boundary value problems, matrices, integral equations, Sturm-Liouville systems.

## 403 Topics in Applied Mathematics (3)

Prerequisite: Consent of instructor. The course will cover various advanced topics in applied mathematics, and can be taken more than once for credit. Examples of such topics are: Fast transforms, digital filters, etc.

## 404 Topics in Computation (3)

Prerequisite: Consent of instructor. The course will cover various advanced topics in computation, and can be taken more than once for credit. Examples of such topics are: computer graphics, computer architecture, theories of language, analysis of operating systems, numerical geometry and computer aided design, etc.

## 410 Theory of Functions of a Real Variable I (3)

Prerequisite: Mathematics 310; 311 is strongly recommended. The real number system, properties of functions of one or more real variables, mapping theorems. Introduction to measure and integration theory.

## 411 Theory of Functions of a Real Variable II (3)

A continuation of Mathematics 410.

## 416 Functions of a Complex Variable I (3)

Prerequisites: Mathematics 310 and 316. Complex numbers, topology of the complex plane, analytic functions, conformal mappings, Taylor series, Laurent series, complex integration, residues, analytic continuation, representation of analytic functions, elliptic functions, normal families, Riemann theorem, majorization.

## 417 Functions of a Complex Variable II (3)

Prerequisite: Mathematics 416. A continuation of Mathematics 416. Meromorphic functions, Dirichlet series, Riemann surfaces.

## 418 Topics in Analysis (3)

Prerequisite: Consent of instructor. Topics selected from the areas of Fourier analysis, harmonic analysis, Hilbert spaces, Banach algebras, special functions, generalized functions, partial differential equations. May be taken more than once for credit with consent of department.

## 420 Probability Theory I (3)

Prerequisite: Mathematics 410 (may be taken concurrently). Combinatorial analysis, random walks, stochastic independence, random variables, laws of large numbers, generating functions, and branching processes.

## 421 Probability Theory II (3)

Prerequisite: Mathematics 420. A continuation of Mathematics 420: characteristic functions, limit theorems, Brownian motion, and diffusion processes.

## 423 Topics in Numerical Analysis (3)

Prerequisite: Consent of instructor. The course will cover various advanced topics in numerical analysis and can be taken more than once for credit. Examples of such topics are: A.D.I. Techniques for solving p.d.e., finite element techniques, the algebraic eigenvalue problem, the software, etc.

## 430 Partial Differential Equations I (3)

Prerequisite: Mathematics 310. Classification of partial differential equations; Cauchy, Dirichlet, and Neumann problems; the fundamental solution; existence theorems of potential theory; eigenvalue problems; and Tricomi's problem.

## 431 Partial Differential Equations II (3)

Prerequisite: Mathematics 430. A continuation of Mathematics 430: differential operators and partial differential equations on manifolds.

## 442 Algebra I (3)

Prerequisite: Mathematics 340. Basic fundamentals of the theory of groups, rings and fields.

## 443 Algebra II (3)

A continuation of Mathematics 442.

## 448 Topics in Algebra (3)

Prerequisites: Mathematics 340, 341 and consent of department. Topics selected from the theory of groups, rings, fields, algebras, and other algebraic systems. May be taken more than once for credit with consent of department.

## 450 Directed Readings (1-6)

Prerequisite: Consent of instructor. Independent readings at an advanced level.

## 452 Topics in Advanced Mathematics for the Teacher (3)

Prerequisite: Consent of instructor. This course will look at various topics in algebra, analysis, and geometry that will deepen a teacher's understanding of the mathematics of the precollegiate curriculum. It can be taken more than once for credit.

## 460 Optimization and Variation (3)

Prerequisites: Mathematics 310 and 345. Topics from classical optimization, linear programming, calculus of variations, and other techniques of optimization.

## 470 Functional Analysis I (3)

Prerequisites: Mathematics 410 and 411. Algebraic and topological tools applied to problems in analysis. The topics chosen will usually include topological vector spaces, metric spaces, Banach spaces, Hilbert spaces, and Banach algebras.

## 471 Functional Analysis II (3)

Prerequisite: Mathematics 470. A continuation of Mathematics 470: spectral theory, distribution and test functions, unbounded operators.

## 480 Topology I (3)

Prerequisite: Mathematics 310. Topological spaces, compactness, connectedness, mapping theorems, product spaces, function spaces, metric spaces.

## 481 Topology II (3)

Prerequisite: Mathematics 480. A continuation of Mathematics 480: introduction to algebraic topology, fundamental group, homology.

## 490 Master's Thesis (1-6)

Prerequisite: Consent of instructor. Thesis work under the supervision of a faculty member. The course is designed for those students intending to present a thesis as part of their M.A. program. Students who do not write a thesis cannot apply Mathematics 490 to a degree.

# Mathematical Sciences

## Computer Science

### 22 Introduction to Computing (3)

Prerequisite: Mathematics 30 or 40.

Fundamental concepts of computer systems and introduction to the applications of computers. The programming language BASIC.

### 122 Computers and Programming (3)

Prerequisite: Mathematics 80 or 101, or a grade of at least B in Mathematics 30 or 40. Introduction to machine hardware and software; FORTRAN programming. Credit not granted for both Business Administration 104 and Mathematics 122.

### 222 Programming Techniques (3)

Prerequisites: Computer Science 122 and either Mathematics 80 or Mathematics 101. Advanced programming techniques using the computer. An introduction to computer manipulation of non-numeric data. Programs will be run in a higher level language such as PL/1 or Pascal.

### 226 File Structures (3)

Prerequisite: Computer Science 222.

Characteristics of files stored on tape and direct access storage devices. Sequential and random access methods for updating, inserting, and deleting records in files. Data structures used in file storage and retrieval. Utility routines for file handling. I/O specification statements for allocating space and cataloging files. Overview of data base systems.

### 240 Computer Hardware and Small Computer Systems (3)

Prerequisite: Computer Science 222.

Computer Science 240 and 241 present an introduction to the design and operation of small computer systems. The courses will center on the architecture and assembly language programming of a specific system as an example of the general principles presented in class.

### 241 Computer Hardware and Small Computer Systems II (3)

Prerequisite: Computer Science 240. A continuation of Computer Science 240.

### 272 Programming Languages Laboratory (1-3)

Prerequisite: Computer Science 122 and consent of instructor. Computer programming in a specified language. Credit will depend upon the language, but will normally be one or two hours. Languages taught include APL, PASCAL, SNOBOL, GPSS, and BASIC. New languages will be included as they become available on our computers. This course may be repeated for up to six hours of credit, if a different language is studied each time.

### 312 Analysis of Algorithms (3)

Prerequisites: Computer Science 322 and Mathematics 355. Efficiency of the basic algorithms of computer science. Sorting, searching, multiplication of matrices and integers. Emphasis will be placed upon comparison of alternate methods.

### 322 Data Structures (3)

Prerequisite: Computer Science 222 and Mathematics 175. Topics chosen from the following: in-memory data structures—lists, trees, rings; file structures—sequential, indexed, random, and inverted files, bit maps; data bases—the network, hierarchical, and relational models for data and the implementation of such models in data-base systems. Applications in algorithms.

### 328 Programming Languages and Compilers (3)

Prerequisite: Computer Science 222 and Mathematics 250. A survey of certain features and concepts common to many programming languages, a guide to how they can be implemented, and finally, an introduction to compiling techniques. Examples will be given in various programming languages including PL/1, FORTRAN, BCPL, and ALGOL. The course will include but not be confined to recursive functions, formal syntax, precedence grammars, and the Tree-Meta compiler.

### 332 Artificial Intelligence (3)

Prerequisite: Computer Science 322. The programming language LISP and its application to problems such as heuristic search, game playing, problem solving, natural language understanding, visual perception, automatic programming, and theorem proving.

### 370 Software Design and Development (3)

Prerequisite: Computer Science 322. Software design techniques including stepwise refinement, segmentation, top-down design, and iterative enhancement. Organization and management of software development teams. Documentation of integrated software projects. Organization, management, and development of a large scale software project by students working in teams.

### 373 Teleprocessing and Telecommunication (3)

Prerequisite: Computer Science 222. Characteristics of communication lines: modems; techniques for controlling line errors; multiplexing; synchronous and asynchronous line protocols; packet switching and circuit switching; and Networks.

### 376 Operating Systems (3)

Prerequisite: Computer Science 322. The need for operating systems will be examined. The technical problems involved and some possible solutions will be presented.

### 379 Topics in Computer Science (3)

Prerequisite: Consent of instructor. A seminar on special topics in computer science to be determined by recent developments in the field and the interests of the instructor. May be repeated for credit provided different topics are studied.

# Mathematical Sciences

## Probability and Statistics

### 31 Elementary Statistical Methods (3)

Prerequisite: Mathematics 30 or 40. An introduction to the basic tools and elementary methods of statistics, such as testing of hypotheses, analysis of variance, method of least squares, and time series. Does not satisfy the School of Business Administration requirement ordinarily met by Business Administration 131. A student may not receive credit for both Statistics 31 and Business Administration 131.

### 132 Applied Statistics I (3)

Prerequisite: A grade of C or better in Mathematics 80 or Mathematics 101. An introduction to the basic tools and elementary methods of statistics, such as least squares estimation, analysis of variance, regression, and testing of hypotheses. The use of the statistical package, SAS, for operation on statistical data. A student cannot receive credit for more than one of Business Administration 131, Statistics 31, and Statistics 132.

### 232 Applied Statistics II (3)

Prerequisite: Statistics 31 or 132 or equivalent. Topics to be chosen from: fitting distributions to data, goodness of fit, parametric and non-parametric correlations and partial correlation, and non-parametric statistics. Sampling, design of experiments, categorical data, and regression. Emphasis on practical applications.

### 320 Mathematical Statistics I (3)

(Same as Mathematics 320.) Prerequisite: Mathematics 132 and 201. Introduction to theory of probability and statistics using concepts and methods of calculus.

### 321 Mathematical Statistics II (3)

(Same as Mathematics 321.) Prerequisite: Statistics 320. Continuation of Mathematics 320. Continuous sample spaces, stochastic processes, statistical inference, and statistical models.

### 326 Introduction to Stochastic Processes (3)

Prerequisite: Statistics 320. Markov chains, martingales, stationary distributions of a Markov chain, recurrent states, branching, birth and death, queueing chains, jump processes, second order processes, continuity and differentiation of second order processes, white noise, and stochastic differential equations.

### 330 Multivariate Analysis (3)

Prerequisites: Mathematics 245 and Statistics 320 or consent of instructor. Multivariate normal distribution and related distributions such as the Wishart distribution. Statistical inference for the multivariate normal distribution. Multiple regression, canonical correlations, multivariate analysis of variance, classification problems, and discriminant analysis.

### 331 Analysis of Variance and Design of Experiments (3)

Prerequisites: A year of calculus, some matrix theory, and an intermediate course in statistics. Theory of general linear hypotheses, important special cases of analysis of variance, theory of least square estimation, interval estimation. One-way, two-way, and higher-way layouts, completely randomized design, randomized complete blocks. Latin square design, factorial, incomplete block and fractional replications, lattice design, optimum design.

### 333 Nonparametric Methods in Statistics (3)

Prerequisite: Statistics 320 or consent of instructor. Emphasis on statistical tests which are distribution free; one sample and two sample location and detection of shifts, point estimators, and confidence intervals. relative dispersion, K-sample tests, detection of independence, and regression.



## Modern Foreign Languages and Literature

Prerequisites may be waived by consent of the department.

The following courses fulfill the Humanities [H] breadth of study requirements:  
**FRENCH:** 110, 150, 180, 211, 280, 281, 331, 341, 342, 353, 354, 362, 365, 371, 375, 390.  
**GERMAN:** 110, 150, 180, 201, 202, 210, 315, 320, 345, 397, 398, 399. **SPANISH:** 110, 111, 150, 210, 211, 280, 281, 310, 315, 320, 321, 325, 330, 331, 335, 340, 345, 351, 360, 399.

### Chinese

Courses in Chinese are available at Washington University for UMSL students. Consult the modern foreign languages department for details and obtain the necessary forms from the registrar's office.

#### 101 First Level Modern Chinese I (5) (V)

#### 102 First Level Modern Chinese II (5) (V)

Plus **one** more course above 102.

**Note** Course 101 at Washington University is equivalent to Course 001 at UMSL.

### French

#### 1 French I (5)

Emphasis will be placed upon the speaking and understanding of French and upon the acquisition of the fundamentals of grammar and syntax. One hour language laboratory per week required.

#### 2 French II (5)

Prerequisite: French 1 or equivalent. Emphasis will be placed upon the speaking and understanding of French and upon the acquisition of the fundamentals of grammar and syntax. One hour language laboratory per week required.

#### 101 Intermediate French (3)

Prerequisite: French 2 or equivalent. Grammar review and cultivation of language skills through the study of moderately difficult prose selections.

#### 105 Commercial French (3)

Prerequisite: French 2 or equivalent. Grammar review and cultivation of language skills with emphasis on technical vocabulary and correct French usage in business affairs. Designed for business and economics majors, or anyone interested in the commercial application of French. This course is the equivalent of French 101. French 101 and French 105 may not both be taken for credit.

#### 110 Modern French Literature in Translation (3)

Prerequisite: Sophomore standing. Reading and discussion of selected works in French literature from the modern period, in English translation. No credit toward major in French.

#### 111 Québécois Language and Culture (3)

Prerequisites: French 101 or equivalent and permission of instructor. A study and discussion of the French-Canadian cultural evolution, language, and contemporary identity, followed by a one-week stay in the province of Québec. Special fees: travel, food, and lodging to and in Québec.

#### 115 Intensive French:

##### 115a Grammar (5)

##### 115b Conversation (5)

##### 115c Readings (5)

Prerequisites: Aptitude test and permission of department. French 115a, 115b and 115c must be taken concurrently. An intensive study of French in one semester which assumes no previous knowledge of French. French 115a, 115b, and 115c are equivalent to French 1, 2, and 101.

#### 125 Introduction to French/English Translation Techniques (3)

Prerequisite: French 101 or equivalent, or permission of instructor. Practical training in translating from English into French and French into English using a variety of technical, scientific, literary, and commercial texts.

#### 150 European Literature in Translation: Special Topics (3)

Major figures, works, or movements in the literature of Europe and their relevance to our own age. Topic is announced in advance by the department. Does not count toward major in French.

#### 160 French Phonetics (3)

Prerequisite: French 101 or consent of instructor. An analytic and practical study of French pronunciation. Emphasis is placed upon the articulation and practice of contemporary French sounds.

#### 171 French Conversation and Pronunciation (3)

Prerequisite: French 101 or equivalent. Emphasis will be placed upon the development of oral skills in French and upon the problems of French pronunciation.

#### 172 French Composition (3)

Prerequisite: French 101 or equivalent. Designed to develop writing skills in French.

#### 180 Readings in French (3)

Prerequisite: French 101 or equivalent. Development of language skills through reading and discussion of literary texts.

#### 190 Special Readings in French (1-3)

Prerequisite: French 101 and consent of the department. Independent study on mutually acceptable topics through readings, reports, and conferences.

#### 200 Advanced Grammar (3)

Prerequisite: French 171, 172 or equivalent. Problems in grammatical analysis.

#### 211 Contemporary French Civilization (3)

Prerequisite: French 171, 172 or equivalent. The culture and civilization of contemporary France from World War I to the present. All readings and classwork in French.

#### 264 Curriculum and Methods of Teaching Foreign Languages (3)

(Same as SEC ED 274.) Prerequisites: SEC ED 213 and junior standing. A study of the scope and sequence of the foreign language courses in the school curriculum with emphasis on the selection and organization of materials and methods of instruction and evaluation. Attention is also directed toward the techniques and research tools of the scholar in the field of foreign languages.

#### 271 Intermediate French Conversation (3)

Prerequisites: French 160 and 171 or consent of department. Emphasis will be placed upon the further development of oral skills in French.

#### 280 French Literature I: Middle Ages to Eighteenth Century (3)

Prerequisite: French 180 or equivalent. Designed to acquaint the student with the development of French literature from the Middle Ages to the eighteenth century. Critical reading of representative texts.

#### 281 French Literature II: Nineteenth and Twentieth Centuries (3)

Prerequisite: French 180 or equivalent. Designed to acquaint the student with the development of French literature from the nineteenth century to the present. Critical reading of representative texts.

#### 290 Special Readings (1-3)

Prerequisite: Consent of department. Independent study through readings, reports and conferences.

## Modern Foreign Languages and Literature

### 300 Syntax and Stylistics (3)

Prerequisite: French 200 or equivalent. Advanced theoretical and practical study of modern French syntax. Analysis of French prose style.

### 320 Advanced Oral Composition (3)

Prerequisite: French 171 or equivalent. Emphasis will be placed upon the development and refinement of skills in spoken French.

### 331 Medieval and Renaissance Literature (3)

Prerequisite: French 280 or 281. Critical reading and analysis of representative works of the period in modernized French versions.

### 341 Seventeenth-Century French Theatre (3)

Prerequisite: French 280 or 281. Critical readings of selected plays by Corneille, Molière, Racine, and other dramatists of the seventeenth century.

### 342 Seventeenth-Century French Prose and Poetry (3)

Prerequisite: French 280 or 281. A critical study of representative poets and prose writers of the seventeenth century including novelists and philosophers.

### 353 Eighteenth-Century French Literature (3)

Prerequisite: French 280 or 281. The philosophic movement. Selected readings of the eighteenth century, including Montesquieu, Voltaire, Diderot, and Rousseau.

### 354 Eighteenth-Century French Theatre and Novel (3)

Prerequisite: French 280 or 281. Critical reading and discussion of representative novels and plays of the eighteenth century.

### 362 Nineteenth-Century French Novel (3)

Prerequisite: French 280 or 281. Critical reading of selected works by the major novelists of the period. Discussion of realism and naturalism.

### 365 Modern French Poetry (3)

Prerequisite: French 280 or 281. A study of French poetry in the nineteenth and twentieth centuries through critical readings of selected works by major poets.

### 371 Twentieth-Century French Novel (3)

Prerequisite: French 280 or 281. A study of selected works by the principal novelists of the modern period.

### 375 Modern French Theatre (3)

Prerequisite: French 280 or 281. A study of French drama in the nineteenth and twentieth centuries through critical study of selected works by major dramatists.

### 390 Special Readings (1-3)

Prerequisite: Consent of instructor. Independent study through readings, reports and conferences.

### 399 French Seminar (3)

Prerequisite: French 280 or 281. Specialized topic in French literature. Subject to be announced by instructor in charge of seminar.

### 400 Contemporary French Thought (3)

Prerequisite: B.A. or permission of instructor. Analyses and discussion of contemporary cultural French issues through a representative sample of journals and pamphlets. In French.

## German

### 1 German I (5)

Emphasis will be placed upon the speaking and understanding of German and upon the acquisition of the fundamentals of grammar and syntax. One hour language laboratory per week required.

### 2 German II (5)

Prerequisite: German 1 or equivalent. Emphasis will be placed upon the speaking and understanding of German and upon the acquisition of the fundamentals of grammar and syntax. One hour language laboratory per week required.

### 50 German for Reading Knowledge (3)

This course presumes no prior knowledge of German and is designed to provide the student with a basic recognition knowledge of vocabulary, structure, and syntax. German for reading knowledge does not fulfill the language requirement nor does it count toward a major or minor in German.

### 100 Scientific German (3)

Prerequisite: German 2 or equivalent. Reading of selected German texts in the natural and social sciences. Designed primarily for majors in these areas. This course is the equivalent of German 101. German 101 and German 100 may **not** both be taken for credit.

### 101 Intermediate German (3)

Prerequisite: German 2 or equivalent. Grammar review and cultivation of language skills through the study of moderately difficult prose selections.

### 110 Masterpieces of German Literature in Translation (3)

Prerequisite: Sophomore standing. Representative readings in German literature from the beginning to the present. Emphasis to be placed upon German literature in the general context of European culture. No credit toward major in German.

### 115 Intensive German

#### 115a Conversation (5)

#### 115b Grammar (5)

#### 115c Readings (5)

Prerequisites: Aptitude Test and permission of department. An intensive study of German in one semester which assumes no previous knowledge of German. 115a, 115b, and 115c are equivalent to German 1, 2, and 101.

### 150 European Literature in Translation: Special Topics (3)

Major figures, works, or movements in the literature of Europe and their relevance to our own age. Topic announced in advance by the department. Does not count toward major in German.

### 171 German Conversation and Pronunciation (3)

Prerequisite: German 101 or equivalent. Emphasis will be placed upon the development of oral skills, German pronunciation, and intonation.

### 172 German Composition (3)

Prerequisite: German 101 or equivalent. Designed to develop writing skills in German.

### 180 Readings in German (3)

Prerequisite: German 101 or equivalent. Further development of language skills through readings and discussions of literary texts. May be taken concurrently with German 171 or 172.

### 190 Special Readings (1-3)

Prerequisite: German 101 and consent of department. Independent study on mutually acceptable topics through readings, reports, and conferences.

### 201 Masterpieces of German Literature (3)

Prerequisite: Two years of college German or equivalent. Introduction to German literature. Readings and critical analysis of selected works of German literature.

### 202 The German *Novelle* and Drama (3)

Prerequisite: German 201 or equivalent. Reading and critical analysis of selected German *Novellen* and dramas.

## Modern Foreign Languages and Literature

### 208 Intermediate Composition and Conversation (3)

Prerequisite: German 171, 172 or equivalent. Emphasis on speaking and writing German.

### 210 German Culture and Civilization (3)

Prerequisite: German 180 or equivalent. A survey of the development of German culture and civilization. All reading and classwork in German.

### 264 Curriculum and Methods of Teaching Foreign Languages (3)

(Same as SEC ED 274.) Prerequisites: SEC ED 213 and junior standing. A study of the scope and sequence of the foreign language courses in the school curriculum with emphasis on the selection and organization of materials and methods of instruction and evaluation. Attention is also directed toward the techniques and research tools of the scholar in the field of foreign languages.

### 290 Special Readings: German (1-3)

Prerequisite: Consent of department. Independent study through readings, reports, and conferences.

### 308 Advanced Composition and Conversation (3)

Prerequisite: German 208 or equivalent. Continuation of German 208. Designed to develop accuracy and fluency of expression in German.

### 315 German Classicism and Romanticism (3)

Prerequisites: German 201 and one other 200-level course in German. Representative writers from the classical and romantic periods of German literature, including works by Lessing, Goethe, Kleist, and E.T.A. Hoffmann.

### 320 German Realism and Naturalism (3)

Prerequisites: German 201 and one other 200-level course in German. Representative writers of realism and naturalism in German literature, including works of Grillparzer, Hebbel, Stifter, Keller, and Hauptmann.

### 345 Modern German Literature (3)

Prerequisites: German 201 and one other 200-level course in German. Representative works from modern German literature.

### 390 Special Readings (1-3)

Prerequisite: Consent of instructor. Independent study through readings, reports, and conferences.

### 397 Survey of German Literature Part I (3)

Prerequisite: German 201 or 202. Special emphasis on the summary and synthesis of trends and characteristics of major periods in German literature, considered in the general context of European culture.

### 398 Survey of German Literature Part II (3)

Prerequisite: German 201 or 202. Special emphasis on the summary and synthesis of trends and characteristics of major periods in German literature, considered in the general context of European culture.

### 399 German Seminar (3)

Prerequisites: German 201 or 202. Specialized topic in German literature.

## Greek

### 1 Ancient Greek 1 (5)

Study of grammar, syntax, and vocabulary, accompanied by readings of simple prose selections.

### 2 Ancient Greek 2 (5)

Prerequisite: Ancient Greek 1 or equivalent. The study of vocabulary, grammar, and syntax is continued from Greek 1. Readings and discussion from selected classical authors.

### 101 Ancient Greek 101 (3)

Prerequisite: Ancient Greek 2 or equivalent. Review and continued study of Greek grammar and syntax. Readings and discussions of selected classical authors such as Homer and Plato.

## Hebrew

Courses in Hebrew are available at Washington University for UMSL students. Consult the modern foreign languages department for details and obtain the necessary forms from the registrar's office.

### 101 Elementary Hebrew (3)

### 102 Elementary Hebrew (3)

Plus **two** courses above 102.

**Note** Course 101 at Washington University is equivalent to Course 001 at UMSL.

## Italian

### 1 Italian I (5)

Fundamentals of Italian grammar, pronunciation, and diction for students with no previous acquaintance with the language. One hour laboratory per week required.

### 2 Italian II (5)

Prerequisite: Italian 1 or equivalent. Continuation of grammar and conversation with introductory readings centering on Italian contributions to art, literature, and music. One hour laboratory per week required.

### 101 Intermediate Italian (3)

Prerequisite: Italian 2 or equivalent. Grammar review and cultivation of language skills through the study of moderately difficult prose selections.

### 190 Special Readings (1-3)

Prerequisite: Italian 101 or equivalent. Readings on literary topics mutually acceptable to student and instructor.

## Japanese

Courses in Japanese are available at Washington University for UMSL students. Consult the modern foreign languages department for details and obtain the necessary forms from the registrar's office.

### 103 First Level Modern Japanese I (5)

### 104 First Level Modern Japanese II (5)

Plus **one** course above 104 level.

**Note** Course 103 at Washington University is equivalent to Course 001 at UMSL.

## Latin

### 1 Latin 1 (5)

A study of Latin grammar, syntax and vocabulary, accompanied by reading selections from literary texts.

### 2 Latin 2 (5)

Prerequisite: Latin 1 or equivalent. The study of vocabulary, grammar and syntax is continued from Latin 1. Readings and discussion from selected classical authors.

### 101 Latin 101 (3)

Prerequisite: Latin 2 or equivalent. Review and continued study of Latin grammar and syntax. Readings and discussions from selected authors such as Caesar and Vergil.

# Modern Foreign Languages and Literature

## Portuguese

Courses in Portuguese are available at Saint Louis University for UMSL students. Consult the modern foreign languages department for details and obtain the necessary forms from the registrar's office.

### 5 Elementary Portuguese (4)

### 6 Intermediate Portuguese (4)

Plus **one** more course above 6.

**Note** Course 5 at Saint Louis University is equivalent to Course 001 at UMSL.

## Russian

### 1 Russian I (5)

Emphasis will be placed upon the speaking and understanding of Russian and upon the acquisition of the fundamentals of grammar and syntax. Five hours of class and one hour language laboratory per week required.

### 2 Russian II (5)

Prerequisite: Russian 1 or equivalent. Emphasis will be placed upon the speaking and understanding of Russian and upon the acquisition of the fundamentals of grammar and syntax. Five hours of class and one hour language laboratory per week required.

### 100 Scientific Russian (3)

Prerequisite: Russian 2 or equivalent. Introduction to reading of selected Russian texts in the natural and social sciences. Designed primarily for majors in these areas. This course is the equivalent of Russian 101. Russian 101 and 100 may **not** both be taken for credit.

### 101 Intermediate Russian (3)

Prerequisite: Russian 2 or equivalent. Further presentation of the structure of Russian; development of oral and aural skills; elementary composition; readings of simplified texts.

### 190 Special Readings (1-3)

Prerequisite: Russian 101 or equivalent. Readings on literary topics mutually acceptable to student and instructor.

## Spanish

### 1 Spanish I (5)

Emphasis will be placed upon the speaking and understanding of Spanish and upon the acquisition of the fundamentals of grammar and syntax. One hour language laboratory per week required.

### 2 Spanish II (5)

Prerequisite: Spanish 1 or equivalent. Emphasis will be placed upon the speaking and understanding of Spanish and upon the acquisition of the fundamentals of grammar and syntax. One hour language laboratory per week required.

### 101 Intermediate Spanish (3)

Prerequisite: Spanish 2 or equivalent. Grammar review and cultivation of language skills through the study of selected modern works.

### 105 Commercial Spanish (3)

Prerequisite: Spanish 2 or equivalent. Grammar review and cultivation of language skills with emphasis on technical vocabulary and correct Spanish usage in business affairs. Designed for business majors, economics majors, or anyone interested in the commercial application of Spanish. This course is the equivalent of Spanish 101; both may not be taken for credit.

### 110 Spanish Literature in Translation (3)

Prerequisite: Sophomore standing. Lectures on the literature and culture of Spain from the Middle Ages to the contemporary period. Reading and discussion of works of representative Spanish writers: Cervantes, Calderón, Galdós, Unamuno, García Lorca, Buero Vallejo, and others. No credit toward major in Spanish.

### 111 Spanish-American Literature in Translation (3)

Prerequisite: Sophomore standing. Lectures on the literature and culture of Spanish America. Reading and discussion of works of representative poets, novelists, and essayists of the contemporary period. No credit toward major in Spanish.

### 115 Intensive Spanish:

#### 115a Grammar (5)

#### 115b Conversation (5)

#### 115c Readings (5)

Prerequisites: Aptitude test and permission of department. Spanish 115a, 115b, and 115c must be taken concurrently. An intensive study of Spanish in one semester which assumes no previous knowledge of Spanish. Spanish 115a, 115b, and 115c are equivalent to Spanish 1, 2 and 101.

### 150 European Literature in Translation: Special Topics (3)

Majors figures, works, or movements in the literature of Europe and their relevance to our own age. Topic is announced in advance by the department. Does not count toward major in Spanish.

### 171 Spanish Conversation and Pronunciation (3)

Prerequisite: Spanish 101 or equivalent. Emphasis will be placed upon the development of oral skills in Spanish and upon the problems of Spanish pronunciation and intonation.

### 172 Spanish Composition (3)

Prerequisite: Spanish 101 or equivalent. Emphasis in developing the capacity and the ability to write in Spanish.

### 190 Special Readings (1-3)

Prerequisite: Spanish 101 and consent of department. Independent study through readings, reports, and conferences.

### 200 Syntax of the Spanish Language (3)

Prerequisite: Spanish 171, 172 or equivalent. Study of the syntactical and morphological characteristics of the Spanish language. Designed primarily for students majoring in Spanish. May be taken concurrently with any 200-level course.

### 210 Hispanic Culture and Civilization: Spain (3)

Prerequisite: Spanish 171, 172 or equivalent. The development of Spanish peninsular civilization from its Roman beginnings to the present.

### 211 Hispanic Culture and Civilization: Spanish America (3)

Prerequisite: Spanish 171, 172 or equivalent. The development of the cultures and civilization of the Spanish-speaking nations of the Western hemisphere.

### 264 Curriculum and Methods of Teaching Foreign Languages (3)

(Same as SEC ED 274). Prerequisites: SEC ED 213 and junior standing. A study of the scope and sequence of the foreign language courses in the school curriculum, with emphasis on the selection and organization of materials and methods of instruction and evaluation. Attention is also directed toward the techniques and research tools of the scholar in the field of foreign languages.

## Modern Foreign Languages and Literature

### 271 Advanced Spanish Conversation (3)

Prerequisite: Spanish 171 or consent of department. Emphasis will be placed upon the further development of oral skills in Spanish.

### 280 Introduction to Hispanic Literature: Spain (3)

Prerequisite: Spanish 171, 172 or equivalent. Study of selected texts of Spanish writers from the Middle Ages to the present and the historical, cultural, and political factors which influence their writing. Required of Spanish majors.

### 281 Introduction to Hispanic Literature: Spanish America (3)

Prerequisite: Spanish 171, 172 or equivalent. Study of selected texts of Spanish-American writers from the colonial period to the present and the historical, cultural, and political factors which influenced their writings. Required of all Spanish majors.

### 290 Special Readings: Spanish (1-3)

Prerequisite: Consent of department. Independent study through readings, reports, and conferences.

### 310 Spanish Literature From 1898 to 1939 (3)

Prerequisite: Spanish 280. A study of cultural and literary characteristics of the period. Emphasis on leading novelists, poets, essayists, and dramatists.

### 315 Spanish Literature From 1939 to the Present (3)

Prerequisite: Spanish 280. A study of cultural and literary development since the Spanish Civil War. Emphasis on leading novelists and dramatists.

### 320 Realism and Naturalism in the Nineteenth-Century Spanish Novel (3)

Prerequisite: Spanish 280. A study of the culture and literature of Spain in the nineteenth century with emphasis on the leading novelists of the epoch (Galdós, Clarín, Pardo, Bazán, Blasco-Ibáñez).

### 321 Poetry and Drama of the Nineteenth Century (3)

Prerequisite: Spanish 280. A study of the culture and literature of Spain in the twentieth century with emphasis on the leading poets (Espronceda, Becquer) and playwrights (Zorrilla, Duque de Rivas).

### 325 Poetry and Drama of the Golden Age (3)

Prerequisite: Spanish 280. Selected readings from the drama of Lope de Vega, Tirso de Molina, Ruiz de Alarcón, and Calderón de la Barca, and from the poetry of Garcilaso, Fray Luis de León, San Juan de la Cruz, Góngora, Lope de Vega, and Quevedo.

### 330 Cervantes (3)

Prerequisite: Spanish 280. A study of *Don Quixote* in relation with author's life and with the cultural background of the Spanish Golden Age. Independent readings on other works of Cervantes.

### 331 Picaresque and Satirical Prose (1550-1650) (3)

Prerequisite: Spanish 280. A study of Renaissance and Baroque prose in its social context. All readings and discussions in Spanish.

### 335 Masterpieces of Spanish Medieval and Renaissance Literature (3)

Prerequisite: Spanish 280. Designed to acquaint students with the cultural background of medieval and Renaissance Spanish traditions. Critical reading and discussion of representative works of these periods: *Poema del Cid*, *El Conde Lucanor*, *Libro de Buen Amor*, *El Romancero*, *La Celestina*, the Picaresque novel, and *Don Quixote*.

### 340 Spanish-American Literature of the Nineteenth Century (3)

Prerequisite: Spanish 281. A study of the culture and literature of Spanish America in the nineteenth century with emphasis on the leading novelists and essayists of the epoch.

### 341 Modernismo (3)

Prerequisite: Spanish 281. The genesis, development, and influence of this literary movement in Spanish-American letters with emphasis on Modernista poetry and prose.

### 345 Spanish-American Literature of the Twentieth Century (3)

Prerequisite: Spanish 281. A study of the leading Spanish American poets, essayists, and novelists of this period as interpreters of contemporary man's dilemma and the "pathos" and "ethos" of their culture.

### 351 Spanish-American Fiction in the Twentieth Century (3)

Prerequisite: Spanish 281. The role of prose fiction in Spanish American literary and cultural history from World War I to the present.

### 360 Spanish American Poetry From Modernismo to the Present (3)

Prerequisite: Spanish 281. A study of poetry and its role in the literary and cultural history of Spanish-American society from Modernismo to the present.

### 390 Special Readings (1-3)

Prerequisite: Consent of instructor. Independent study through readings, reports, and conferences.

### 399 Seminar on Hispanic Literature (3)

Required of major students in the senior year. Subject to be announced every year by the instructor in charge of the seminar.

### 400 Spanish as Spoken Today (3)

Prerequisite: B.A. or permission of instructor. Contemporary Spanish, including emphasis on standard and colloquial speech: slang, proverbs and the mass-media. Some attention will be given to the influence of English on twentieth-century spoken Spanish. Study of samples; oral practice.

# Music

Prerequisites may be waived by consent of the department.

For the nonmajor, no more than 8 hours in applied music courses will be accepted toward graduation.

The following courses fulfill the Humanities [H] breadth of study requirements: 1, 2, 6, 7, 9, 10, 19, 30, 31, 32, 55, 90, 101, 102, 103, 105, 108, 130, 131, 177, 192, 290, 321, 322, 323, 324, 325, 326.

## Applied Music

**44, 45, 144, 145, 244, 245, 344, 345, 346, 347 Applied Music (1-2)**

Registration by audition and consent of department. Each Applied Music course is a prerequisite for the subsequent course in the sequence. Courses are offered in the following areas: a, bassoon; b, clarinet; c, classical guitar; d, euphonium; e, flute; f, French horn; g, harp; h, oboe; i, organ; j, percussion; k, piano; l, saxophone; m, trombone; n, trumpet; o, tuba; p, violin; q, viola; r, violoncello; s, string bass; t, voice.

## Ensemble Performance

**14, 15 Piano Proficiency (2)**

Prerequisite: Permission of department. Group instruction for music majors who do not meet beginning keyboard requirements.

**20 Jazz Improvisation Laboratory (1)**

Prerequisite: Consent of instructor. The study and application of the theoretical, technical, and performance aspects of jazz improvisation. May be repeated for credit.

**40 University Chorus (1)**

Prerequisite: Consent of instructor. Preparation and performance of choral literature.

**41 The University Singers (1)**

Prerequisite: Consent of instructor. The study and performance of music for vocal chamber ensemble.

**50 University Orchestra (1)**

Prerequisite: Consent of instructor. Study, preparation, and performance of orchestral repertory.

**52 University Band (1)**

Prerequisite: Consent of instructor. Study, preparation, and performance of music for the wind ensemble and band.

**53 University Wind Ensemble (1)**

Prerequisite: Consent of instructor. The study, preparation, and performance of music for wind ensemble and chamber band.

**54 Chamber Ensemble (1)**

Prerequisite: Consent of instructor. Study, preparation, and performance of music for small ensembles: a, brass; b, jazz combo; c, percussion; d, strings; e, voice; f, woodwinds; g, accompanying.

**55 Jazz Ensemble (1)**

Prerequisite: Consent of instructor. Study, preparation, and performance of jazz music for big band.

**56 Opera Workshop (1)**

Prerequisite: Consent of instructor. Instruction in movement, basic stage techniques, technical theater, repertory and performance techniques and preparation. May be repeated for credit.

**60 Collegium Musicum (1)**

Prerequisite: Consent of instructor. Performance of music for chamber ensemble with particular emphasis on the Renaissance and Baroque periods.

**116, 118, 119, 120 Intermediate Piano Proficiency (1)**

Prerequisite: Music 15 or permission of department. Continuation of piano proficiency study.

**117 Jazz Keyboard Harmony (1)**

Prerequisite: Applied Music 116 or consent of department. Group keyboard instruction in the application of chordal structures and harmonic functions commonly used in mainstream jazz performance.

**125 Singer's Diction: French and Italian (1)**

Prerequisite: Music 44 or 124. A study of French and Italian pronunciation.

**126 Singer's Diction: English and German (1)**

Prerequisite: Music 44 or 125. A study of English and German pronunciation.

**153 Accompanying I (1)**

Prerequisite: Consent of department. Accompanying and ensemble practices, including rehearsal techniques, for keyboard majors. Public performance of works studied is required.

**154 Accompanying II (1)**

Prerequisite: Consent of department. A continuation of Music 153.

**155 Accompanying III (1)**

Prerequisite: Consent of department. A continuation of Music 154.

**356 Advanced Opera Workshop (1)**

Prerequisite: Consent of instructor. Instruction in movement, stage technique, technical theater, repertory, and performance based on advanced vocal skills. May be repeated for credit.

## Music Education

**177 An Introduction to Music for the Elementary School Teacher (3)**

Prerequisite: None. An introduction to the elements of music and the expressive nature of music. Includes application of fundamentals to appropriate literature and activities for use with children in a classroom setting. This course will not apply toward requirements for a music major.

**257 Curriculum and Methods of Teaching Elementary School Music (3)**

(Same as ELE ED 277.) Prerequisites: Music 112 and ED FND 111. For the music education major. A study of the elementary school music curriculum emphasizing the objectives, methods of teaching and staffing music classes, and analysis of instructional materials and resources.

**267 Philosophic and Practical Foundations of the Secondary Music Education Curriculum (1)**

(Same as SEC ED 275.) Prerequisites: Music 112, Music 257/ELE ED 277, and ED FND 111. Concurrent registration in Music 268/SEC ED 276 and Music 270/SEC ED 278 or Music 271/SEC ED 279. For the music education major. A study of the secondary school music program: curricular objectives, philosophy, and general administrative procedures common to all secondary music classes.

**268 Curriculum and Methods of Teaching Elementary/Middle School/Junior High Instrumental Music (2)**

(Same as SEC ED 276.) Prerequisites: Music 112, Music 257/ELE ED 277, and ED FND 111. Concurrent registration in Music 267/SEC ED 275 and Music 270/SEC ED 278. A study of the teaching techniques, materials, curriculum, and organization of the beginning instrumental music program in the elementary and middle school/junior high school.

## Music

### **269 Curriculum and Methods of Teaching Middle School/Junior High School General Music (2)**

(Same as SEC ED 277.) Prerequisites: Music 112, Music 257/ELE ED 277, and ED FND 111. Concurrent registration in Music 267/SEC ED 275, and Music 271/SEC ED 279. For the music education major. A study of the middle school/junior high school general music program emphasizing a conceptually based curriculum: objectives, methodologies, materials, innovations, classroom organization, and management.

### **270 Curriculum and Methods of Teaching High School Instrumental Music (2)**

(Same as SEC ED 278.) Prerequisites: Music 112, Music 257/ELE ED 277, and ED FND 111. Concurrent registration in Music 267/SEC ED 275, Music 268/SEC ED 276. For the music education major. A study of the high school instrumental music program: curriculum, methods, teaching techniques, organization, and administrative procedures for instrumental performance classes.

### **271 Curriculum and Methods of Teaching Secondary Choral Music (2)**

(Same as SEC ED 279.) Prerequisites: Music 112, Music 257/ELE ED 277, and ED FND 111. Concurrent registration in Music 267/SEC ED 275, Music 269/SEC ED 277. For the music education major. A study of the secondary choral music program: curriculum, methods, teaching techniques, organization, and administrative procedures for choral performance classes.

### **300 Advanced Techniques in Music Education (1-2)**

Prerequisite: A 200-level music education course or permission of the department. Intensive study for advanced music education students and music teachers, emphasizing specialized techniques and innovative concepts. Topics to be announced. May be repeated for credit.

### **301 Marching Band Techniques (2)**

Techniques for organizing and training school marching bands. Content will include planning and charting shows, rehearsal problems, corps and traditional styles, and auxiliary units.

### **375 Microcomputer Applications in Music Education (2)**

(Same as EDUC 375.) Prerequisites: Music 257 or Music 267 and EDUC 301 or consent of instructor. An examination of the potential of microcomputers in the music

education field. Experiences with available hardware and software suitable for applications that include inventory, budget, music library cataloging, digital music synthesis, and computer-assisted instruction at all levels.

### **376 Microcomputer Assisted Instruction Curriculum Development in Music (2)**

(Same as EDUC 376.) Prerequisites: Music 375/SEC ED 375 and a working knowledge of BASIC or PILOT, or consent of instructor. Design and development of Computer Assisted Instruction (CAI) lessons in music. Commercial courseware and various CAI models will serve as the basis for creating original programs that can be used effectively to implement objectives of the music curriculum for a specific school or school district. The design, refinement, and production of a major CAI program for use in an elementary, secondary or post-secondary setting is required.

## Music History and Literature

### **1 Introduction to Music (3)**

An historically oriented study of art music, its styles and forms from the Baroque period to the present day. This course will not apply toward requirements for a music major.

### **2 Introduction to Symphonic Music (3)**

Orchestral music from the Baroque period to the present time; concerto grosso and suite; program music; the symphony. This course will not apply toward requirements for a music major. This course is also offered for independent study through the UMSL College-at-Home Program.

### **6 America's Black Musical Heritage (3)**

This course will survey Black American musical heritage, including: Black music and its roots; Black music of the nineteenth-century American society; Black musical forms after 1900; and American Black composers of the twentieth century who wrote in the European tradition. This course will not apply toward requirements for a music major or minor.

### **7 Introduction to Jazz (3)**

A survey course which examines the musical, historical, and social aspects of the subject. This course will not count toward requirements for a music major.

### **9 Non-Western Music (3)**

The music of Oceania; folk and classical music and dance of East Asia, Tibet and Southwest Asia, the influence of Buddhism, Islam, and Western acculturation on the functions of music in these societies.

### **10 Non-Western Music (3)**

Music of the African continent, West Asia, and South Asia; a survey of the tribal, folk, and classical music and performing arts of these cultures.

### **101 History of Western Music I (3)**

Prerequisite: Music 3 or consent of department. A general survey of the history of Western music. Includes the evolution and development of styles, forms and their social setting.

### **102 History of Western Music II (3)**

Prerequisite: Music 3 or consent of department. A continuation of Music 101.

### **103 Music in Religion (3)**

Prerequisite: Sophomore standing or departmental consent. A survey of the role of music in the religious traditions of the East and West from earliest times to the present. The types of music in the various religious traditions and the effects of this music in society are examined.

### **105 Music as Propaganda (3)**

A study of music as a tool of individuals or government and other authorities to teach, to persuade, to beguile a society in various periods and places of world history. Topics include Beethoven and the rise of democracy, nationalism in nineteenth-century Europe, music in Eastern and Western religions, official art in Marxist-socialist states, and protest songs of the sixties.

### **108 Women in Music (3)**

This course surveys the role of women in the development of music from antiquity to the present day. The course will explore the lives and contributions of women composers, performers, and conductors.

### **202 Music History Review (3)**

Prerequisite: Consent of department. A review of the history of Western music. Includes a survey of styles in major periods of Western music. The credit may not be used to satisfy requirements for a music degree.

## Music

### 321 Music of the Middle Ages (3)

Prerequisite: Music 101 or consent of department. A study of music and musical thought from the beginning of Christianity to 1450. Gregorian chant polyphonic music, the Ars Antiqua and the Ars Nova.

### 322 Music of the Renaissance (3)

Prerequisite: Music 101 or consent of department. A study of the theoretical and practical impact of humanism on music, musicians, and musical thought from 1450 to 1600. Sacred and secular music; the rise of an instrumental idiom.

### 323 Music of the Baroque (3)

Prerequisite: Music 101 or consent of department. A detailed study of music from 1600 to 1750. The rise of the new style, national styles in the seventeenth century, and the culmination of the Baroque period.

### 324 Music of the Classic Period (3)

Prerequisite: Music 102 or consent of department. A study of the growth of classical style; galant and expressive styles; Mozart, Haydn, and Beethoven.

### 325 Music of the Romantic Period (3)

Prerequisite: Music 102 or consent of department. Composers, forms and styles in nineteenth-century music. The literary and social background of musical romanticism.

### 326 Music of the Twentieth Century (3)

Prerequisite: Music 102 or consent of department. A detailed study of trends in modern music and of influential composers; impressionism, serial composition, electronic music, and other recent techniques.

## Music Theory and Composition

### 19 Fundamentals of Music (3)

This course provides basic music vocabulary: scales, intervals, and chords, and systematic instruction in the melodic, rhythmic, and harmonic aspects of music. This course will not apply toward requirements for a music major.

### 30 Theory of Music I (3)

The basic materials and their use in analyzing and writing music. Systematic instruction in ear training and sight-singing. Primarily for music majors.

### 31 Theory of Music II (3)

Prerequisite: Music 30 or consent of department. Instruction in ear training and sight singing continued from Music 30; study of seventh chords, secondary dominants, and modulation; composition in small forms.

### 32 Theory of Jazz (3)

Prerequisite: Music 31 or consent of department. This is a survey analysis of the tonal organization of mainstream jazz music as documented by standard performance practice. Scale formation chordal structure, and harmonic function will be examined.

### 71 Sight Singing I (1)

Rhythmic and tonal sight singing, based on Kodaly methodology. Recommended for music education majors. Will not substitute for music theory sequence.

### 72 Sight Singing II (1)

Prerequisite: Music 71. A continuation of Music 71.

### 130 Theory of Music III (3)

Prerequisite: Music 31 or consent of department. Ear training and sight singing; study of chromaticism in eighteenth and nineteenth centuries; composition in simple part-forms.

### 131 Theory of Music IV (3)

Prerequisite: Music 130 or consent of department. Study of late nineteenth- and early twentieth-century tonal harmony; analysis of large forms; instruction in advanced aural perceptions; composition in large forms.

### 201 Music Theory Review (3)

Prerequisite: Music 131 or consent of department. A review of techniques employed in the analysis and composition of tonal music. The credit may not be used to satisfy requirements for a music degree.

### 203 Ear Training and Sight-Singing Review (1)

Rhythmic and tonal sight-singing based on Kodaly methodology: melodic and harmonic ear-training. Does not substitute for music theory sequence. The credit may not be used to satisfy the requirements for a music degree.

### 141 Orchestration (2)

Prerequisite: Music 112 or concurrent enrollment. Study of the instruments of the orchestra; scoring for various instrumental ensembles and orchestra.

### 311 Analysis of 20th Century Technique (2)

Prerequisite: Music 112 or consent of department. Study of compositional devices in tonal and atonal music of twentieth century.

### 312 Tonal Counterpoint (2)

Prerequisite: Music 112 or consent of department. Study of tonal counterpoint with emphasis on the eighteenth-century style. Composition in two and three parts.

### 330 Seminar in Composition (2)

Prerequisite: Music 311 or consent of instructor. The study of composition in theory and practice.

## Pedagogy

### 17 Beginning Instrumental Techniques (1)

Prerequisite: Consent of department. Performance, teaching techniques, and materials for the various media: a, bassoon; b, clarinet; c, flute; d, french horn; e, oboe; f, percussion; h, saxophone; i, string bass; j, trumpet; k, trombone; l, tuba; m, viola; n, violin; o, violoncello.

### 123 Intermediate Vocal Techniques (1)

Prerequisite: Permission of department. Instruction for non-voice majors in the choral option of the music education curriculum.

### 124 Intermediate Vocal Techniques (1)

Prerequisite: Permission of department. Instruction for non-voice majors in the choral option of the music education curriculum.

### 156 Piano Pedagogy (2)

Prerequisite: Equivalent of Music 45k or permission of instructor. A study of methods, repertoire, and technical problems pertaining to private studio teaching for all levels of performance ability.

### 221 Pedagogy of Jazz Improvisation (1)

Prerequisite: Music 112 and permission of instructor. Study of the techniques, systems, and instructional materials used in teaching jazz improvisation.



# Music

## Practicum

### 151 Conducting I (2)

Prerequisite: Music 111. Concurrent registration in Music 161 required. Techniques and problems in conducting.

### 152a Conducting II—Instrumental (2)

Prerequisite: Music 151. Concurrent registration in Music 162 required. Advanced study of instrumental conducting and rehearsal techniques, score reading, and interpretation.

### 152b Conducting II—Choral (2)

Prerequisite: Music 151. Concurrent registration in Music 162 required. Advanced study of choral conducting and rehearsal techniques, score reading, and interpretation.

### 161 Junior-Senior High School Materials Laboratory (1)

Prerequisite: Music 111. Analysis and evaluation of selected instructional and concert materials for the junior and senior high school performance groups.

### 162 Elementary School Materials: Conducting Laboratory (1)

Prerequisite: Music 112. Active conducting experience while analysing and evaluating selected instructional and concert materials for elementary grades.

### 192 Senior Research (2)

Prerequisite: Consent of department. Required of all senior music majors. Directed readings and research in an area mutually acceptable to the student and instructor.

### 292 Internship (1-3)

Prerequisites: Senior standing in bachelor of music business emphasis program and permission of the instructor. Supervised experience in the area of the student's career objective, such as music or instrument merchandising, arts management, mass communication publishing, manufacturing or other, as available. May be repeated once for credit in different area.

# Philosophy

Prerequisites may be waived by consent of the department.

The following courses fulfill the Humanities [H] breadth of study requirements: 10, 11, 30, 31, 50, 60, 74, 85, 90, 101, 102, 103, 104, 105, 107, 120, 124, 150, 151, 153, 154, 156, 160, 165, 201, 202, 205, 206, 207, 208, 210, 215, 230, 235, 238, 240, 245, 250, 260, 265, 269\*, 270, 272, 274, 276, 278, 280, 282, 285, 287, 290, 291, 350.

\*Course may fulfill the [H] or Social Sciences [SS] breadth of study requirement.

## 10 History of Philosophy I: A Survey From Antiquity to the Renaissance (3)

Lectures and discussions tracing the development of Western philosophy from its beginnings among the pre-Socratics through the Middle Ages and Renaissance. Philosophical ideas will be examined in the cultural and historical context: the Greek city-state, the rise of Christianity, etc.

## 11 History of Philosophy II: A Survey From Descartes to the Present (3)

Lectures and discussions on the development of Western philosophy from Descartes (1596-1650) to the present. Philosophical ideas will be examined with an eye to their historical and cultural setting: the rise of modern science, the industrial revolution, the rise of capitalism, etc.

## 30 Approaches to Ethics (3)

A study and discussion of representative topics in moral philosophy such as moral skepticism, moral objectivity, theories of obligation and value, evaluation of social institutions, and the relation between morality and science. Traditional and contemporary writers will be considered.

## 31 Explorations in Western Philosophy (3)

(Same as Honors 31.) Prerequisite: Enrollment in University Honors Program. An examination of selected philosophical problems as treated by major figures in the Western intellectual tradition. Emphasis will be on textual study and critical analysis and discussion.

## 50 Major Questions in Philosophy (3)

A study and discussion of representative topics in philosophy such as free will and determinism, concepts of mind and body, the basis of value judgments, knowledge and belief, and the possibility of constructing a world view.

## 60 Logic and Language (3)

An introduction to the language and logical structure of arguments, the principles of sound reasoning, and application of these principles in a variety of contexts.

## 74 Philosophy and Literature (3)

Critical reading and discussion of selected literary works in terms of the philosophical problems they present.

## 85 Philosophy of Religion (3)

A philosophical investigation of such problems as the nature of religious faith and experience, the relation of faith and reason, alternative concepts of deity, and the problem of evil.

## 90 Freshman Seminar (3)

Prerequisites: Freshman standing and consent of instructor. Topics to be announced. Weekly seminars supplemented by individual conferences. Limited to twelve students.

## 101 Ancient Philosophy (3)

Freshman admitted by consent of department. The principal philosophical doctrines of the ancient world, with special emphasis on the philosophies of Plato and Aristotle. Although there is no formal prerequisite, it is recommended that students have taken at least one other philosophy course.

## 102 Medieval Philosophy (3)

A critical study of the important philosophies of the period from Augustine to the Renaissance. Although there is no formal prerequisite, it is recommended that students have taken at least one other philosophy course.

## 103 Early Modern Philosophy (3)

Principal figures in the development of rationalism, empiricism and skepticism in early modern Europe, from Descartes through Hume. Although there is no formal prerequisite, it is recommended that students have taken at least one other philosophy course.

## 104 Kant and Nineteenth-Century Philosophy (3)

A study of Kant and such major nineteenth-century figures as Hegel and Nietzsche, Mill and Peirce. Although there is no formal prerequisite, it is recommended that students have taken at least one other philosophy course.

## 105 Twentieth-Century Philosophy (3)

Representative topics in contemporary philosophy, with readings selected from pragmatism, logical positivism, linguistic analysis, and existentialism. Although there is no formal prerequisite, it is recommended that students have taken at least one other philosophy course.

## 107 American Philosophy (3)

Prerequisite: Six hours of philosophy or consent of instructor. A study of selected American philosophers.

## 120 Asian Philosophy (3)

Critical study of selected philosophical classics of India and China. Fulfills the non-Euro-American study requirement.

## 124 Philosophy of Judaism (3)

No background in Judaism or Jewish studies is necessary. An examination of distinctive features of Judaism, such as conceptions of religious law (*Halachah*), teachings about human nature and interaction with God, responses to the Holocaust, and analysis of specific institutions such as the Sabbath. Medieval and contemporary Jewish philosophers will be read and discussed, as well as selected Talmudic and other primary sources.

## 150 Philosophy and Current Issues (3)

A careful examination of such current social controversies as women's liberation, the ethics of abortion, public accountability of holders of high offices, and the subtler forms of racism and other prejudices. Although there is no formal prerequisite, it is recommended that students have taken, or be concurrently enrolled in, at least one other philosophy course.

## 151 Sexual Ethics (3)

A critical review of what philosophers, both classical and contemporary, have said about sexual experience and its place in our lives. Included will be such topics as sexual desire, sexual perversion, love and commitment, marriage and adultery, larger questions might include the role of sexual experience in the good life, issues of sexual privacy, and the morality of laws which regulate sexual activity.

# Philosophy

## 153 Philosophy and Feminism (3)

A critical survey of what various philosophers have said about issues of concern to the women's movement. Included will be accounts, both traditional and modern, of such topics as differences between the sexes, sexism in language, oppression, preferential treatment and affirmative action, abortion and rape, and the differences between sexism and racism.

## 154 Business Ethics (3)

A critical survey from the perspective of moral theory of businesses and business practices. Topics vary but usually include some of the following: whether the sole moral obligation of businesses is to make money; whether certain standard business practices, e.g., the creation of wants through advertising, are moral; whether businesses ought to be compelled, e.g., to protect the environment or participate in affirmative action programs.

## 156 Medical Ethics (3)

An examination of ethical issues in medical practice and research and in public policies affecting health care. Topics include: abortion, euthanasia, medical experimentation, informed consent, and the right to health care.

## 160 Formal Logic (3)

An introductory study of logical truth and deductive inference, with emphasis on the development and mastery of a formal system.

## 165 Inductive Logic (3)

An examination of the techniques for evaluating inferences which do not fit deductive frameworks. Examples will be drawn from at least the physical sciences, medicine, ethics, law, and everyday life.

## 201 Plato (3)

Prerequisite: Six hours of philosophy or consent of instructor. A study of selected Platonic dialogues.

## 202 Aristotle (3)

Prerequisite: Six hours of philosophy or consent of instructor. A selective study of Aristotle's major works.

## 205 The Rationalists (3)

Prerequisite: Six hours of philosophy or consent of instructor. An examination of the philosophies of such major figures as Descartes, Spinoza, and Leibniz.

## 206 The British Empiricists (3)

Prerequisite: Six hours of philosophy or consent of instructor. An examination of the philosophies of such major figures as Locke, Berkeley, and Hume.

## 207 Kant (3)

Prerequisite: Six hours of philosophy or consent of instructor. A systematic study of the *Critique of Pure Reason*.

## 208 Hegel (3)

Prerequisite: Six hours of philosophy or consent of instructor. A critical study of the writings and influence of Hegel.

## 210 Significant Figures in Philosophy (3)

Prerequisite: Six hours of philosophy or consent of instructor. A critical study of the work of an important philosopher. The philosopher to be considered will be announced prior to registration. This course may be repeated for credit on approval by the department.

## 215 Existentialism and Phenomenology (3)

A study of some major representatives of these schools from Kierkegaard to the present.

## 230 Social and Political Philosophy (3)

An analysis of some fundamental concepts and assumptions involved in the theory and practice of social and political organization.

## 235 Classical Ethical Theories (3)

Significant contributions to moral philosophy from Plato and Aristotle to Bentham and Mill.

## 238 Recent Ethical Theory (3)

Prerequisite: Six hours of philosophy or consent of instructor. A study of major contributions to twentieth-century ethics, including works by such writers as Moore, Dewey, Ross, Stevenson, Hare, and Rawls.

## 240 Theories of Knowledge (3)

Prerequisite: Six hours of philosophy or consent of instructor. An examination of concepts and problems involved in the characterization of knowledge. Specific topics will vary, but will usually include knowledge, belief, skepticism, evidence, certainty, perception, truth, and necessity.

## 245 Metaphysics (3)

Prerequisite: Six hours of philosophy or consent of instructor. An examination of selected metaphysical topics such as substance, universals, causality, necessity, space and time, free will, being, and identity.

## 250 Special Topics in Philosophy (3)

Prerequisite: Six hours of philosophy or consent of instructor. A critical study of classical and/or contemporary contributions to a selected topic in philosophy. The topic to be considered will be announced prior to registration. This course may be repeated for credit on approval by the department.

## 260 Advanced Formal Logic (3)

Prerequisite: Philosophy 160 or consent of instructor. Rigorous study of major developments in contemporary logic. Emphasis is given to theoretical problems and some attention is devoted to philosophical issues arising from logic.

## 265 Logical Explorations (3)

Prerequisite: Philosophy 160. A variable content course in which techniques of modern logic are used to explore one or more of the following topics: modal logic, the logic of decision and action, value theory and decision analysis, induction and inductive logic, the logic of knowledge and belief, system construction, and contemporary logical theory. The topic will be announced prior to registration. This course may be repeated for credit on approval by the department.

## 269 The Marxist Heritage (3)

(Same as Political Science 269.) Study of Marx and leading Marxists. Designed to evaluate their influence on recent political, economic, and social thought and institutions.

## 270 Philosophy of Language (3)

A study of the nature and structure of language and its relationship to selected philosophical problems. Included will be such topics as ordinary language philosophy, significant developments in twentieth-century linguistics, prospects for semantic theory, and a discussion of traditional problems of meaning, reference, and synonymy.

## 272 Philosophical Issues in Education (3)

A critical study and discussion of selected topics in education, including the distinctive features of education as an activity and achievement, concepts of teaching and learning, relations between education and values and the functions of a university.

# Philosophy

## 274 Philosophy of Art (3)

A study of issues concerning the definition of art, meaning and truth in the arts, aesthetic experience, and criticism.

## 276 Philosophy of History (3)

Discussion and analysis of some philosophical problems raised by historical inquiry, such as subjectivity, relativism, the role of value judgments, and the nature of historical explanation.

## 278 Philosophy and Psychology (3)

Prerequisite: Three hours of philosophy or consent of instructor. An examination of the philosophical foundations of psychology as well as traditional problems in the philosophy of mind. Topics might include behaviorism; Freudian theory; pleasure and pain; desire, emotion and action; and memory and consciousness.

## 280 Philosophy of Science (3)

An examination of logical and methodological problems related to the sciences, including the structure of scientific explanations, laws and theories; methods of concept formation; and confirmation and the problem of induction.

## 282 Philosophy of Social Science (3)

A detailed analysis of issues raised by the social sciences, including the logical characterization of explanations, predictions, laws and theories; types of reductionism; objectivity and values; and the empirical basis of the social sciences.

## 285 Problems in Philosophical Theology (3)

Prerequisite: Six hours of philosophy or consent of instructor. An intensive study of problems arising out of traditional and contemporary philosophical theology.

## 287 Philosophy of Law (3)

An examination of typical problems raised by law, including the basis of legal obligations and rights, relations between law and morality, the logic of legal reasoning, and the justification for punishment.

## 290 Philosophical Issues in Other Disciplines (3)

Prerequisite: Consent of instructor. An examination of selected philosophical issues in a discipline other than philosophy. One or more such disciplines as history, political science, psychology, sociology, biology, physics, or mathematics will be chosen, and philosophical issues selected, and announced prior to registration, usually in consultation with the other department concerned. This course is normally taught as a seminar and attempts to serve advanced students in other departments with or without previous background in philosophy.

## 291 Senior Thesis (3-9)

Prerequisite: Consent of department. Directed individual research. May be repeated, but no more than nine hours may be credited toward a degree. Required of students earning departmental honors.

## 350 Special Readings (1-3)

Prerequisite: Written consent of instructor. Independent study through readings, reports, and conferences.

## 485 Seminar in the Humanities (3)

A study of selected topics using works of more than one discipline in the humanities.

## Physics

Prerequisites may be waived by consent of the department.

Courses in this section are grouped as follows: Astronomy; Atmospheric Science; Engineering; Geology; and Physics.

The following courses fulfill the Natural Sciences and Mathematics [SM] breadth of study requirements: ASTRONOMY: 1, 11, 12, 22, 50, 51, 121, 201, 222. ATMOSPHERIC SCIENCE: 1. ENGINEERING: 85, 185, 201, 202. GEOLOGY: 1, 2, 53, 201, 290. PHYSICS: 1, 10, 11, 12, 36, 50, 111, 112, 113, 170, 171, 172, 173, 200, 201, 202, 221, 223, 281, 282, 289, 290, 301, 311, 312, 323, 325, 331, 335, 343, 344, 351, 353, 354, 356, 365, 381, 400, 408, 409, 424, 434, 490.

## Astronomy

### 1 Cosmic Evolution/Introductory Astronomy (4)

Planets: A brief survey of their motions and properties. Stars: Observations, including stellar spectra and colors; stellar evolution, and star clusters. Galaxies: Structure and content of the Milky Way Galaxy, its relationship to other galaxies. Cosmology: The origin and evolution of the universe. Three lectures and two multi-media laboratories.

### 11 Planets and Life in the Universe (3)

Man's concept of the solar system from Stonehenge to Einstein; geology and meteorology of the planets of our solar system, with particular attention to results from the space program; exobiology—study of the possibilities of life on other worlds and the best method of communicating with it. Three lecture hours per week.

### 12 The Violent Universe and the New Astronomy (3)

Prerequisite: Astronomy 1 or consent of instructor. A non-technical course focusing on recent results which larger telescopes and the space program have made available. Pulsars, x-ray stars, and black holes; radio astronomy, our galaxy, and interstellar molecules; exploding galaxies and quasars; origin of the expanding universe. Three lecture hours and one observing session per week.

### 22 Practical Astronomy (2)

Prerequisite: Astronomy 1 or 11 or consent of instructor. Designed to acquaint students with observational astronomy: constellations, planets, stars, nebulae, and galaxies. Students will become familiar with

operation of a telescope and its use in visual observation and photography. The basics of astronomical nomenclature and co-ordinates will also be emphasized. This course is primarily for non-scientists.

### 50 Introduction to Astronomy I (3)

Prerequisites: Mathematics 30 or 40 and trigonometry. A survey of the history of astronomy from the ancient times to the present. The motions of the planets and stars, real and apparent. Tools of the astronomer. A study of our solar system, concentrating on results of the space program.

### 51 Introduction to Astronomy II (3)

Prerequisites: Mathematics 30 or 40 and trigonometry. A survey of astronomy and cosmology focusing on discoveries and phenomena outside of the solar system: stars, galaxies, quasars, etc.

### 121 The Search for Extraterrestrial Life (3)

Prerequisite: Astronomy 1, 11, or consent of instructor. Are we alone? The possibility of life in the universe in addition to our own will be explored. Our discussion of the chances for extraterrestrial life will be built around the current theories of chemical, biological, and cultural evolution which have led to our own technological civilization on Earth. Strategies for communication with extraterrestrial intelligence will be discussed.

### 201 Astrophysics (3)

Prerequisite: Mathematics 201 or Physics 113 or consent of instructor. A moderately technical introduction to astrophysics. Topics will include: physics of stellar interiors and atmospheres; interpretation of stellar spectra; stellar evolution; radio astronomy; and cosmology.

### 222 Observational Astronomy (4)

Prerequisite: Astronomy 50 or Mathematics 80 or consent of instructor. Tools of the astronomer: telescopes, astrophotography, photoelectric photometry. Students will work on a number of projects which will enable them to develop expertise in obtaining, reducing, and analyzing astronomical observations. Student observing will be an important part of the course. This course is primarily for persons who are astronomy or physics majors or who have some equivalent astronomical background.

## Atmospheric Science

### 1 Elementary Meteorology (4)

Prerequisite: High-school physics or chemistry. An elementary survey of atmospheric phenomena intended to fulfill the science requirement. Topics included are temperature, pressure, and moisture distributions in the atmosphere and dynamical effects such as radiation, stability, storms, and general circulation. Applications to weather forecasting. Three hours of lecture and two hours of laboratory per week.

## Engineering

### 30 Engineering Graphics (3)

Prerequisite: Mathematics 40 or equivalent. Lettering, drafting equipment, technique, and standards. Technical sketching, engineering curves, charts, and graphs. Multiview and pictorial drawing, space analysis of lines, planes, and solids. Basic dimensioning, sections, shop processes, and shop drawings and sketches. Engineering organization charts and flow diagrams. Design analysis and use of standard parts. Graphical mathematics, microfilming, computer drafting and reproduction processes. Creative design.

### 85 Statics and Elementary Strength of Materials (3)

Prerequisites: Mathematics 175 and Physics 111. Fundamentals of statics; static equilibrium and introduction to elements of, mechanics of elastic materials.

### 185 Introduction to Dynamics (3)

Prerequisite: Engineering 85. Basic fundamentals of particle and rigid-body dynamics; energy and momentum methods.

### 201 Elementary Electronics (3)

(Same as Physics 201.) Prerequisite: Physics 112. Primarily a laboratory study of characteristics of standard circuit elements, amplifier circuits, power supplies, operational amplifiers, digital and switching circuits, servo systems, shielding and noise problems, transducers and oscilloscopes. Six hours of laboratory per week.

### 202 Elementary Electronics II (3)

(Same as Physics 202.) Prerequisite: Engineering 201. Continuation of Engineering 201. Six hours of laboratory per week.

# Physics

## Geology

### 1 General Geology (4)

Earth materials and processes, including geological aspects of the resource/energy problem. Laboratory involves identification of common rocks and minerals.

### 2 Historical Geology (4)

Prerequisite: Geology 1. Study of changes in geography, climate and life through geological time; origin of continents, ocean basins, and mountains in light of continental drift. Laboratory primarily involves description and identification of fossils. Three hours of lecture and two hours of laboratory per week.

### 53 Oceanography (3)

The atmospheric and ocean circulations; the chemistry and geology of the deep sea; and their effects on the distribution of marine organisms.

### 201 Stratigraphy and Sedimentation (3)

Prerequisites: Geology 1 and 2. Principles of stratigraphy, with an introduction to sedimentary processes. The major sedimentary sequences of North America will be examined, with origins interpreted from a plate tectonics perspective.

### 290 Research (1-3)

Prerequisite: Consent of instructor. Independent geology research projects arranged between student and instructor. Hours arranged.

## Physics

### 1 Foundations of Modern Physical Theory I (4)

Prerequisite: Mathematics 02 or equivalent. An introduction to some of the major ideas, principles, and basic laws directing the development of contemporary physics. The course work consists of two general lectures each week in which the material is introduced, one discussion session, and one two-hour multimedia laboratory.

### 10 Experimentation in Physics (2)

Prerequisite: Mathematics 40 (may be taken concurrently) or equivalent. A laboratory course designed to introduce the students to electrical circuits and elementary electronics. No prior knowledge of circuits or electronics will be assumed. Four hours of laboratory per week.

### 11 Basic Physics (4)

Prerequisite: Mathematics 30 or 40. A survey course specifically designed for students in health and life sciences covering such topics as classical mechanics, heat, sound, electricity, magnetism, light, and radiation. Will not fulfill the Physics 111 requirement for physics, chemistry, and engineering majors. Three hours of lecture and two hours of laboratory.

### 12 Basic Physics (4)

Prerequisite: Physics 11. Continuation of Physics 11.

### 36 Science: Its Nature and Practice (3)

(Same as Honors 36 and Interdisciplinary 36.) Prerequisites: Mathematics 40 and enrollment in University Honors Program. Since the seventeenth century, the scientific/empirical method has revolutionized the nature of civilization and the human perception of the world. This course is an introduction to the methods of science, the evolution of scientific concepts, and the role of theoretical structure.

### 50 Introduction to Physics (4)

Prerequisite: Mathematics 30. A laboratory survey course which introduces students to the fields of mechanics, heat and thermodynamics, optics, electricity and magnetism, and modern physics at the pre-calculus level. A problem-solving course, recommended for science and engineering students who have no physics background or who desire additional preparation for Physics 111. Three hours of lecture and two hours of laboratory per week.

### 111 Physics: Mechanics and Heat (5)

Prerequisite: Mathematics 80 or 101. Physics 1 or Chemistry 12 or equivalent is recommended. An introduction to the phenomena, concepts, and laws of mechanics and heat for physics majors and students in other departments. Three hours of lecture, one hour of discussion, and two hours of laboratory per week.

### 112 Physics: Electricity, Magnetism, and Optics (5)

Prerequisites: Physics 111 and Mathematics 101 or 175. A phenomenological introduction to the concepts and laws of electricity and magnetism, electromagnetic waves, optics and electrical circuits for physics majors and students in other departments. Three hours of lecture, one hour of discussion, and two hours of laboratory per week.

### 113 Physics: The Structure of Matter (3)

Prerequisite: Physics 112. A phenomenological introduction to selected concepts and laws of physics as they are applied to the structure of matter. Elements of atomic, nuclear, and molecular physics will be discussed. Three hours of lecture plus one hour of discussion per week.

### 124 Circuit Analysis I (3)

Prerequisite: Physics 112 and Mathematics 201 (may be taken concurrently). Circuit elements, signals, Kirchhoff's laws, network theorems, and mesh and nodal analysis. Transient and complete response of RL, RC, LRC circuits will also be studied.

### 125 Circuit Analysis II (3)

Prerequisite: Physics 124 and Mathematics 202 (may be taken concurrently). Analysis of steady state AC circuits, phasor notation, polyphase circuits, complex frequency and frequency response, magnetically coupled circuits, and two-part networks.

### 170 Physics of Music (3)

Prerequisite: Mathematics 02 or equivalent. Musical sound is the subject matter of this course: how it originates (musical instruments), how it is reproduced (stereo sound systems), how it is transmitted, and how it is perceived.

### 171 Applications of the Physics of Music (2)

Prerequisite: Mathematics 02 or equivalent. Demonstrations and experiments concerning the origination, the reproduction, the synthesis, the transmission, and the detection of musical sounds.

### 172 Light and Color (3)

Prerequisite: Mathematics 02. A study of the physical concepts as they relate to light, color, and visual phenomena. Models of light applied to reflection, refraction, diffraction, and interference. Optical devices such as the eye and the camera will be studied. Visual and color perception.

### 173 Applications of Light and Color (2)

Prerequisite: Mathematics 02. Demonstrations and experiments leading to a physical understanding of the behavior of light from source to detector, whether that of the eye or a camera. Phenomena such as reflection, refraction, diffraction, and interference will be demonstrated. Color analysis and synthesis.

# Physics

## 200 Survey of Theoretical Physics (3)

Prerequisites: Physics 111 and Mathematics 201. Mathematical techniques specifically used in the study of mechanics, electricity, magnetism, and atomic physics are developed in the context of various physical problems. In particular, statics problems in electricity and magnetism are emphasized as applications of vector analysis, solutions of Laplace's equation, coordinate systems, and numerical techniques.

## 201 Elementary Electronics I (3)

(Same as Engineering 201.) Prerequisite: Physics 112. Primarily a laboratory study of characteristics of standard circuit elements, amplifier circuits, power supplies, operational amplifiers, digital and switching circuits, servo systems, shielding and noise problems, transducers and oscilloscopes. Six hours of laboratory per week.

## 202 Elementary Electronics II (3)

(Same as Engineering 202.) Prerequisite: Physics 201. Continuation of Physics 201. Six hours of laboratory per week.

## 221 Mechanics (3)

Corequisites: Physics 200 and Mathematics 202. Advanced course covering rigid-body dynamics, damped and undamped oscillatory motion, with an introduction of Lagrange's equations and variational principles. Three hours of lecture and one hour of discussion per week.

## 223 Electricity and Magnetism (3)

Prerequisites: Physics 200 and Mathematics 202. (Mathematics 202 may be taken concurrently). Electromagnetic fields, including electrostatics, dielectric materials, solution to Laplace's equation, currents and magnetic fields, motion to charged particles, and introduction to electromagnetic waves. Three hours of lecture and one hour of discussion per week.

## 231 Introduction to Modern Physics I (3)

Prerequisite: Mathematics 202 (may be taken concurrently). Physics 111, 112, and 200 strongly recommended. Photons and the wave nature of particles; wave mechanics, Schrodinger equation, and applications to single systems; atomic physics and spectroscopy; molecular physics; nuclear models and reactions; the physics of solids; elementary particles; relativity. Three hours of lecture and one discussion section per week.

## 232 Introduction to Modern Physics II (3)

Prerequisite: Physics 231. Continuation of Physics 231.

## 280 Methods of Teaching Physics in Secondary Schools (3)

(Same as SEC ED 240.) Prerequisites: SEC ED 213 and a near-major in the subject area. Study of the scope and sequence of the science courses in the school curriculum, with emphasis on the selection and organization of materials and methods of instruction and evaluation. Attention is also directed toward learning the techniques and research tools of the scholar in the field of science.

## 281 Directed Readings in Physics (1-10)

Prerequisite: Consent of instructor. A study of the literature of physics. A paper is required on an approved topic. Hours arranged.

## 282 History of Physics (3)

Prerequisite: Physics 1 or Astronomy 1. A study of the historical evolution of physics. Three hours of lecture per week.

## 289 Seminar (1)

Presentation of selected papers by students and faculty members at weekly meetings. May be taken twice for credit.

## 301 Introduction to Mathematical Physics (3)

Prerequisites: Sixteen hours of physics. A course covering mathematical techniques as applied to the equations of theoretical physics, calculus of variations, Green's functions; linear vector spaces, and integral equations. Three hours of lecture and one hour of discussion per week.

## 311 Advanced Physics Laboratory I (2)

Prerequisites: Physics 201, 221, 231, and Mathematics 122. Physics majors are introduced to the experimental techniques used in research. A student will choose and do several special problems during the semester. Six hours of laboratory per week.

## 312 Advanced Physics Laboratory II (2)

Prerequisite: Physics 201, 221, 231, and Mathematics 122. Continuation of Physics 311. Six hours of laboratory per week.

## 323 Modern Optics (3)

Prerequisite: Physics 223. A study of modern optics including diffraction theory, polarization, light propagation in solids, quantum optics, and coherence. Three hours of lecture and one discussion per week.

## 325 Linear Analysis of Physical Systems (3)

Prerequisites: Physics 201 and Mathematics 202. Signals and systems, Fourier and Laplace analysis, transform methods, amplitude phase and delay, transfer functions and filters. Three hours of lecture and one hour of discussion per week.

## 331 Introduction to Quantum Mechanics (3)

Prerequisites: Physics 200 and 231. Photons and the wave nature of particles; wave mechanics, Schrodinger equation, and applications to single systems, atomic physics and spectroscopy; molecular physics, nuclear models and reactions, the physics of solids; elementary particles, relativity. Three hours of lecture and one discussion section per week.

## 333 Reflection Seismology (3)

Prerequisites: Physics 200 and Mathematics 202. An introduction to the theory and application of seismic reflection methods. The course will emphasize mathematical methods in elastic wave analysis.

## 335 Atomic and Nuclear Physics (3)

Prerequisite: Physics 331. Application of Schrodinger's equation to hydrogen-like atoms; atomic structure and spectra; nuclear masses, energy levels; alpha, beta, and gamma radiation, nuclear reactions, and models of the nucleus. Three hours of lecture and one hour of discussion per week.

## 341 Thermal and Statistical Physics (3)

Prerequisite: Mathematics 201 and Physics 231. Introduction to statistical mechanics, laws of thermodynamics, kinetic theory. Three hours of lecture and one hour of discussion per week.

## 343 Selected Topics in Physics I (3)

Prerequisites: Physics 221, 223, 225, 231, 341 and Mathematics 316. (Mathematics 316 may be taken concurrently.) Topics include special phenomena such as scattering of waves, thermal motion in gases, atmospheric disturbances treated by methods of advanced mechanics, electromagnetism, and quantum mechanics. Three hours of lecture and one hour of discussion per week.

# Physics

## 344 Selected Topics in Physics II (3)

Prerequisite: Physics 343. Continuation of Physics 343. Three hours of lecture and one hour of discussion per week.

## 351 Elementary Solid State Physics (3)

Prerequisite: Physics 331. Theoretical and experimental aspects of solid state physics, including one-dimensional band theory of solids; electron emission from metals and semiconductors; electrical and thermal conductivity of solids. Three hours of lecture and one hour of discussion per week.

## 353 Physics of Fluids (3)

Prerequisites: Physics 221, 223 and 341 or consent of instructor. Topics from the theory of gases, liquids, or plasmas. Dynamical properties of one of these forms of matter will be developed with contemporary applications stressed.

## 354 Atmospheric Physics (3)

Prerequisite: Physics 341. Topics from dynamic and physical meteorology including the ionosphere. Application of thermodynamics, optics, radiation, and mechanics to atmospheric phenomena.

## 356 Quantum Optics (3)

Prerequisites: Physics 200 and 231, and Mathematics 202. Review of atomic theory and spectroscopy. Selected applications to modern optical phenomena such as optical pumping, lasers, masers, Mossbauer effect, and holography.

## 365 Plasma Physics (3)

Prerequisites: Physics 223 and 341. A study of the non-linear collective interactions of ions, electrons, and neutral molecules with each other and with electric and magnetic fields. Topics include plasma confinement and stability, electrical discharges and ionization, kinetic theory of plasma transport, plasma waves and radiation, and controlled fusion. Solutions of the Boltzmann, Fokker-Planck, and Vlasov equations are discussed and methods of advanced electromagnetism and statistical physics are utilized. Three hours of lecture and one hour of discussion per week.

## 370 Relativity (3)

Prerequisites: Physics 221, 223, and 231. An introduction to Einstein's general theory of relativity. Topics will include special relativity in the formalism of Minkowski's four dimensional space-time, Principle of Equivalence, Riemannian geometry and tensor analysis, Einstein Field Equation and cosmology. Three hours of lecture and one hour of discussion per week.

## 381 Directed Readings in Physics (1-10)

Prerequisite: Consent of instructor. A study of special topics in physics for senior undergraduates or graduate students.

## 390 Research (1-10)

Prerequisite: Consent of department. Independent research projects arranged between student and instructor. Hours arranged.

## 400 Computational Physics (3)

Prerequisite: Mathematics 122 or equivalent. Numerical analysis and computer analysis in physics; solutions of eigenvalue problems; coupled differential equations; and writing of FORTRAN programs.

## 401 Principles of Mathematical Physics (4)

Boundary value problems; Green's function techniques; and introduction to group theory with emphasis on representations of Lie Algebras.

## 408 Classical Dynamics and Electrodynamics (4)

Prerequisites: Physics 200, 221, and 223. Presents methods and applications of classical dynamics, electrodynamics, and field theory.

## 409 Quantum Mechanics and Statistics (4)

Prerequisite: Physics 331 and 341. Physics 408 recommended. Continues 408 with methods and applications of quantum mechanics and statistical mechanics.

## 418 Atomic and Molecular Physics (4)

Prerequisites: Physics 232, 331, 341, and Mathematics 202. Physics of atoms and molecules. Topics include spectroscopy, kinetic theory, transport phenomena, molecular interactions, and interaction of radiation with molecules.

## 419 Condensed Matter Physics (4)

Prerequisites: Physics 221, 223, 341, and Mathematics 202. Crystal structure, diffraction and the reciprocal lattice phonons, free electron Fermi gas and band structure. Also to include one or more topics selected from the following: semiconductor devices, optical properties of solids, superfluidity and superconductivity, or critical phenomena and phase transitions.

## 421 Theoretical Mechanics (4)

Lagrangian and Hamiltonian formulation of mechanics; canonical transformations; action angle variables; Poisson brackets; and small oscillation theory.

## 423 Classical Electrodynamics (4)

Prerequisites: Physics 401 and 421. Boundary value problems in electrostatics; Maxwell's equations; multipole expansion; radiation theory; special relativity.

## 424 Applications of Electrodynamics (3)

Prerequisite: Physics 423. Applications of electrodynamics to waveguides, antenna design, and accelerator design.

## 431 Quantum Mechanics I (4)

Prerequisites: Physics 331 and 401. Formal development of quantum mechanics in Heisenberg and Schroedinger pictures, solvable problems; Reyleigh-Schroedinger perturbation theory; and angular momentum.

## 434 Special Topics in Quantum Theory (3)

Prerequisite varies according to material covered. Special applications of quantum theory to such systems as quantum electronics, collision theory, S matrix theory, etc. May be repeated for credit.

## 441 Statistical Mechanics (4)

Prerequisite: Physics 431. Ensembles, classical and quantum statistics; relation to thermodynamics; H theorem; applications to simple systems.

## 481 Directed Readings in Physics (1-10)

Prerequisite: Consent of instructor. A study of special topics in physics for graduate students.

## 490 Thesis Research

Includes writing a thesis. Credit will be awarded only upon successful defense of thesis.



## Political Science

Courses in this section are grouped as follows: Ungrouped Courses; Public Law; American Politics; Public Policy and Administration; Comparative Politics; Theory and Methodology; International Relations; and Graduate Courses.

The following courses fulfill the Social Sciences [SS] breadth of study requirements: UNGROUPED COURSES: 11, 12, 60, 90, 99, 190, 295, 390, 395. PUBLIC LAW: 20, 121, 129, 225, 227, 320, 327, 328, 329. AMERICAN POLITICS: 130, 131, 133, 135, 218, 230, 232, 233, 235, 331, 332. PUBLIC POLICY AND ADMINISTRATION: 140, 240, 241, 242, 244, 245, 246, 340, 342, 343, 346, 348, 349. COMPARATIVE POLITICS: 155, 251, 252, 253, 254, 256, 351, 359. THEORY AND METHODOLOGY: 101, 102, 160, 165, 205, 261, 262, 265, 269\*, 304, 368. INTERNATIONAL RELATIONS: 80, 180, 282, 284, 285, 286, 288, 289, 381, 385, 388.

GRADUATE COURSES: 401, 405, 410, 411, 414, 419, 420, 421, 425, 430, 431, 435, 440, 441, 445, 450, 451, 455, 460, 461, 465, 470, 471, 475, 480, 481, 485.

\*Course may fulfill the Humanities [H] or

Social Sciences [SS] breadth of study

requirement.

### Ungrouped Courses

#### 11 Introduction to American Politics (3)

Introduction to basic concepts of government and politics with special reference to the United States, but including comparative material from other systems. Course fulfills the state requirement.

#### 12 Introduction to Comparative Politics (3)

An introduction to basic political structures and processes with an emphasis on foreign political systems and comparative political analysis. The course will deal with democratic and nondemocratic political systems in developed and underdeveloped nations.

#### 60 Civilization and Politics (3)

An examination of the role of politics in human life, of the ways in which individuals have organized themselves and the goals they have pursued in a variety of historical circumstances.

#### 90 Freshman Seminar (3)

Prerequisites: Freshman standing and consent of instructor. Topics to be announced. Weekly seminars supplemented by individual conferences. Limited to twelve students.

#### 99 The City (3)

(Same as Administration of Justice 99, and Sociology 99.) An interdisciplinary course. Consideration of economic factors, urban institutions, historical developments in urbanization, problems of the inner city, suburbia and the metropolitan area, ethnic groups, stratification, and psychological implications of urban living. This course is primarily for freshmen and sophomores. It is open to juniors and seniors with the instructor's permission.

#### 190 Studies in Political Science (3)

Prerequisite: None. Selected topics in political science.

#### 295 Internship (1-6)

Prerequisite: Junior standing and consent of instructor. Independent study involving work with an appropriate public or private agency. A maximum of six credit hours may be earned.

#### 390 Special Readings (1-10)

Prerequisite: Consent of instructor. Independent study through readings, reports, and conferences. May be repeated.

#### 395 Political Science Seminar (3)

Prerequisite: Senior or graduate standing. An overview of approaches in various subfields. Students will be familiarized with political science journals and bibliographic techniques. Seminar is highly recommended for students going on to graduate school.

## Group I: Public Law

#### 20 Foundations of Law: An Introduction to Legal Studies (3)

As a broad liberal-arts approach to the study of law, this course is designed to familiarize students with legal ideas, legal reasoning, and legal processes. It also provides comparative and historical perspectives on law that will help explain legal diversity and legal change. Finally, it offers opportunities to explore some of the persistent issues in law and legal theory: for example, issues about the sources of law, the responsibilities of the legal profession, or the relative merits of the adversary system.

#### 121 Civil Liberties (3)

Prerequisite: Political Science 11 or consent of instructor. Civil rights in the American constitutional context, emphasizing freedom of religion, freedom of expression, minority discrimination, loyalty, and rights of defendants. Course fulfills the state requirement.

#### 129 Women and the Law (3)

Prerequisite: None. Legal position of women in the United States, emphasizing constitutional law, criminal law, domestic relations, and fair employment practice laws.

#### 225 Jurisprudence (3)

Prerequisite: Political Science 11 or 12 or consent of instructor. Development of law and legal systems; comparison of methods and procedure in making and enforcing law in Roman and common law systems; consideration of fundamental legal concepts; contributions and influence of schools of legal thought in relation to law and government.

#### 227 Urban Law: Poverty and the Justice System (3)

Prerequisite: Political Science 11 or Administration of Justice 70 or equivalent or consent of instructor. Examination of administrative regulations and the civil law process as it affects the life of urban residents.

#### 320 Introduction to American Constitutional Law (3)

Prerequisite: Political Science 11, or 20, or consent of instructor. Study of leading American constitutional principles as they have evolved through important decisions of the United States Supreme Court. Course fulfills the state requirement.

#### 327 Urban Judicial Systems (3)

(Same as Administration of Justice 327.) Prerequisite: Political Science 11, Administration of Justice 101, or consent of instructor. The study of the nature and function of local judicial systems. Consideration of key participants (legislators, prosecutors, defense counsel, judges) and processes, (bail procedures, prosecutorial decision-making, adjudication, and sentencing behavior).

#### 328 The Federal Judicial System: Politics, Process and Behavior (3)

Prerequisite: Political Science 11, or 20, or consent of instructor. The study of the federal courts as a political system. Analysis of organization, procedures, and norms of the Supreme Court and lower federal courts. Consideration of judicial recruitment, attitudes, and decision making as well as the impacts and limitations of judicial policy making.

#### 329 Studies in Public Law (3)

Prerequisite: Political Science 11 or 20 or consent of instructor. Selected topics in public law. May be repeated.

# Political Science

## Group II: American Politics

### 130 State Politics (3)

Prerequisite: Political Science 11 or consent of instructor. An examination of contemporary state politics in the United States; social, economic, and political determinants of policies; federal-state-local relations; elections, interest groups and participation; executive, legislative, and judicial institutions and policies, and their impact. Course fulfills the state requirement.

### 131 Congressional Politics (3)

Prerequisite: Political Science 11 or consent of instructor. An examination of the Congress of the United States, its history and evolution, its contemporary politics, and its role in the national policy-making process. Topics include candidate recruitment, campaigns and elections, representation, committees, legislative leadership, roles and norms, voting alignments, lobbyists and interest groups, oversight of administration, and House-Senate comparisons. The role of Congress in foreign policy, economic policy, and social-welfare policy will be examined.

### 133 Politics and the Media (3)

Prerequisite: Political Science 11 or consent of instructor. An analysis of the role the media play in shaping American political life. The first part of the course examines the organizational structures, the economic and psychic incentives, and the social and professional norms that define how television and newspapers report news about public affairs. The second part then considers the nature of a mass-communications society by looking at how reality is defined, the susceptibility of mass publics to persuasion and propaganda, the peculiar form of media election campaigns, and the manner in which the media-link changes the basic character of a citizenry.

### 135 Introduction to Urban Politics (3)

Prerequisite: Political Science 11 or consent of instructor. Examination of structure and process of politics in the urban community, with emphasis on their relationships to community power structures. Course fulfills the state requirement.

### 218 Social Choice in Political Economic Systems (3)

(Same as Economics and Sociology 218.) Prerequisites: Two courses in economics, political science or sociology. A study of the mechanisms of social choice from the

standpoint of individual and political party maximization of personal objectives. This area draws on work done by sociologists, political scientists, and economists.

### 230 The American Presidency (3)

Prerequisite: Political Science 11 or consent of instructor. Study of the constitutional, political, legislative, and administrative roles played by the American chief executive in the development of public policy. Course fulfills the state requirement.

### 232 Ethnic and Racial Politics (3)

Prerequisite: Political Science 11 or consent of instructor. This course will focus on the political experiences of significant racial and ethnic minorities in the United States. Emphasis will be placed on the groups' political strengths, weaknesses, successes, failures in the present, and changes over time. Course fulfills the state requirement.

### 233 Introduction to Political Behavior (3)

Prerequisite: Political Science 11 or consent of instructor. A general introduction to political socialization, political opinion formation, and electoral behavior.

### 235 Political Parties (3)

Prerequisite: Political Science 11 or consent of instructor. Development, organization, functions, activities of major and minor political parties, pressure groups, and election administration, especially in the United States. Course fulfills the state requirement.

### 331 Legislative Processes (3)

Prerequisite: Political Science 11 or consent of instructor; Political Science 102 is strongly recommended. Congressional elections, constituent relations, policy making and leadership; relations between Congress and administrative and executive agencies, the committee system, seniority, and procedure. Congress as an element in the party system. Course fulfills the state requirement.

### 332 Studies in Political Behavior (3)

Prerequisite: Political Science 11 or consent of instructor. Selected topics in political behavior. May be repeated.

## Group III: Public Policy and Administration

### 140 Public Administration (3)

Prerequisite: Political Science 11 or consent of instructor. Survey of public administration, with reference to organization, financial administration, personnel management, and judicial control of the administrative process. Course fulfills the state requirement.

### 240 Bureaucratic Politics (3)

Prerequisite: Political Science 11 or consent of instructor. Examination of the policy-making process within public organizations and the forces influencing the making of bureaucratic policy. Study of the role of the bureaucracy as one of several "actors" in the larger policy process. Course fulfills the state requirement.

### 241 Politics of Business Regulation (3)

Prerequisite: Political Science 11 or consent of instructor. This course will examine the role of governmental decision-making processes in regulatory policy, including congressional politics, presidential initiatives, administrative rulemaking, and society-wide constraints. The impact of government regulation and alternative means for accomplishing regulatory goals (e.g., mandatory standards or incentive systems) will also be considered. Bureaucratic incentives and the role of the courts will be emphasized. Selected areas of regulation which may be covered include: equal employment policies, occupational health and safety policies, environmental policies, employment policies, and urban policies.

### 242 Introduction to Public Policy (3)

Prerequisite: Political Science 11 or consent of instructor. Study of differing approaches to understanding the public policy process. Course surveys the application of social science to public issues and problems.

### 244 Public Budgeting (3)

Prerequisite: Political Science 11 or consent of instructor. Examination of the techniques used in the public sector for preparing and administering financial controls.

## Political Science

### 245 Urban Administration (3)

Prerequisite: Political Science 11 or consent of instructor. Study of administrative machinery and practices of metropolitan government, how metropolitan areas organize themselves to provide services, how urban policies are made and implemented, how budgeting and personnel recruitment processes operate, and how these relate to urban policies. Course fulfills the state requirement.

### 246 The Politics of Poverty and Welfare (3)

Prerequisite: Political Science 11 or consent of instructor. An examination of the structure of income inequality in the U.S. and public policies designed to redistribute wealth and to treat poverty. The history of welfare programs, the growth of the welfare state, and attempts to cut social spending are closely examined.

### 340 Organizational Politics (3)

Prerequisite: Political Science 11, or 140, or or consent of instructor. Examination of public sector organizations and the range of factors affecting their operation. Specific areas of attention will include theories of organization structure and management, decision theory, organizational/environment interactions, interorganizational relations, and theories of organizational change and development.

### 342 Public Personnel Management (3)

Prerequisite: Political Science 11, or 140, or or consent of instructor. A study of personnel practices in the public sector, including recruitment, job development, labor relations, and administration of equal employment/affirmative action programs.

### 343 Studies in Policy Formation (3)

Prerequisite: Consent of instructor. Selected topics in policy formation. May be repeated.

### 346 Urban Planning and Politics (3)

Prerequisite: Political Science 11, or 140, or or consent of instructor. Examination of the political processes of urban areas as they relate to the planning of services and facilities. Course fulfills the state requirement.

### 348 Program Evaluation (3)

Prerequisite: Political Science 11, or 140, or or consent of instructor. Study of techniques and applications for evaluating the impact of public programs.

### 349 Studies in Public Administration (3)

Prerequisite: Political Science 11, or 140, or consent of instructor. Selected topics in public administration. May be repeated.

## Group IV: Comparative Politics

### 155 Asian Comparative Politics (3)

Study of the political systems of Asia including China, Japan, India and Southeast Asia. Course fulfills the non-Euro-American requirement.

### 251 Comparative Politics of Western Europe (3)

Prerequisite: Political Science 12 or consent of instructor. Introduction to the major political systems of Western Europe. The course will emphasize political culture, political parties, interest groups, and political behavior. It will also focus on political institutions and policy making. While individual countries will be examined separately, the course will also emphasize comparison between systems.

### 252 The Politics of Modernization (3)

Prerequisite: Political Science 12 or consent of instructor. Analysis of the dimensions and problems of modernization and the role of political systems, with primary emphasis on African nations. Course fulfills the non-Euro-American requirement.

### 253 Political Systems of South America (3)

Prerequisite: Political Science 12 or consent of instructor. The political systems, international problems, and socio-economic-cultural environments of the governmental processes of South America. Course fulfills the non-Euro-American requirement.

### 254 Political Systems of Mexico, Central America, and the Caribbean (3)

Prerequisite: Political Science 12 or consent of instructor. The political systems, international problems and socio-economic-cultural environments of the governmental processes in Mexico, Central America, and the Caribbean. Course fulfills the non-Euro-American requirement.

### 256 Soviet Political Systems (3)

Prerequisite: Political Science 12 or consent of instructor. Examination of government and politics in the Soviet Union dealing with such themes as the role of the party; recruitment and socialization of elites; the role of ideology and interest groups; the formulation of policy; and bureaucratization of social, economic, and cultural life.

### 351 Comparative Public Policy and Administration (3)

Prerequisite: Political Science 12 or consent of instructor. A comparative study of the characteristics of public administrators, their institutions and environments in Western democratic, developing nations, and communist political systems.

### 359 Studies in Comparative Politics (3)

Prerequisite: Political Science 12 or consent of instructor. Selected topics in comparative politics. May be repeated.

## Group V: Theory and Methodology

### 101 Theory and Policy (3)

A critical examination of the use of social science theory in public policy-making. A current issue (such as housing, national defense, environmental protection, or income security) will be used to demonstrate the requirements for adequate theory.

### 102 Research Methods in Political Science (3)

Prerequisite: Political Science 11 or 12. Methods of testing causal statements about politics, including research design and data measurement, collection, and analysis.

### 160 Contemporary Political Ideologies (3)

An introduction to the major political ideologies of the world today. Emphasis on communism, democracy, and nationalism.

### 165 American Political Thought (3)

History of political thought in the United States from colonial times to the present.

## Political Science

### 205 Introduction to Models in the Social Sciences (3)

(Same as Anthropology, Sociology and Interdisciplinary 205.) Prerequisite: Sociology 10 or Anthropology 11 or Political Science 11 or consent of instructor. The course will focus on explaining social and cultural behavior. Elementary models of decision making, exchange, and adaptation will be covered. Computer processing of data to test empirical hypotheses will be introduced.

### 261 Ancient and Medieval Political Thought (3)

Study of political thought from Plato to Machiavelli.

### 262 Modern Political Thought (3)

Study of political thought from Machiavelli to the present.

### 265 Recent Political Thought (3)

Study of current questions in political thought.

### 269 The Marxist Heritage (3)

(Same as Philosophy 269.) An interdisciplinary study of Marx and leading Marxists, designed to evaluate their influence on recent political, economic, and social thought and institutions.

### 304 Survey Research Practicum (3)

(Same as Economics and Sociology 304.) Prerequisites: Junior standing and consent of the instructor. The execution of a sample survey, including establishing study objectives, sampling, questionnaire construction, interviewing, coding, data analysis, and presentation of results.

### 368 Studies in Political Theory (3)

Prerequisite: Political Science 11 or 12 or consent of instructor. Selected topics in political theory. May be repeated.

## Group VI: International Relations

### 80 Global Issues (3)

A freshman- and sophomore-level course designed to introduce students to a range of global concerns, including population, hunger, trade, energy, and the environment. The worldwide implications of these and other problems will be considered, as well as their effects on local communities such as St. Louis.

### 180 World Politics (3)

Analysis of politics among nations, including such topics as: nationalism, power, imperialism and colonialism, revolution and war, arms control and disarmament, and peace and the regulation of conflict.

### 282 United States Foreign Policy (3)

Prerequisite: Political Science 11 or 12 or consent of instructor. Examination of the factors influencing the formation and the execution of United States foreign policy and of specific contemporary foreign policies and problems.

### 284 European International Relations (3)

Prerequisite: Political Science 11 or 12 or consent of instructor. European international relations since World War II. Emphasis upon developments from the Cold War to Detente, emphasizing such concepts as containment, Truman Doctrine, Marshall Plan, NATO, WTO, community building, force structures, and security.

### 285 International Institutions and Global Problem-Solving (3)

Prerequisite: Political Science 11 or 12 or consent of instructor. Introduction to the study of international organization. The course focuses on relationships between nation-states and "non-state" actors (global intergovernmental organizations such as the United Nations, regional organizations such as the European Economic Community, and nongovernmental organizations such as multinational corporations) in world politics and on the role of international institutions in such problem areas as economic development and stability, management of resources, and control of violence across national boundaries.

### 286 Studies in War and Peace (3)

Prerequisite: Political Science 11 or 12 or consent of instructor. Exploration, development, and testing of theories about the causes and consequences of war, peace, and conflict among nations. A broad range of literature on war and peace will be reviewed and applied to crisis situations in the international system.

### 288 African Politics (3)

Prerequisites: Political Science 11 or consent of instructor. An introduction to the nature of societies, governments, and international relations in Africa. The course deals with forms of governance on the continent, regional groupings of states, and persistent conflicts within and among states. Problems of economic underdevelopment, food supplies, health and population trends, and cultural change are analyzed, along with the role of outside major power intervention. Fulfills the non-Euro-American requirement.

### 289 Middle Eastern Politics (3)

Prerequisite: Political Science 11 or 12 or consent of instructor. Survey of political movements, governments, and international conflicts in the Middle East. Islam, nationalism, ideologies, and economic systems will be studied. The effects of oil and the military will also be considered. Course fulfills the non-Euro-American requirement.

### 381 Foreign Policy Decision-Making (3)

Prerequisite: Political Science 11 or 12 or consent of instructor. Empirical and experimental studies of foreign policy decision-making processes. Foreign policies of a number of countries will be compared.

### 385 International Law (3)

Prerequisite: Political Science 11 or 12 or consent of instructor. Study of the international legal system, including the content and operation of the laws of war and peace, how law is created and enforced with regard to the oceans and other parts of the globe, and the relationship between international law and international politics.

### 388 Studies in International Relations (3)

Prerequisite: Political Science 11 or 12 or consent of instructor. Selected topics in international relations. May be repeated.

# Political Science

## Graduate Courses

### 401 Introduction to Policy Research (3)

(Same as Public Policy Admin. 401.)  
Procedures for testing explanations, including research design, principles of measurement, probability sampling, methods of data collection, and techniques for analyzing data.

### 405 Directed Readings in Research Methods (1-10)

Independent study through readings, reports, research projects, and conferences.

### 410 Introduction to Policy Analysis (3)

(Same as Public Policy Admin. 410.)  
Systematic development of a critical/analytic base for dealing with public policy.

### 411 Seminar in Policy Analysis (3)

Prerequisite: Political Science 410.  
Evaluation and criticism of contemporary public policies in selected areas.

### 414 Topics in Public Policy Analysis (3)

Intensive analysis of a specific public policy area such as housing, budgeting, integration, planning, metropolitan reorganization. Course may be repeated.

### 419 Cases in Public Policy Analysis (3)

(Same as Public Policy Admin. 419.)  
Intensive analysis of several public policy cases. Cases will be problem-solving exercises in areas such as personnel management, program financing, budget preparation, and planning.

### 420 Proseminar in Public Law (3)

Study of judicial systems and processes (judges, courts, litigants, and juries) and evaluation of legal policies (compliance, impact, and deterrence).

### 421 Seminar in Public Law (3)

Research problems and designs, models and approaches to the study of public law.

### 425 Directed Readings and Research in Public Law (1-10)

Independent study through readings, reports, research projects, and conferences.

### 430 Proseminar in American Politics (3)

Study of individual and group political behavior, including socialization, participation, consensus formation, representation, legislative and judicial behavior.

### 431 Seminar in American Politics (3)

Research problems and design in American political process and behavior.

### 435 Directed Readings and Research in American Politics (1-10)

Independent study through readings, reports, research projects, and conferences.

### 440 Proseminar in Public Policy Administration (3)

(Same as Public Policy Admin. 440.)  
Examination of major approaches to analyzing public policies and their administration. Emphasis is on the effects of administrative organization and procedures on policy decisions and their impacts. Specific topics may include administrative accountability, inter-governmental relations, public-private interaction, implementation processes, bureaucratic expertise, the legal environment of public policy administration, and public service and merit issues.

### 441 Seminar in Public Administration (3)

Research problems and design in public administration.

### 445 Directed Readings and Research in Public Administration (1-10)

Independent study through readings, reports, research projects, and conferences.

### 450 Proseminar in Comparative Politics (3)

Classification and typology of political systems; structural-functional analysis; political culture, ideology, affiliation and participation; decision-making processes; political roles; organization of authority.

### 451 Seminar in Comparative Politics (3)

Research problems and design in comparative politics.

### 455 Directed Readings and Research in Comparative Politics (1-10)

Independent study through readings, reports, research projects, and conferences.

### 460 Proseminar in Political Theory (3)

Study of concepts and problems in normative political theory.

### 461 Seminar in Political Theory (3)

Research problems and design in political theory.

### 465 Directed Readings and Research in Political Theory (1-10)

Independent study through readings, reports, research projects, and conferences.

### 470 Proseminar in Urban Politics (3)

Examination of the relationships among the social, economic, and political systems of urban areas. Urban political structure, patterns of influence, political participation, and communication and political change. Special attention to problems of access to and control of urban political systems.

### 471 Seminar in Urban Politics (3)

Research problems and design in urban and regional politics.

### 475 Directed Readings and Research in Urban Politics (1-10)

Independent study through readings, reports, and conferences.

### 480 Proseminar in International Relations (3)

Examination of various approaches to the study of international politics and foreign policy, focusing on studies of conflict, decision making, international political economy, and related topics. Included are realist, idealist, and Marxist perspectives.

### 481 Seminar in International Relations (3)

Research problems and design in international politics.

### 485 Directed Readings and Research in International Relations (1-10)

Independent study through readings, reports, research projects, and conferences.

### 494 Thesis Research (1-10)

Arranged.

### 495 Internship (1-6)

(Same as Public Policy Admin. 495.)  
Independent study involving work with an appropriate public or private agency.

# Psychology

The following courses fulfill the Social Sciences [SS] breadth of study requirements: 3, 101, 150, 160, 161, 162, 200, 210, 211, 212, 213, 215, 216, 219, 220, 222, 225, 230, 232, 235, 240, 245, 256, 268, 269, 270, 271, 272, 280, 295, 301, 305, 306, 310, 314, 320, 340, 346, 349, 354, 355, 356, 357, 360, 361, 365, 370, 373, 390, 403, 404, 405, 406, 408, 409, 411, 412, 413, 414, 415, 416, 421, 422, 423, 424, 425, 426, 427, 428, 434, 435, 436, 437, 441, 442, 445, 446, 447, 450, 451, 461, 462, 464, 465, 466, 467, 468, 469, 470, 471, 472, 477, 480, 481, 482, 483, 484, 491, 492.

The following course fulfills the Natural Science and Mathematics [SM] breadth of study requirements: 140.

## 09 Seminar in Career Choice and Life Planning (1)

This course covers the major theories regarding career selection and provides information and skill training necessary for making career decisions. NO CREDIT TOWARD ANY DEGREE.

## 3 General Psychology (3)

A broad introductory survey of the general principles of human behavior.

## 101 Psychological Statistics (4)

Prerequisites: Psychology 3 and Mathematics 30, or equivalents. (With laboratory.) Statistical methods in psychological measurement and analysis of psychological data. Frequency distribution analysis, sampling, test of significance, and correlation methods.

## 140 Female Sexuality (3)

(Same as Biology 140.) Prerequisites: Psychology 3 and Biology 1 or Biology 10. This course will present a biological-psychological orientation toward the study of female sexuality. Topics include: sexual anatomy, hormonal influences on sexual behavior, psychosexual development, sexual attraction and relationships, sexual response and dysfunction, menstruation, pregnancy, menopause, reproductive health issues, and social issues in sexuality.

## 150 The Psychology of Individual Differences (3)

Prerequisite: Psychology 3. Analysis of major dimensions of individual differences in behavior and the roles of genetic, constitutional, and experiential factors in the development of psychological differences. While emphasis is placed on human behavior, relevant information from infrahuman species will be considered.

## 160 Social Psychology (3)

(Same as Sociology 160.) Prerequisite: Psychology 3 or Sociology 10. Study of interaction between individuals and their social environment. Examination of basic principles, concepts, and methods.

## 161 Helping Relationships (3)

Prerequisites: Psychology 3 and consent of instructor. Exploration of the basic elements contributing to effective helping skills. Course assignments include keeping a journal, writing papers, and a final exam. Readings, discussion, and guided experiences will be used to instill active listening and communication skills. Ethics of helping relationships will be emphasized.

## 162 Applied Skills (3)

Prerequisites: Psychology 161 and consent of instructor. Builds upon Psychology 161. Provides advanced readings and supervised experiences in helping relationships. Course assignments include readings, discussion, preparation of tapes for supervision, and a term paper. Designed for students interested in learning more about the psychological functioning of themselves and others. The course is also focused on increasing awareness of the dynamics of helping relationships.

## 200 Drugs and Behavior (3)

Prerequisites: Psychology 3 and three other hours in psychology or biology. The course is designed to provide an introduction to the relationship between drugs and behavior. The emphasis will be on psychoactive drugs, alcohol, nicotine, as well as drug-like substances produced naturally in the body.

## 210 Psychology of Nonverbal Behavior (3)

Prerequisite: Psychology 160 or Sociology 160. Psychological perspective on the role of nonverbal behavior in social settings. Primary concerns of the course will include an analysis of (a) functions of nonverbal behavior (e.g., communication, intimacy exchange, control), (b) factors influencing nonverbal expression (e.g., culture, personality, relationships), and (c) various theoretical views on nonverbal behavior and communication. Applications to various problems and settings in everyday life will also be pursued.

## 211 Physiological Psychology (3)

Prerequisites: Psychology 3 or equivalent and Biology 1. A survey of the major areas of physiological psychology with an emphasis on their historical development.

## 212 Principles of Learning (3)

Prerequisite: Psychology 3. A consideration of critical findings in learning.

## 213 Principles of Perception (3)

Prerequisite: Psychology 3. Sensory and perceptual processes in human experience and behavior.

## 215 The Social Behavior of Animals (3)

Prerequisites: Two semesters of psychology and/or biology. An introduction to the social organization of a variety of different animal forms. The emphasis will be on nonhuman primates and other mammals through the social behavior of species of insects, fish, and birds. Aggression, sexual behavior, affiliation, maternal reactions, and the ontogeny of behavior are the primary areas to be studied. The orientation will be from both an ethologist's and animal psychologist's perspective.

## 216 Personality Theory (3)

Prerequisite: Nine hours of psychology. Structural and dynamic aspects of the human personality considered in the context of selected theoretical systems.

## 219 Research Methods (3)

(With laboratory.) Prerequisite: Psychology 101. Research methods and analysis techniques used in psychological inquiry. Special emphasis placed on the logic of research design. Includes laboratory study of, and analysis of, selected methods.

## 220 Psychology of Male-Female Relationships (3)

Prerequisites: Junior standing and Psychology 3. The course is an introduction to the biological and social influences on the interactions of males and females. The findings of biopsychologists and social psychologists from both laboratory and field settings will be reviewed. Topics will include the emotions of love and jealousy, separation, physical attraction, sex roles, and hormonal animal social groups.

## 222 Group Processes in Organizations (3)

Prerequisite: Psychology 3 or Business Administration 210. Topics include theory, research, and practice in coordination, conflict, and decision-making in groups and organizations, as well as the role of influence, power, and leadership effectiveness in understanding interpersonal and group relations.

# Psychology

## 225 Behavior Modification (3)

Prerequisite: Nine hours of psychology, or consent of instructor. Methods, applications, and ethics of the use of behavior theory (primarily Skinner's operant conditioning) to the control of human behavior in a variety of settings including mental institutions, grade schools, universities, individual treatment, and communal living.

## 230 Psychology of Women (3)

Prerequisite: Psychology 3. Evaluation of psychological theories and research regarding physiological, cognitive, and personality sex differences, female problems in adjustment, and clinical interventions for women.

## 232 Psychology of Victims (3)

Prerequisite: Psychology 3. A review of the effects of crime, violence, natural disasters and other traumas on psychological functioning. Prevention and therapy techniques will also be discussed.

## 235 Community Psychology (3)

Prerequisite: Psychology 3. The analysis of psychological problems in terms of the social and situational forces that produce them. Community psychology analyzes the situational problems in living. Epidemiology of mental illness; group, family, and crisis intervention; mental health-care delivery; program evaluation and demonstration project research; role of psychologist as consultant and change agent; and utilization of non-professional manpower.

## 240 Play: Psychological and Anthropological Perspectives (3)

(Same as Anthropology 240.) Prerequisite: Psychology 3 or Anthropology 11 or consent of instructor. This course will examine play from psychological and anthropological perspectives in an effort to provide an understanding of the importance of play for humans. The questions which will be the focus of the course include: why people play; the adaptive benefits derived from play; the cultural functions of play, and how play is expressed in different cultures.

## 245 Abnormal Psychology (3)

Prerequisite: Psychology 3. Introduction to major symptom complexes, theories of etiology, and treatment of behavior disorders.

## 256 Environmental Psychology (3)

Prerequisite: Psychology or Sociology 160. Analysis of environmental influences on behavior and man's influence, in turn, on the environment. Topics will include a consideration of both individual processes relating to the environment (such as the perception, evaluation, and adaption to the environment) and social processes relating to the environment (such as privacy, territoriality, and crowding).

## 268 Human Growth and Behavior (3)

Prerequisite: Psychology 3. A survey of development over the life span, with an emphasis on the developmental tasks and hazards of each period.

## 269 Infancy (3)

Prerequisite: Psychology 3. Principles of infant development. Discussion of bonding; infant capacities and state; perceptual and motor development; environmental and childrearing factors influencing the rate of development in infants.

## 270 Child Psychology (3)

Prerequisite: Psychology 3. Principles of biological, behavioral, and personality development from conception to puberty.

## 271 Adolescent Psychology (3)

Prerequisite: Psychology 3. Principles of biological, behavioral, and personality development from puberty to maturity.

## 272 Adult Development and Aging (3)

Prerequisite: Psychology 3. Personality, social, and physiological development from the onset of early adulthood through maturity and old age.

## 280 The Psychology of Death and Dying (3)

Prerequisite: Psychology 3. This course will address the psychological aspects of death and dying for both adults and children. The psychological reactions of terminally ill patients and their families will also be examined, and therapeutic interventions will be discussed.

## 295 Selected Projects in Field Placement (3)

Prerequisites: Junior standing, fifteen hours of psychology, and departmental approval. Selected options in field work placement experiences in various local agencies with training and supervision by faculty. May be repeated once for credit.

## 301 Advanced Statistics and Experimental Design (3)

Prerequisites: Twelve hours of psychology, including Psychology 101. Statistical methods which are particularly useful in psychological research and the design of experiments appropriate to these methods.

## 305 Cognitive Development (3)

Prerequisites: Junior standing and Psychology 270, or consent of instructor. Data and theory concerned with development of perceptual, language, and symbolic abilities in infants and young children, including discussion of deprivation and enrichment of cognitive development.

## 306 Social Development (3)

Prerequisites: Junior standing and Psychology 270, or consent of instructor. Data and theory concerned with development of social behavior in infants and young children. Discussion will include the formation and interruption of attachment, the effects of social isolation, sex-role development, identification, and development of moral judgments in children.

## 310 Motivation Theory (3)

Prerequisites: Junior standing and twelve hours of psychology, or consent of instructor. Survey of current theoretical material in the area of motivation.

## 314 Physiological Psychology (3)

(With laboratory.) Prerequisites: Psychology 219 and Biology 1 and 3, or consent of instructor. The biological and physiological correlates of behavior. Special emphasis placed on the neural and endocrine systems.

## 318 Industrial and Organizational Psychology (3)

Prerequisites: Psychology 101 or Business Administration 151 and 210. This course introduces the student to psychological research and theories pertaining to human behavior in the work setting. Topics covered include: selection, performance appraisal, training, leadership, motivation, job satisfaction, and organizational design.

# Psychology

## 320 Personnel Assessment (3)

Prerequisite: Psychology 318 or Business Administration 309. This course will provide an in-depth study of several topics in the area of personnel psychology. Consideration will be given to issues such as assessment centers, employment interviewing, personnel appraisal, employment test validity, and legal issues relevant to personnel assessment.

## 340 Clinical Problems of Childhood (3)

Prerequisites: A total of twelve hours of psychology including Psychology 3 and Psychology 270. This course will address the clinical disorders and difficulties of children and the treatment of these disorders. Topics that will be addressed include autism, childhood schizophrenia, behavior disorders, drug abuse, euresis, encopresis, and childhood compulsive and phobic reactions. Treatments designed for specific use with children, including behavioral, drug, and community mental health approaches will be addressed.

## 346 Introduction to Clinical Psychology (3)

Prerequisites: Nine hours of psychology, including Psychology 216 or 245. A conceptual framework for research, description, and understanding of clinical phenomena. Assessment, interviewing, the clinical use of tests and psychological approaches to treatment.

## 349 Human Learning and Memory (3)

Prerequisites: Nine hours of psychology or consent of instructor. A survey of contemporary research, theory, and facts pertaining to the acquisition, retention, and forgetting of information.

## 354 Experimental Personality and Social Psychology (3)

(With laboratory.) Prerequisite: Psychology 219. Social psychological processes, both inside and outside of the laboratory, including an emphasis on experimental methods in research.

## 355 Psychology of Perception (3)

(With laboratory.) Prerequisite: Psychology 219. Analysis of major sensory and perceptual processes.

## 356 Thinking and Cognition (3)

Prerequisites: Nine hours of psychology or consent of instructor. An introduction to modern analytical approaches to the psychology of thinking: problem solving, reasoning, categorizing, judgement, attention, and consciousness. Particular attention is paid to the mental structures and operations involved in the encoding, abstraction, representation, transformation, and retrieval of knowledge.

## 357 Psychology of Learning (3)

(With laboratory.) Prerequisite: Psychology 219. Major theoretical positions and experimental conditions of learning. Includes laboratory study of selected problems.

## 360 Attitude Structure and Change (3)

Prerequisites: Psychology 101 or equivalent and Psychology 160 or Sociology 160. Theories of attitude structure and attitude change, measurement, and current research.

## 361 History and Systems of Psychology (3)

Prerequisites: At least fifteen hours of psychology. The course should be taken no sooner than the winter term of the junior year. Historical antecedents of contemporary psychology, including a survey of systems and schools of psychology.

## 365 Psychological Tests and Measurements (3)

(With laboratory.) Prerequisites: Psychology 101 and Psychology 219 or consent of instructor. Survey of psychological testing and principles of test construction and evaluation. Laboratory experience in construction, administration, and interpretation of selected tests.

## 370 Human Factors (3)

Prerequisites: Nine hours of Psychology. This course illustrates how experimental psychology can be applied to the work place. Topics include display-control designs, human perceptual limitations, human information processing, environmental stress, and design of the work place. The person-machine interface is the focus of this course.

## 373 Aging in Contemporary Society (3)

Prerequisite: Twelve hours of psychology, sociology or social work. Presentation of data and theory concerning the process of aging. Discussion will include analysis of the social framework within which aging takes place, as well as physical, intellectual, social, and family changes that take place as a function of age.

## 390 Directed Studies (1-5)

Prerequisite: Consent of instructor. Directed reading and research. May be repeated for a maximum total of ten hours.

## 392 Selected Topics in Psychology (1-3)

Prerequisites: Twelve hours of psychology and consent of instructor. A seminar of selected issues and methods in psychology. May be repeated once for credit.

## 403 Seminar: Psychopathology (3)

A critical examination of the clinical-experimental literature on personality disorders.

## 404 Seminar: Introduction to Clinical Assessment I (3)

Fundamentals of clinical assessment with emphasis on interviewing and the measurement of cognitive functioning.

## 405 Seminar: Personality (3)

Current theories and research in personality with emphasis on normal behavior.

## 406 Seminar: Introduction to Clinical Assessment II (3)

Theory and techniques of personality assessment with emphasis on projective personality tests.

## 407 Seminar: Psychopharmacology (3)

An examination of the effects of drugs on the brain and on behavior. Primary emphasis is on those drugs used in the treatment of affective disorders, schizophrenia, and anxiety.

## 408 Proseminar in General Psychology (3)

A survey of the major areas of general psychology.

## 409 Proseminar in Experimental Psychology (3)

A survey of the major topics in experimental psychology.

## 410 Current Issues in Clinical Psychology (3)

A review of current professional issues facing clinical psychologists, including standards and models of practice, ethics, legislative affairs, emerging job markets, and national trends in research and practice.

## 411 Seminar: Learning and Cognitive Processes (3)

Evolution of contemporary approaches to learning, both animal and human, and the higher cognitive processes.



# Psychology

## 412 Seminar: Social Psychology (3)

A review of key areas in contemporary theory and research in social psychology.

## 413 Seminar: Developmental Psychology (3)

Analysis of theories and empirical findings of human and infrahuman studies as related to development.

## 414 Seminar: Perception (3)

Sensory processes, psychophysics, and theories of perception.

## 415 Seminar: Physiological and Comparative Psychology (3)

Analysis and review of specific physiological and behavioral processes common to a wide variety of animals.

## 416 Seminar: Animal Behavior and Genetics (3)

Analysis of the major theoretical positions and empirical findings concerning vertebrate and invertebrate forms.

## 417 Proseminar in Human Factors (3)

Prerequisite: A research methods course, e.g. Psychology 219 or permission of instructor. First portion of course reviews human capabilities and limitations relevant to human-machine systems. Balance of course examines in depth several applications of experimental psychology to the work place; e.g., environmental stressors, control-display compatibility, information overloading, and display codes.

## 421 Quantitative Methods I (4)

(With laboratory.) A comprehensive study of the use of analysis of variance procedures in analyzing data. Topics include completely randomized designs, randomized blocks, factorial designs, and the analysis of covariance.

## 422 Quantitative Methods II (4)

(With laboratory.) A comprehensive study of the use of multivariate statistics in data analysis. Topics include multiple regression, canonical correlation, factor analysis, discriminant analysis, and the multivariate analysis of variance.

## 423 Psychological Scaling (3)

Theory of measurement and the principal methods of psychological scaling.

## 424 Factor Analysis (3)

Principal factor analytic methods and multivariate procedures.

## 425 Mathematical Models (3)

Decision theory and mathematical models used in the behavioral sciences.

## 426 Computer Programming (3)

Fundamentals of digital computer programming and computer applications in the behavioral sciences.

## 427 Quantitative Measurement and Evaluation of Psychology I (3)

Use of quantitative methods in psychology.

## 428 Quantitative Measurement and Evaluation of Psychology II (3)

A continuation of Psychology 427.

## 429 Psychometric Theory (3)

Prerequisite: Consent of instructor. A consideration of test reliability, validity, and construction from the standpoint of modern psychometric theory and a survey of unidimensional and multidimensional scaling procedures.

## 430 Practicum: Introduction to Clinical Assessment I (2)

Supervised experience in interviewing and the assessment of cognitive functioning.

## 431 Practicum: Introduction to Clinical Assessment II (2)

Prerequisite: Psychology 430. Supervised experience in interviewing and the assessment of cognitive and personality functioning.

## 432 Clinical Practice I (3)

Prerequisite: Consent of instructor. Placement in an affiliated institution, agency or organization under supervision of staff.

## 433 Clinical Practice II (3)

Prerequisites: Psychology 432 and consent of adviser. Placement in an affiliated institution, agency or organization under supervision of staff.

## 434 Seminar: Introduction to Psychotherapy I (3)

Study of the theory, techniques, and research data on various types of psychotherapy.

## 435 Seminar: Introduction to Psychotherapy II (3)

Continuation of Psychology 434.

## 436 Practicum: Introduction to Psychotherapy I (3)

Supervised experience in clinical practice.

## 437 Practicum: Introduction to Psychotherapy II (3)

Continuation of Psychology 436.

## 438 Clinical Team (1-3)

Prerequisite: Psychology 437. Advanced training in clinical methods. May be repeated for credit.

## 441 Seminar: Behavior Therapy I (3)

A course on the applications of learning principles to clinical populations. Emphasis is on a critical review of research on behavioral assessment and therapy procedures.

## 442 Seminar: Behavior Therapy II (3)

Prerequisite: Psychology 441. The practice of behavior therapy. Students will learn to implement behavioral assessment and therapy strategies in clinical settings.

## 445 Seminar: Community Psychology (2)

Critical examination of principles and application of preventive intervention in social systems and community mental-health programming.

## 446 Principles of Group Psychotherapy (3)

Prerequisite: Psychology 432 or 434. Investigation of the models and principles of group intervention techniques.

## 447 Topics in Social Psychology (3)

Focused and indepth analysis of contemporary problems in social psychology. One or more specific topic areas will be covered in a given semester. May be taken twice for credit.

## 450 Clinical Internship I (1)

Prerequisites: Consent of adviser. Supervised training in an affiliated agency or organization following completion of two years of course work.

# Psychology

## 451 Clinical Internship II (1)

Prerequisites: Psychology 450 and consent of adviser. Supervised training in an affiliated agency or organization following completion of two years of course work.

## 452 Survey of Industrial/Organizational Psychology (3)

A review of theoretical, practical, and legal issues faced by personnel specialists. Topics covered include personnel selection and testing, performance appraisal and criteria development, leadership, motivation, job design, and job satisfaction.

## 453 Compensation and Applied Motivational Theory (3)

A review of compensation theory, compensation programs, job evaluation, the Equal Pay Act and comparable worth, applied motivational theory and the use of incentive systems for relating pay to individual and organizational performance.

## 454 Seminar: Personnel Psychology (3)

An analysis of theories and research in personnel and industrial psychology. Topics include testing, assessment centers, performance appraisal, and interviewing.

## 455 Seminar: Organizational Psychology (3)

An analysis of theories and research in organizational psychology. Topics include theories of motivation, leadership, job design, group process decision making, organizational effectiveness, and the relation between organizations and their environment.

## 456 Seminar: Employment Interviewing (3)

A survey of the theory, research, and technology of employment interviewing. Topics include selection interviewing, and job analysis interviewing.

## 457 Seminar: Special Topics in Industrial Psychology (3)

A seminar of selected issues and methods in personnel psychology.

## 458 Seminar: Special Topics in Organizational Psychology (3)

A seminar of selected issues and methods in organizational psychology.

## 459 Practicum in Industrial/Organizational Psychology (1-4)

Supervised experience in personnel or human resource management

## 461 Seminar: Learning (3)

A critical examination of contemporary problems in learning.

## 462 Seminar: Motivation (3)

A critical examination of contemporary problems in motivation.

## 464 Seminar: Perception (3)

A critical examination of contemporary problems in perception.

## 465 Seminar: Physiological Psychology (3)

A critical examination of contemporary problems in physiological psychology.

## 466 Seminar: Developmental Psychology (3)

A critical examination of contemporary problems in developmental psychology.

## 467 Seminar: Conceptual Systems (3)

A critical examination of the evolution of contemporary theory in psychology.

## 468 Seminar: Cognitive Processes (3)

A critical examination of contemporary problems in cognitive processes.

## 469 Seminar: Animal Behavior (3)

A critical examination of contemporary problems in animal behavior.

## 470 Seminar: Behavior Genetics (2)

A critical examination of contemporary problems in behavior genetics.

## 471 Seminar: Comparative Psychology (3)

A critical examination of contemporary problems in comparative psychology.

## 472 Special Topics in Psychology (3)

A seminar of selected issues and methods in psychology.

## 474 Research Designs for Field Settings (1)

Prerequisites: None. The course provides information regarding the design and execution of research in applied settings (e.g., industry and human service agencies). Topics cover internal external, statistical conclusion, and external validity.

## 475 Introduction to Evaluation Research Methods (3)

(Same as Sociology 475 and Public Policy Admin. 475.) Prerequisite: At least one course in research design and statistics (e.g., Sociology 130 or Psychology 219). A comparative study of research strategies with regard to data sources, data collection, and modes of analysis that are appropriate for program evaluation research. Attention is given to observational, survey, and quasi-experimental methodologies.

## 477 Seminar in Clinical Child Psychology (3)

Introduction to principles, theory, and methods of study in the field of clinical child psychology.

## 478 Directed Research in Industrial/Organizational Psychology (1-4)

Independent study of an issue in industrial/organizational psychology through the application of research techniques.

## 479 Directed Readings in Industrial/Organizational Psychology (1-4)

Independent literature review of a topic in industrial/organizational psychology.

## 480 Research Methods in Clinical Psychology (3)

Prerequisite: Psychology 421 or equivalent. An overview of research methods that are appropriate for clinical and other non-laboratory settings.

## 481 Principles of Scientific Inquiry (3)

Problems in the logic of inquiry and understanding in science.

## 482 Ethics for Psychologists (1)

A study of ethical standards as they relate to teaching, research and professional practice.

## 483 Directed Research (1-10)

## 484 Directed Readings (1-10)

## 485 Research Team (1)

Group supervision of advanced research leading to the specialty examination and dissertation proposal.

## 491 M.A. Thesis Research (1-10)

## 492 Ph.D. Thesis Research (1-10)

## Social Work

The following courses fulfill the Social Sciences [SS] breadth of study requirements: 100, 150, 210, 275, 280, 285, 290, 300, 305, 310, 316, 350, 390.

### 80 Community Resources in the Field of Aging (1)

Prerequisite: Permission of instructor. This course will provide skills to understand community organizations and practical aspects of locating resources useful in developing programs in agencies. Community organization topics will be emphasized and special attention will be given to the development of working relationships. The course will provide practical information concerning St. Louis metropolitan services for the aged.

### 100 Introduction to the Social Services (3)

Prerequisite: Sociology 10 or Psychology 3. Examination of the network of social programs and services presently operating in modern urban communities and the various roles and functions performed by the helping professions. Students will be introduced to basic values, skills, and training involved in a helping relationship, as well as the characteristics of both clients seeking help and of professionals and paraprofessionals engaged in the helping process.

### 150 Social Welfare as a Social Institution (4)

Prerequisite: Social Work 100 or consent of instructor. A study of the: 1) development of social welfare services and the philosophy underlying the present practices and systems, 2) present social welfare programs with particular emphasis given to public income-maintenance provisions, 3) special welfare needs of the black, elderly, women, Indian and Hispanic Americans, and 4) the development of social work as a profession. This course may be taken by non-social work majors.

### 151 Social Welfare as a Social Institution Laboratory (1)

Prerequisites: Social Work major; simultaneous with Social Work 150. All Social Work majors must take this course as part of Social Work 150. The lab session will be used for field trips to social agencies. This course is required by all Social Work majors and is taken concurrently with Social Work 150.

### 210 Interventive Strategies in Social Work Practice I (3)

Prerequisites: Social Work 150, Sociology or Psychology 160, or permission of instructor. A presentation of basic knowledge, skills, and theory used for entry-level professional practice, such as problem assessment, interviewing skills, crisis intervention, and referral procedures. The course objectives will also be to teach students how to help clients negotiate systems effectively, use resources, services, and opportunities.

### 265 Human Sexuality (3)

Prerequisite: Social Work 280, Biology 110, or consent of instructor. This course will provide knowledge about physical, psycho-physiological, and legal aspects of human sexuality. The range of human sexual behavior and sexual dysfunctions will be discussed. This course will also help students learn how to help clients recognize and express their concerns in sexual matters, recognize limits of their own intervention skills and make appropriate referrals.

### 275 Stress and Stress Management (3)

Prerequisite: Social Work 280 or Psychology 268. This course will explore the causes of stress, with special emphasis given to stressors on the job; linkage between stress and mental and physical disorders; and stress management techniques such as cognitive restructuring, environmental change, progressive relaxation and biofeedback.

### 280 Human Behavior in the Social Environment (3)

Prerequisite: Social Work 150 or permission of instructor. This course will focus on the normative stages in the life span, specifically how human development is affected by the physical environment and social status characteristics. Empirical information and theoretical views on human development will be included. Human development will be viewed as a complex interaction of individual developmental stages with family, social, and community systems.

### 285 Social Issues and Social Policy Development (3)

Prerequisites: Social Work 150 and Political Science 11 and Economics 40. The identification of issues concerning governmental provisions to meet contemporary social needs, with analysis of the principles and values underlying alternative solutions. A study of the processes by which citizen opinions and public policies evolve and are implemented in areas such as income maintenance, crime and delinquency, employment, family and child welfare, and public mental health.

### 290 Selected Topics in Social Work Practice (3)

Prerequisite: Social Work 210 or 235 or consent of instructor. A variable-credit course examining special topics in social work practice. Relative theories, strategies, and skills will be presented for topics selected. Course may be taken more than once for credit as different topics are offered.

### 300 Interventive Strategies in Social Work Practice II (3)

Prerequisites: Social Work 210 and 285. This course continues the presentation of basic knowledge and practice skills for entry-level professional practice begun in Social Work 210. It builds on the generalized helping model, incorporating specialized skills for working with specific groups of clients (e.g., children, aged, mentally ill, and physically handicapped). Ideally, Social Work 300 should be taken concurrently with the practicum (Social Work 320) so that examples from practice will help link theory and practice.

## Social Work

### **305 Interventive Strategies in Social Work Practice III (3)**

Prerequisite: Social Work 300. Continuation of basic practice skills with emphasis given to practice in small groups and analysis and intervention at the organizational and community levels. Includes assessment of available services, organization of client groups, efforts to modify resources for a client group unable to intervene effectively on their own behalf. Also emphasis on helping the practitioner evaluate the impact of intervention. Ideally, Social Work 305 should be taken concurrently with the practicum (Social Work 321) so that examples from practice can be used to help link theory and practice.

### **310 Abused and Neglected Children and Their Families (3)**

Prerequisite: Social Work 280 or consent of instructor. This course will focus on the major concepts necessary for understanding abused and neglected children and their families. Emphasis will be placed on:

1) defining the problem, including societal stresses which contribute to the abuse and neglect; 2) exploring existing practice methods; and 3) becoming familiar with treatment programs currently available.

### **312 Women's Social Issues (3)**

Prerequisite: Social Work 280. This course will help students become more sensitive to the social and welfare concerns of women. The discussions will include work and pension concerns, welfare benefits, family responsibilities (in the new dual career family), family violence, and special health and mental health service needs. Emphasis will be placed on integrating a knowledge base of women's needs with professional social work practice.

### **316 Clinical Gerontology (3)**

Prerequisite: Social Work 280 or Psychology 268. This course includes: 1) an examination of the social, economic, health, and psychological problems specific to an older adult population; 2) consideration of special needs of the frail elderly, to include problems in long-term care; and 3) the special practice skills (individual, group) needed for intervention with older adults.

### **320 Social Work Practicum in Supervised Field Experience (6)**

Prerequisites: Social Work 210 (Social Work 300 must be taken concurrently), and consent of instructor. This course provides students practice experience in social service agencies. Students work at the agencies approximately 20 hours per week. The purpose of this experience is to familiarize students with agency operations. Selection of the agency is based on student education needs.

### **321 Social Work Practicum in Supervised Field Experience (6)**

Prerequisites: Social Work 210, 300, 320, and consent of instructor. Should be taken concurrently with 305. This is a continuation of agency practice experience. Classroom discussions emphasize administration issues and community organization practice issues. The student may continue his/her practice experience at the same agency as 320 or change agencies with the consent of the instructor.

### **350 Special Study (1-10)**

Prerequisite: Consent of instructor. Independent study through advanced readings in method and philosophy on a topic of particular interest, or field research in an agency.

### **390 Seminar in Social Work Issues (1-3)**

Prerequisite: Consent of instructor. A variable-credit course examining current and future considerations in designing and implementing social work service and delivery arrangements. Issues will be selected according to interests of the class. Course may be taken more than once for credit as different topics are offered.

### **420 Medical Social Work (3)**

Prerequisite: Consent of instructor or graduate standing (with Bachelor of Social Work degree). This course is for new health care professionals presently at work in health care settings or for upper level undergraduate students interested in medical social work. The course will include: major changes in health care legislation, advances in medical technology (those aspects important to the medical social worker), an overview of the organization of the health care system, and social work roles and tasks in health care settings.

# Sociology

The following courses fulfill the Social Sciences [SS] breadth of study requirements: 10, 30, 40, 75, 90, 99, 100, 102, 105, 106, 110, 120, 130, 131, 160, 175, 180, 200, 202, 205, 214, 218, 224, 234, 238, 240, 241, 256, 260, 264, 268, 270, 278, 286, 290a, 290b, 290c, 298, 304, 310, 312, 314, 316, 326, 328, 330, 336, 342, 344, 346, 350, 352, 354, 360, 361, 370, 377, 378, 380, 394, 420, 422, 424, 432, 434, 440, 450, 460, 462, 466, 468, 470, 475, 480, 490, 492.

## 10 Introduction to Sociology (3)

An introduction to sociological approaches to human behavior including types of social organizations, patterns of social interaction, and social influences on individual conduct.

## 30 Interpretation of Social Data (3)

Prerequisite: Sociology 10. An introduction to the understanding of sociological research. Emphasis will be placed on how research is conducted and on how to read and interpret data analysis. This will be done in a non-technical fashion. Sociology majors cannot receive sociology credit for this course.

## 40 Social Problems (3)

Prerequisite: Sociology 10 or consent of instructor. Conditions defined by society as social problems, as well as potential solutions, are examined from various sociological perspectives. Emphasis is given to problem issues prevalent in metropolitan settings. Analyses focus on victims and beneficiaries of both problem conditions and alternative solutions.

## 75 Crime and Punishment (3)

(Same as Administration of Justice and Interdisciplinary 75.) An introduction to sociological and psychological explanations of crime and punishment. An examination of private and governmental responses to the threats of crime and delinquent behavior.

## 90 Freshman Seminar (3)

Prerequisites: Freshman standing and consent of instructor. Topics to be announced. Weekly seminars supplemented by individual conferences. Limited to twelve students.

## 99 The City (3)

(Same as Administration of Justice, Political Science, and Interdisciplinary 99.) Consideration of economic factors, urban institutions, historical developments in urbanization, problems of the inner city, suburbia and the metropolitan area, ethnic groups, stratification, and psychological implications of urban living. This course is for freshmen and sophomores. It is open to juniors and seniors with the consent of instructor.

## 100 Women in Contemporary Society (3)

Prerequisite: Sociology 10 or Interdisciplinary 50. An introduction to the sociological analysis of the status of women in society, including their work, family, and political roles. Socialization, education, and the women's movement will also be considered as these affect the position and participation of women in a variety of social arenas.

## 102 Sex Roles in Contemporary Society (3)

Prerequisite: Sociology 10 or Interdisciplinary 50. The study of social processes through which sex roles are developed and acquired; the impact of gender and sex roles on personal identity and social conduct; the relationship between sex roles and social inequality; and individual and social consequences of changing sex roles in contemporary society.

## 105 Group Prejudice and Minority Identity (3)

Prerequisite: Psychology 3 or Sociology 10. The psychological and sociological study of determinants of identity formation and transformation among minority groups.

## 106 Development of Social Thought (3)

Prerequisite: Sociology 10. The antecedents of sociological theory, as traced through social thought traditions until the time of Comte.

## 110 Sociological Theory (3)

Prerequisite: Sociology 10. The nature of sociological theory. An investigation of theory from Comte through contemporary developments. Contributions made by theorists in related disciplines.

## 120 Sociological Statistics (3)

Prerequisites: Sociology 10 and satisfaction of mathematics proficiency requirement. For majors, concurrent enrollment in Sociology 130 is strongly recommended. Issues and techniques of statistical analyses relevant to quantitative sociological research e.g. elementary probability, measurements of central tendency and dispersion, measures of relationships including linear regression and correlation, inferential statistics.

## 130 Research Methods (3)

Prerequisites: Sociology 10 and satisfaction of mathematics proficiency requirement. For majors, concurrent enrollment in Sociology 120 is strongly recommended. Research planning and interpretation, principles of research design, measurement, and sampling. Techniques for the collection, analysis, and presentation of data.

## 131 Laboratory in Research Methods (1)

Prerequisite: Sociology 130 (may be taken concurrently). Laboratory course to accompany Sociology 130. The course will include practical experience in the conduct of research. Required for students with a major or minor in sociology.

## 160 Social Psychology (3)

(Same as Psychology 160.) Prerequisite: Sociology 10 or Psychology 3. Study of the interaction between the individuals and their social environment. Examination of basic principles, concepts, and methods.

## 175 Women, Crime and Society (3)

(Same as Administration of Justice 175.) Prerequisite: Sociology 10 or consent of instructor. An examination of key issues in criminology from a feminist perspective. Topics include social origins of laws relating to women; quantitative and qualitative views of women's criminality; theories of women's criminality; women as crime victims; treatment of women in the correctional process; and women personnel within the criminal justice structure.

## 180 Alcohol, Drugs and Society (3)

(Same as Administration of Justice 180.) Prerequisite: Sociology 10 or Psychology 3. This course examines the medical, legal and social aspects of alcohol and drug use. Medical aspects considered include treatment approaches and the role of physicians in controlling such behavior. In the legal realm, past and present alcohol and drug laws are explored. Cultural and social influences on alcohol and drug use are discussed.

## 200 Sociology of Deviant Behavior (3)

Prerequisite: Three hours of sociology or anthropology. Theories of the nature, causes and control of deviance as a generic phenomenon. Application of theories to specific types, such as mental disorder, delinquency, drug abuse, suicide, and unconventional sexual behavior.

## 202 Urban Sociology (3)

Prerequisite: Sociology 10 or consent of instructor. Urbanization as a world phenomenon; urban social and ecological structures and changing life styles; the decision-making processes in urban problem-solving.

# Sociology

## 205 Introduction to Models in the Social Sciences (3)

(Same as Anthropology, Political Science and Interdisciplinary 205.) Prerequisite: Sociology 10 or Anthropology 11 or Political Science 11 or consent of instructor. The course will focus on explaining social and cultural behavior. Elementary models of decision-making, exchange, and adaptation will be covered. Computer processing of data to test empirical hypotheses will be introduced.

## 214 Juvenile Delinquency and Youth Crimes (3)

Prerequisite: Three hours of 100-level sociology. A theoretical and research-oriented approach to delinquency and youth crime, including types, trends, causation, correction, and prevention.

## 218 Social Choice in Political-Economic Systems (3)

(Same as Economics and Political Science 218.) Prerequisites: Two courses in economics, political science, or sociology. A study of the mechanisms of social choice from the standpoint of individual and political party maximization of personal objectives. This area draws on work done by sociologists, political scientists, and economists.

## 224 Sociology of the Family (3)

Prerequisite: Sociology 10. Universal and variable aspects of family organization, family role systems, and changes in family social structure.

## 234 Political Sociology (3)

Prerequisite: Sociology 10 or Political Science 11. The analysis of power as a social phenomenon. The processes of legitimizing power and instituting authoritative structures. Stabilizing of social control and social integration at various levels of social and political organization.

## 238 Medical Sociology (3)

Prerequisite: Sociology 10. The application of sociology to the field of health. Social elements of the etiology of disease and its distribution. The sick role, doctor-patient relationships, and the social organization of hospitals and medical careers.

## 240 Selected Topics in Micro-sociology (1-3)

Prerequisite: Sociology 10 or consent of instructor. Examination of a specific sociological topic that focuses on small groups and interpersonal relations. May be taken more than once for credit provided the topic of the course is different each time.

## 241 Selected Topics in Macro-sociology (1-3)

Prerequisite: Sociology 10 or consent of instructor. Examination of a specific topic that focuses on large-scale social systems and the structural relationships among social organizations and institutions. May be taken more than once for credit provided the topic of the course is different each time.

## 256 Sociology of Education (3)

Prerequisite: Sociology 10. Education as a social institution, its role as an agent of socialization, and its effect upon the processes of social change and social mobility. The relationship between the school and its community.

## 260 Social Interaction in Small Groups (3)

Prerequisite: Sociology 160 or Psychology 160. Analysis of human interaction with emphases on group problem-solving, group structure, and group process.

## 264 The Sociology of Religion (3)

Prerequisite: Sociology 10. Religion as a universal phenomenon. The effect of religion upon the individual and society. The organization of religious enterprises.

## 268 The Sociology of Conflict (3)

Prerequisite: Six credit hours of sociology. The conditions under which social conflicts arise, develop, and are terminated (or in some cases resolved) are examined. The functions of different levels of conflict are studied to determine the potential effects and outcomes of planned intervention.

## 270 Socialization (3)

Prerequisite: Sociology 10. Analysis of the structural and social psychological aspects of roles and the self as a product of social interaction.

## 278 Sociology of Law (3)

Prerequisite: Sociology 10. A study of law and society with emphasis on the sociological analysis of specific problems of legal doctrines and legal institutions. The law is examined as an instrument of social control through study of the courts, the legal profession, the police and various social institutions. Consideration is given to law as an instrument of social change.

## 286 The Arts in Society (3)

(Same as Anthropology 286.) Prerequisite: Sociology 10 or Anthropology 11. The relationship of artists, writers, and musicians, their traditions and modes of artistic expression to variant social structures and institutions, and social pressures and rewards.

## 290a, 290b, 290c Undergraduate Seminar in Sociological Issues (3)

Prerequisites: Sociology 10 and consent of instructor. Consideration of an issue or area of the instructor's choice, not already covered by other undergraduate courses. May be taken up to three times for nine hours credit, provided the subject matter is different each time the seminar is taken.

## 298 Practicum in Field and Laboratory Research (1-3)

Prerequisite: Sociology 130. Intensive field or laboratory research to be taken subsequent to or concurrent with a specific substantive course. May be taken twice for credit.

**Note:** Any 300-level course taken for major elective credit requires prior completion of two of the following: Sociology 110, 120, or 130.

## 304 Survey Research Practicum (3)

(Same as Economics and Political Science 304.) Prerequisites: Junior standing and consent of instructor. The execution of a sample survey, including establishing study objectives, sampling, questionnaire construction, interviewing, coding, data analysis, and presentation of results.

## 310 Selected Topics in Sociological Theory (1-3)

Prerequisite: Sociology 110. Focused examination of selected issues, the contributions of individual theorists, and methodological implications in the study of sociological theory. May be taken twice for credit.

## 312 Social Stratification and Inequality (3)

Prerequisites: Sociology 10 and junior standing or consent of instructor. Theories of social stratification and inequality through an examination of current research changes in the occupational and hierarchical structure emphasizing mobility in contemporary society.

## 314 Social Change (3)

Prerequisites: Sociology 10 and junior standing, or consent of instructor. Theories of social change applied to the analysis of small and large social systems, including the planning of change and projecting of alternative futures.

# Sociology

## 316 Power, Ideology and Social Movements (3)

Prerequisite: Social Work 285 or Sociology 234 or 314. Effect of events and social processes on thought and action in the twentieth century. Social functions of ideologies as expressed in movements and formal and informal organizations seeking social change.

## 326 Criminology (3)

Prerequisites: Sociology 200 and 214 or six hours of sociology or anthropology. Crime as a social phenomenon. Theory and research concerning the causes of crime.

## 328 Institutions and the Control of Crime and Delinquency (3)

Prerequisite: Sociology 214 or 326. Institutional responses to crime and delinquency. Theories and programs of rehabilitation and punishment. Organizational conditions affecting behavior of correctional personnel.

## 330 Field Research in Criminology (2-4)

Prerequisites: Sociology 130 and 214 or 326 or their equivalent. Students will participate in individual or group research projects involving systematic data collection and sociological analysis concerning the causation or societal reaction to crime, delinquency, or related forms of deviance. One option available to students will be an opportunity to study organizations dealing with juvenile or adult offenders.

## 336 Bureaucracy and the Social Order (3)

Prerequisites: Sociology 10 and junior standing or consent of instructor. Sociological aspects of types of formal organizations; the norms and behavior of the formal and informal structures in organizations; and the interrelations between complex organizations and the larger society.

## 342 Population Dynamics (3)

Prerequisites: Sociology 10 and junior standing or consent of instructor. Sociological aspects of theories relating man and ecological environment. Selected topics including fertility and population change, community planning and urbanism, and demographic aspects of Western and non-Western cultures.

## 344 Problems of Urban Community (3)

Prerequisites: Sociology 10 and junior standing or consent of instructor. The urban community as an area of social action and problem-solving with emphasis on the sociological aspects of urban problems.

## 346 Demographic Techniques (3)

Prerequisite: Sociology 120 or equivalent. This course is designed to familiarize students with the research techniques used in population analysis. Topics included are: appraisal of census and vital data; measurement of mortality, fertility, and migration; standardization; construction of life tables; and population projection.

## 350 Special Study (1-10)

Prerequisite: Consent of instructor. Independent study through readings, reports, and field work.

## 352 Advanced Principles of Sociology (3)

Prerequisites: Sociology 10 and junior standing or consent of instructor. Analysis of the main concepts and principles of sociology and survey of sociology as a social science.

## 354 Occupations and Their Work Settings (3)

Prerequisites: Sociology 10 and junior standing or consent of instructor. The social nature of work; the work plant as a social system; occupational role behaviors, including deviant occupations; the socialization of the worker; determinants of occupational behavior in America and other societies; social problems of work; and the impact of community on work behavior.

## 360 Sociology of Minority Groups (3)

Prerequisites: Sociology 10 and junior standing or consent of instructor. The study of dominant-subordinate group relations. Religion, ethnicity, and race as factors affecting conflict, competition, accommodation, and assimilation.

## 361 Social Gerontology (3)

Prerequisites: Sociology 10 and junior standing or consent of instructor. Topics include: sociological theories of aging, technological and social change and its effects on the environment of older people, and prejudice and discrimination against the elderly.

## 370 Selected Topics in Techniques of Sociological Research (1-3)

Prerequisite: Sociology 10 or consent of the instructor. The study of a specific research technique used in sociological analyses. May be taken more than once for credit provided the course topic is different each time.

## 377 Personality and Culture (3)

(Same as Anthropology 377.) Prerequisites: Sociology 10 and junior standing or consent of instructor. Analysis of behavior from the standpoint of interaction between psychological, sociological, and cultural systems.

## 378 Selected Topics in Social Psychology (1-3)

Prerequisite: Psychology or Sociology 160 or consent of instructor. Focused examination of selected issues, concepts, and methods in the study of social interaction. May be taken twice for credit.

## 380 Selected Topics in Social Policy (1-3)

Prerequisite: Sociology 10 or consent of instructor. Examination of a specific sociological topic of current relevance in the community. May be taken more than once for credit provided the course topic is different each time.

## 394 Methods in Theory Construction (3)

Prerequisite: Sociology 110 or consent of instructor. An indepth comparison of selected techniques of theory building and testing. Verbal and/or mathematical formalization of selected sociological examples of theory will be the central activity.

## 420 Proseminar in Sociology (3)

Required of all entering graduate students in the fall semester of the first year of residency. An overview of the field of contemporary sociology, with emphasis on the major theories, issues, research approaches, and ethical problems in the field today, and an introduction to theory construction, measurement and design strategies.

## 422 Advanced Quantitative Techniques (3)

Prerequisite: Sociology 120 or consent of instructor. A study of advanced quantitative analysis of sociological data, focusing on problems of multivariate analysis, sampling theory and techniques, and the use of electronic data processing in approaching these problems.

# Sociology

## 424 Research Practicum (3)

Prerequisites: Sociology 420 and consent of instructor. Involvement of students in an individual or group project culminating in a report, in order to provide firsthand experience in integration of theoretical concerns, methodological principles, and appropriate research techniques in an empirical study, the subject of which shall be determined in collaboration with the instructor.

## 432 Advanced Methodology (3)

Prerequisite: Sociology 130 or consent of instructor. A study of methodological problems on an advanced level, focusing on contemporary issues in the processes of inquiry with particular emphasis on the applicability of different modes of research to various types of theoretical problems. Consideration of ethical problems in social research.

## 434 Sociological Reporting (3)

Prerequisites: Sociology 420, 424 and 432. As part of the M.A. degree exit requirement, the seminar offers directed practice in the interpretation and reporting of sociological data, in a wide range of styles including those appropriate for research reports, journal articles, policy papers, nontechnical magazines, books, and monographs, as well as oral reports to diverse consumers. Ethical dimensions of interpretation and dissemination are explored.

## 440 Seminar in Urban Sociology (3)

Prerequisites: Nine hours of undergraduate course work in sociology and consent of instructor.

## 450 Seminar in Social Psychology (3)

Prerequisites: Nine hours of undergraduate course work in sociology and consent of instructor.

## 460 Seminar in Deviant Behavior (3)

Prerequisites: Nine hours of undergraduate course work in sociology and consent of instructor.

## 462 Sociology of Criminal Law (3)

Prerequisites: Twelve hours of undergraduate course work in sociology and consent of instructor. A survey of research on the formulation, enforcement, and administration of criminal law.

## 466 Social Policy and Community Planning (3)

Prerequisite: Consent of instructor. Analysis of the formulation of policy as a social process with concentration on political as well as technical-rational elements. Relation of social policy formation to planning at the community level, and analysis of the elements and dynamics of community planning. Analysis of and exposure to planning agencies in the St. Louis metropolitan area.

## 468 Theory and Practice of Community Conflict Intervention (3)

Prerequisite: Consent of instructor. Analysis and simulated practice in intervention in community disputes, with major emphasis on development of intervention concepts and skills, among them policy formation, power, racism, change, mediation, conciliation, arbitration, and advocacy. Development and application of a typology of intervention roles.

## 470 Seminar in Sociological Issues (1-3)

Prerequisite: Nine hours of undergraduate course work in sociology and consent of instructor. Consideration of an issue or area of the instructor's choice, not already covered by one of the other 400-level courses. May be taken up to three times for up to nine hours credit, provided the subject matter is different each time the seminar is taken.

## 475 Introduction to Evaluation Research Methods (3)

(Same as Psychology 475 and Public Policy Admin. 475.) Prerequisite: At least one course in research design and statistics (e.g. Sociology 130 or Psychology 219). A comparative study of research strategies with regard to data sources, data collection, and modes of analysis that are appropriate for program evaluation research. Attention is given to observational, survey, and quasi-experimental methodologies.

## 476 Research Practicum in Evaluation Research Methods (3)

Prerequisites: Sociology 475 and consent of instructor. Instruction in, and supervision of research design and data collection for evaluation of social-deviance action program research report. Concurrent with on-site participant observation.

## 480 Individual Study (3)

Prerequisite: Consent of adviser and instructor. Designed to give the student the opportunity to pursue particular interests within the discipline and/or to study areas not currently covered by formal courses. Guided by faculty with appropriate interests. May be taken only twice.

## 490 Supervised Research (1-10)

Prerequisites: Sociology 322, 332, 492, and consent of instructor. Individual supervision of research leading to the preparation of a thesis, research paper, or publishable article, in which the student demonstrates skills in the discipline of sociology.

## 492 Advanced Sociological Theory (3)

Prerequisite: Sociology 110 or consent of instructor. Recent and current developments in sociological theory in light of its tradition and methodological issues. The state of modern theory with regard to specific conceptual, substantive, and methodological concerns.



# Speech Communication

Prerequisites may be waived by consent of the department.

The following courses fulfill the Humanities [H] breadth of study requirements: 23, 70, 80, 116, 160, 223, 260, 261, 271, 272, 281, 282, 322, 340, 341, 342, 343.

The following courses fulfill the Social Sciences [SS] breadth of study requirements: 135, 230, 231, 243, 331, 332, 335, 350.

## 14 Elementary Radio Station Operations I (1)

Designed for students who wish to work at the campus radio station, the course provides basic training in equipment operation, news preparation, announcing procedures, and logging. Requirements include obtaining an FCC permit, passing a written test equivalent to that formerly given by the FCC, and passing a performance examination. Successful completion of requirements will result in certification to operate the KWMU news studio. Speech 14 may not be counted toward minimum number of hours in speech required of majors.

## 15 Elementary Radio Station Operations II (1)

Prerequisite: Speech 14 or consent of instructor. Designed for students who wish to work at the campus radio station. The course provides hands-on training in equipment operation at the KWMU production studio. Requirements include passing a performance examination. Successful completion of requirements will result in certification to operate the KWMU production studio. Speech 15 may not be counted toward minimum number of hours in speech required majors.

## 16 Elementary Radio Station Operations III (1)

Prerequisite: Speech 15 or consent of instructor. Designed for students who wish to work at the campus radio station. This course provides hands-on training in equipment operation at the main KWMU broadcast studio. Requirements include passing a performance test and a written test on logging. Successful completion of requirements will result in certification to operate the main KWMU broadcast studio. Speech 16 may not be counted toward minimum number of hours in speech required of majors.

## 21 Fundamentals of Acting (3)

Oral and physical communication of a role through improvisations, exercises, and scene work. Emphasis on modern representational method with some attention given to other styles.

## 23 Production Aesthetics (3)

An analysis of the visual components of dramatic presentation, including an introduction to theatrical styles and forms, technical design elements, and presentational techniques. A broad survey of theatre production.

## 30 Interpersonal Communication I (3)

Prerequisite: Consent of instructor prior to enrolling in course. Development of basic one-to-one communication skills. Includes self-awareness, listening, nonverbal communication, feedback, role-playing, and receiver awareness.

## 40 Introduction to Public Speaking (3)

Theories and techniques of organization, evidence, argumentation, persuasion, and delivery in public speaking.

## 50 Introduction to Mass Media (3)

Introduction to oral, print, and electronic media of communication. Emphasis on history, theory, and criticism of the mass media as cultural institutions.

## 60 Voice and Diction (3)

A course designed to aid the student in developing clear and distinct enunciation and in using correct pronunciation as requisite in mass media communication, public address, theatre, and oral interpretation.

## 70 Introduction to Cinema (3)

An introduction to the history, rhetoric, and aesthetics of film. Film theory and criticism will be studied as well as major genres, authors, and artists.

## 80 Introduction to the Theatre (3)

A study of theatre as an art form, emphasizing the audience's appreciation of the art of the playwright, actor, director, and designer. Study of major periods, genres, and plays from classical to modern times.

## 110 Introduction to Radio and Television Broadcasting (3)

An introduction to broadcasting, including the areas of history, government regulations, station operation, and program development.

## 114 Radio Production I (3)

Prerequisite: Speech 110. Theory and practice in the creation of radio programs. Laboratory experience included.

## 116 Newswriting (3)

(Same as English 214.) Prerequisite: English 10 or equivalent. An introduction to news writing and reporting. Course covers basic components of news, reporting principles, and newswriting style and structure. Daily writing assignments include coverage of speeches, meetings and interviews, accidents, deaths, courts, sports, consumer affairs and government. Emphasis on clarity, accuracy and speed.

## 118 Radio and Television Announcing (3)

Prerequisite: Speech 110; Speech 60, 114, and 210 recommended. Training in radio and television studio procedures. Production and criticism of lab programs, including news, continuity, interviews, and oral improvisation. Classroom meetings at the radio lab and the television lab, plus hours at the University radio station to be arranged.

## 124 Stage Movement (3)

Training in movement techniques for the stage, including mime, stage combat, and dramatic dance forms.

## 125 Stagecraft (4)

A survey of the theory and practice of stage scenery methods. Practical experiences in construction, rigging, and stage lighting and painting techniques, as well as supervised work in all other phases of theatrical production will be emphasized. Two hours of lecture and four hours of laboratory.

## 126 Costuming for the Theatre (3)

This course covers the theory and practice of costume design and construction. It includes an overview of the history of clothing and fashion and its effect on the actor playing period drama. Lab required.

## 128 Stage Lighting (3)

Prerequisite: Speech 23 or consent of instructor. An introduction to the theory and practice of stage lighting. The course will include a variety of established theories of stage lighting as well as practical training in lighting instrumentation and control systems.

## 130 Interpersonal Communication II (3)

Prerequisite: Speech 30. Interpersonal communication in relationships within group contexts, such as family, classroom, and business. Various theories and diagnostic approaches to interpersonal communication. Extensive laboratory sessions utilizing individual and group exercises.

# Speech Communication

## 135 Communication Theory (3)

Survey of elements and processes critical to human communication behavior. Comparison of influential communication theories.

## 140 Advanced Public Speaking (3)

Prerequisite: Speech 40. Application of advanced public-speaking skills, with emphasis on special occasion speaking situations.

## 141 Business and Professional Speaking (3)

Prerequisite: Speech 40. Application of communication skills in the business and professional environment with emphasis on presentational speaking, organizational constructs germane to professional careers, and uses of various media.

## 143 Parliamentary Procedure (2)

Prerequisite: Speech 40. Study and practice in rules of procedure by which self-governing groups transact business.

## 160 Fundamentals of Oral Interpretation (3)

Prerequisite: Speech 40 or consent of instructor. An introduction to the analysis of literature and to the principles of its oral presentation by the interpreter.

## 199 Special Projects in Communication (1-4)

Prerequisite: Consent of instructor. (Variable credit; repeatable to a maximum of four hours.) Independent study in one of the following areas in speech communication: communication theory and rhetoric; theatre; or radio-TV-film. Conferences adjusted to needs of the student.

## 210 Television Production I (3)

Prerequisites: Speech 110 and consent of instructor. A study of the basic theories and practices of television production. The areas of producing and directing will be studied. The class will provide the student with practical experience in camera operation, switching, lighting, and mixing. Lab arranged. May not be taken on the satisfactory/unsatisfactory option.

## 212 Broadcast Writing and Reporting (3)

Prerequisites: Speech 110 and Speech 116 or English 214, or permission of instructor. Elementary principles and practice of writing for radio and television in varied program formats, emphasis on preparation of written materials for news and public affairs presentation. Lecture and lab.

## 215 Radio Production II (3)

Prerequisite: Speech 114. Study of advanced theories and techniques of audio production, building on principles and skills learned in Radio Production I. Exploration of complex program formats such as radio drama and special problems such as those encountered in recording live music.

## 216 Radio News (3)

Prerequisite: Speech 114. Theory and laboratory practice in the gathering, writing, and delivery of news through radio. Hours at the University radio station to be arranged.

## 217 Script Writing for Business and Industry (3)

Prerequisites: Speech 210 and 212. Script writing for training, motivation, education, and other applications. Students will identify and discuss communication problems and solutions in live, slide/tape, video, and film script formats.

## 219 Promotion, Publicity and Advertising in Broadcasting (3)

Prerequisite: Speech 110. Introduction to theory and practice in the planning, execution, and evaluation of persuasive campaigns involving radio and television. Emphasis on concept developments and production elements. Discussion of broadcast ethics.

## 221 Ensemble Acting (3)

Prerequisite: Speech 21. Laboratory-discussion course emphasizing role analysis, scene study, characterization, and ensemble acting.

## 223 Aesthetics of Theatrical Styles (3)

Prerequisite: Speech 23. Analysis of the development of dramatic and artistic styles as they affect the visual presentation of ideas in theatre.

## 224 Movement for Musical Theatre (3)

Prerequisite: Speech 124 or consent of instructor. Specialized training in movement and dance techniques for musical theatre.

## 225 Designing for the Theatre (3)

An introduction to the theories and practices of scenic and costume design for the theatre. The course will survey the evolution of theatrical designs through different cultures, dramatic genres, and theatre architecture.

## 230 Small Group Communication (3)

Prerequisite: Speech 40. Development of communication skills needed in small group decision making. Application of these skills to contemporary problems.

## 231 Communication in the Organization (3)

Prerequisite: Junior standing or consent of instructor. Course integrates communication theories applicable to the structure and function of organizations. The effect of communication variables on departmental interface, member satisfaction and motivation, leadership and subordinate styles, and perception of the organization by the external environment.

## 237 Male/Female Communication (3)

This course explores the influence of gender upon contemporary American communication behavior. Topics include semantic and syntactic variation in male and female speech, sex-role development as process and product of speech communication, analysis of communication patterns and barriers within gender groups. Mass, public, interpersonal, and dyadic communication contexts are considered.

## 240 Persuasive Communication (3)

Prerequisite: Speech 40. A study of persuasive communication, including theories, techniques, forms, functions, applications, potential, and limitations for the individual and organizations. Insights from both classical rhetoric and contemporary communication theory.

## 241 Argumentation and Debate (3)

Prerequisite: Speech 40 or consent of instructor. Principles of argumentation and debate with practice in preparing briefs and in delivering spoken arguments in formal debate. Emphasis on analysis of issues, logical reasoning, and audience analysis.

## 242 Theory and Practice of Interviewing (3)

Prerequisite: Speech 40. The application of modern communication theory to interview situations. This theory and practicum course is designed to aid the student in mastering specific skills appropriate to specialized settings.

## 243 Communication in American Politics (3)

Prerequisite: Speech 40. Analysis of audience response and media preferences in political campaigns, campaign speeches, candidates' uses of television and other mass media, and measuring effectiveness of campaign communications.

## 260 Advanced Oral Interpretation (3)

Prerequisite: Speech 160. Advanced practice in analyzing and performing oral interpretation of literary forms.

## Speech Communication

### 261 Readers Theatre (3)

Prerequisite: Speech 160. Study of the oral interpretation of literature as a theatrical experience. Study of theory, techniques, and performance.

### 262 Storytelling Workshop (1)

Prerequisite: Junior standing or consent of instructor. This course gives a brief overview of the history of storytelling, types of tales, and appropriate uses for storytelling. The primary emphasis of the course is in developing storytelling skills through preparation, performances, and evaluation.

### 271 Film History I (3)

Prerequisite: Speech 70. History of world cinema to World War II.

### 272 Film History II (3)

Prerequisite: Speech 170; (Speech 271 recommended). History of world cinema since World War II.

### 273 Basic Film Production (3)

Prerequisite: Speech 70. Introduction to filmmaking equipment and practices. Production of short films.

### 281 Theatre History I (3)

Prerequisite: Speech 80. The development of the theatre from its ritual beginnings to 1700.

### 282 Theatre History II (3)

Prerequisite: Speech 80. The development of the theatre from 1700 to the present.

### 299 Special Projects in Communication (1)

Prerequisite: Four hours of Speech 199 or instructor's consent. Advanced independent study in rhetoric and public address; communication theory and research; theatre; or radio-TV-film. Conferences adjusted to needs of the student. Speech 299 may not be counted toward the minimum number of hours in speech required of majors. May be repeated three times.

### 310 Television Production II (3)

Prerequisite: Speech 210. Study of advanced theories of television production. Refinement of studio television principles learned in Speech 210. Exploration of complex program formats. Lab arranged. May not be taken on the satisfactory/unsatisfactory option.

### 311 Broadcast Management (3)

Prerequisite: Speech 110. Introduction to theories of management, with application to radio and television station operations. Discussion of economic, legal, and ethical problems and issues.

### 316 Television News (3)

Prerequisite: Speech 210. Theory and laboratory practice in the gathering, writing, and delivery of news through television. Lab arranged. May not be taken on the satisfactory/unsatisfactory option.

### 321 Acting Styles (3)

Prerequisite: Speech 221. Studies in period acting styles, emphasizing cultural distinctions in manners, movement, and vocal practice.

### 322 Directing for the Theatre (3)

Prerequisite: Speech 21 or consent of instructor. A survey of the theories and practices of theatrical directing. The course will explore the director's role in the theatre from script analysis and production planning to the performance of laboratory scenes.

### 323 Theatre Management (3)

Prerequisite: Speech 23. Comprehensive study of theatre management techniques, including season selection, budget control, box office, facility management, and promotional techniques for theatre.

### 331 Research Methods in Speech Communication (3)

Prerequisite: Speech 135. Introductory study of research designs and methodologies employed in speech communication, including historical, critical, and empirical methods. Review of research reports which exemplify these methods.

### 332 Intercultural Communication (3)

Prerequisite: Junior standing or consent of the instructor. Study of culture as a variable in both interpersonal and collective communicative situations. Emphasis upon opportunities and problems arising from similarities or differences in communication patterns, processes, and codes among various cultural groups.

### 335 Seminar in Applied Communication Research (3)

Prerequisites: Speech 135 and consent of instructor. This course explores the use of dramatic communication concepts, theories, methods, and designs in applied field settings with an emphasis on original research.

### 340 Rhetorical Criticism (3)

Prerequisite: Speech 40. The application of rhetorical theories to the analytical and critical explanation of persuasive messages.

### 341 History of Public Address I (3)

Prerequisite: Speech 40. Survey of history and theories of persuasion and public address from ancient times to 1700.

### 342 History of Public Address II (3)

Prerequisite: Speech 40. Survey of history and theories of persuasion and public address from 1700 to present.

### 343 The Rhetoric of Protest (3)

Prerequisite: Speech 40. An examination of the persuasive messages and tactics used in social movements and their campaigns.

### 350 Mass Communication History and Criticism (3)

Prerequisite: Speech 50 or 110. Examination of the social, economic, and political factors contributing to the development of American mass media. Emphasis on significant personalities who helped shape their course. Reading, viewing, and analysis of selected critical work.

### 355 Media Law and Regulation (3)

Prerequisite: Speech 50 or 110. Discussion of laws affecting the mass media. Exploration of problems and issues in legal regulation of media content, ownership, access, and accountability. Discussion of industry self-regulation and the influence of citizens' organizations.

### 370 Documentary Film (3)

Prerequisite: Speech 70. Consideration of the history, theory, and criticism of nonfiction film. Screening of representative documentary films.

### 392 Administration of Cocurricular Speech Activities (3)

Prerequisites: Junior standing and consent of instructor. A survey of the skills required to administer the various cocurricular activities associated with teachers of speech in the secondary schools, such as operation of debate tournaments, public speaking competitions, theatre production, mass media centers, etc.

### 395 Seminar in Special Topics in Speech Communication (1-3)

Prerequisite: Consent of instructor. In-depth treatment of topics not covered in other advanced speech courses.

### 399 Internship in Communication (3)

Prerequisites: Speech Communication major, junior standing, and consent of instructor. Supervised practicum in one of the following areas of speech communication: communication theory and rhetoric, theatre, or radio-TV-film. Repeatable to a maximum of six hours, but only three may be counted toward the minimum number of hours in speech communication required of majors.

## Honors Courses

Prerequisite to all courses in this section is enrollment in the University Honors Program, known as the Pierre Laclède Honors Program. For information and an application for admission to the program, contact the Director, Pierre Laclède Honors Program, 471 Lucas Hall, 553-5699.

The following courses fulfill the Humanities (H) breadth of study requirements: 31, 32, 34, 234.

The following courses fulfill the Social Sciences (SS) breadth of study requirements: 33, 35, 235.

The following courses fulfill the Natural Sciences and Mathematics (SM) requirements: 36 and 236.

### 31 Explorations in Western Philosophy (3)

(Same as Philosophy 31.) Prerequisite: Enrollment in University Honors Program. An examination of selected philosophical problems as treated by major figures in the Western intellectual tradition. Emphasis will be on textual study and critical analysis and discussion.

### 32 Honors—Western Literary Masterpieces (3)

(Same as English 32.) Prerequisite: Enrollment in University Honors Program. Discussions based on the careful reading of significant creative works that form part of the literary heritage of Western civilization from antiquity to the present day.

### 33 Honors—Western Civilization (3)

(Same as History 33.) Prerequisite: Enrollment in University Honors Program. A survey of major topics in the history of Western civilization, from the Ancient World to the twentieth century, will be presented with emphasis upon discussion of readings in original documents and excerpts from major works of the past in all fields.

### 34 Music and the Visual Arts (3)

(Same as Interdisciplinary 34.) Prerequisite: Enrollment in University Honors Program. The study of similarity and uniqueness in music and the visual arts from medieval to twentieth-century and non-Western cultures. Elements of form, rhythm, "color," and the expression of moods will also be explored.

### 35 Social Sciences and the Modern World (3)

(Same as Interdisciplinary 35.) Prerequisite: Enrollment in University Honors Program. Introduction to the social sciences with applications of the perspectives of the several social sciences to contemporary issues.

### 36 Science: Its Nature and Practice (3)

(Same as Physics and Interdisciplinary 36.) Prerequisites: Mathematics 40 and enrollment in University Honors Program. Since the seventeenth century, the scientific/empirical method has revolutionized the nature of civilization and the human perception of the world. This course is an introduction to the methods of science, the evolution of scientific concepts, and the role of theoretical structure.

### 234 Honors Studies in the Humanities (3)

(Same as Interdisciplinary 234.) Prerequisite: Honors 34. A course involving one or more humanities disciplines. Course title and content may change from semester to semester. The course may be repeated for credit when its topic is substantially different.

### 235 Honors Studies in the Social Sciences (3)

(Same as Interdisciplinary 235.) Prerequisites: Honors 35. A course involving one or more social-science disciplines. Course title and content may change from semester to semester. The course may be repeated for credit when its topic is substantially different.

### 236 Honors Studies in the Natural Sciences (3)

(Same as Interdisciplinary 236.) Prerequisite: Honors 36. A course involving one or more of the natural sciences or mathematics. Course title and content may change from semester to semester. The course may be repeated for credit when its topic is substantially different.

### 237 Honors—Interdisciplinary Seminar (3)

(Same as Interdisciplinary 237.) Prerequisite: Senior standing in Honors Program. An interdisciplinary course for seniors in the University Honors program. Course title and content may change from semester to semester.

## Interdisciplinary Courses

In addition to regular departmental offerings, the College of Arts and Sciences also offers several interdisciplinary courses, listed below. These courses bring together the resources of two or more disciplines to focus on topics which benefit from being studied from the point of view of more than one discipline. In many cases faculty from several departments teach an interdisciplinary course together, giving students the opportunity to experience faculty dialogue on issues in a cross-disciplinary fashion. Most interdisciplinary courses have no prerequisites. Freshman and sophomore students are especially encouraged to take these courses.

The following courses fulfill the Social Sciences [SS] breadth of study requirements: 10\*, 20, 34\*, 40, 50, 75, 90\*, 91\*, 99, 150\*, 205, 234\*, 269\*, 287, 295\*

\*These courses may fulfill the Humanities [H] or Social Sciences [SS] breadth of study requirements.

The following course fulfills the Sciences and Mathematics [SM] breadth of study requirements: 36.

### 10 The Classical World (3)

Prerequisites: None. A survey of the cultures of ancient Greece and Rome—from the beginning of Hellenic civilization during the second millennium B.C. to the start of the breakup of the Roman Empire in the West. Focuses on various central issues and trends; illustrated primarily by the history, literature, philosophy and art of the period.

### 20 Foundations of Law: An Introduction to Legal Studies (3)

As a broad liberal-arts approach to the study of law, this course is designed to familiarize students with legal ideas, legal reasoning, and legal processes. It also provides comparative and historical perspectives on law that will help explain legal diversity and legal change. Finally, it offers opportunities to explore some of the persistent issues in law and legal theory: for example, issues about the sources of law, the responsibilities of the legal profession, or the relative merits of the adversary system.

### 34 Music and the Visual Arts (3)

(Same as Honors 34.) Prerequisite: Enrollment in University Honors Program. See Honors Courses for description.

### 35 Social Sciences and the Modern World (3)

(Same as Honors 35.) Prerequisite: Enrollment in University Honors Program. See Honors courses for description.

### 36 Science: Its Nature and Practice (3)

(Same as Physics and Honors 36.) Prerequisites: Mathematics 40 and enrollment in University Honors Program. See Honors courses for description.

### 40 The Black World (3)

Prerequisites: None. A survey of the cultural life, historical experience, and contemporary socio-political issues facing the black peoples of Africa, the Caribbean, and United States.

### 50 Interdisciplinary Perspectives on Women (3)

An interdisciplinary study of the role of women in the family and in society. Areas of coverage will include the biological, psychological, anthropological, economic, social, political-legal, and historical.

### 65 Photography and Society (3)

(Same as Art 65.) A study of photography as a means of information and expression, as an influence on culture, and as a reflection of concepts in politics, science, morality, and art.

### 70 Introduction to the Study of Religion (3)

The nature of religion and approaches to its study. Examples will be drawn from representative Western and non-Western traditions.

### 75 Crime and Punishment (3)

(Same as Administration of Justice and Sociology 75.) An introduction to sociological and psychological explanations of crime and punishment. An examination of private and governmental responses to the threats of crime and delinquent behavior.

### 90 The Foundations of American Culture (3)

An examination of the development of American culture from its pre-Columbian origins until the turn of the twentieth century. Particular emphasis will be placed on the Native American, British, African, and European origins of American culture, the conflict and amalgamation of these cultures, and the impact of the physical environment. Consideration will be given to the emergence of a national political and economic system, national and regional cultures, racial and sexual ideology, and sectional conflict. These developments will be examined through their impact on art, literature, religion, music, architecture, political philosophy, and economic thought. The development of natural science in America will be given attention.

### 91 American Culture in the Twentieth Century (3)

This course examines the central cultural developments that have characterized American society from the Progressive Period to the present. These developments will be examined through their impact on art, literature, religion, music, architecture, philosophy, and economic thought. Themes such as the following will be considered: the rise of the middle class and generalized affluence; the formation of large corporations and a centralized economy; the nature and impact of periods of crisis such as the 1930s and 1960s; issues of race, sex, and rapid technological change. The special role of science in twentieth-century American culture will be discussed.

### 99 The City (3)

(Same as Administration of Justice, Political Science, and Sociology 99.) An interdisciplinary course. Consideration of economic factors, urban institutions, historical developments in urbanization, problems of the inner city, suburbia and the metropolitan area, ethnic groups, stratification, and psychological implications of urban living. This course is primarily for freshmen and sophomores. It is open to juniors and seniors with the instructor's permission.

### 150 Topics in Women's Studies (3)

Prerequisite: Interdisciplinary 50 or another Women's Studies course. Introduction to current questions and methodology in women's studies, drawing on work in the humanities, social sciences and natural sciences. Emphasis will be placed on acquainting students with different interdisciplinary approaches taken to women's studies.

### 205 Introduction to Models in the Social Sciences (3)

(Same as Sociology, Anthropology and Political Science 205.) Prerequisite: Sociology 10, Anthropology 11, Political Science 11, or consent of instructor. The course will focus on explaining social and cultural behavior. Elementary models of decision making, exchange, and adaptation will be covered. Computer processing of data to test empirical hypotheses will be introduced.

### 234 Honors Studies in the Humanities (3)

(Same as Honors 234.) Prerequisite: Honors 34. See Honors courses for description.

## Interdisciplinary Courses

### 235 Honors Studies in the Social Sciences (3)

(Same as Honors 235.) Prerequisite: Honors 35. See Honors courses for description.

### 236 Honors Studies in the Natural Sciences (3)

(Same as Honors 236.) Prerequisite: Honors 36. See Honors courses for description.

### 237 Honors—Interdisciplinary Seminar (3)

(Same as Honors 237.) Prerequisite: Senior standing in Honors Program. See Honors courses for description.

### 269 The Marxist Heritage (3)

(Same as Philosophy and Political Science 269.) Study of Marx and leading Marxists. Designed to evaluate their influence on recent political, economic and social thought and institutions.

### 287 The World Food Problem (3)

(Same as Economics 287.) Prerequisite: Economics 40 or 51, or consent of instructor. An introduction to the world's food problem and an examination of the economic and political problems in distributing basic food-stuffs among the earth's people.

### 295 Issues in American Culture (3)

Prerequisites: Interdisciplinary 90 and 91 or consent of instructor. An examination of specific topics in American culture from the point of view of a number of disciplines. This exit seminar for the American Studies minor may be repeated for credit.

### 365 Seminar in Photographic Studies (3)

(Same as Art 365.) Prerequisite: Interdisciplinary 65. Advanced special topics in photographic studies.

### 390 Independent Studies in Photographic Studies (1-10)

Prerequisites: Twelve hours completed in photographic studies. Integrated individual projects conducted under photographic studies committee and departmental faculty supervision.

# Business Administration

Courses in this section are grouped as follows: all undergraduate courses are listed under Business Administration; 400-level courses are listed under Business Administration, Accounting, Finance, Management, Marketing, and Quantitative Management Science.

Prerequisites may be waived by consent of the department.

## Business Administration

**A minimum grade of C shall be required to meet the prerequisite requirement for any course except with permission of the School.**

### 36 Introduction to Accounting I (3)

An introduction to the nature of accounting information and its use by managers and investors. **The course is designed as a multimedia, home-study course intended to meet the needs of off-campus students.** Topics include: the nature of financial reporting, analysis of financial statements, budgeting, cost-volume-profit analysis, capital project evaluation, income recognition concepts, and the accounting accumulation process. Not available to students with previous fundamentals of accounting.

### 37 Introduction to Accounting II (3)

Prerequisite: Business Administration 36. A continuation of Business Administration 36. **The course is designed as a multimedia, home-study course intended to meet the needs of off-campus students.** Topics include: mass processing of accounting information, accounting for selected balance sheet accounts, cost and managerial accounting concepts, relevant costs for decision making, capital budgeting, income tax planning, and accounting for not-for-profit organizations.

### 103 Introduction to Business Data Processing (3)

The basic concepts of data processing and the fundamental principles of computer-based information systems are studied. The role of data processing professionals and the uses of computers in business are examined. A basic programming language is introduced. Credit will not be awarded for both Business Administration 103 and Computer Science 22.

### 104 FORTRAN Programming (3)

Prerequisite: Business Administration 103. A study of the principles of programming digital computers using the FORTRAN language. Credit not granted for both Business Administration 104 and Computer Science 122.

### 109 COBOL Programming (3)

Prerequisite: Business Administration 103. Fundamentals of computer programming using the COBOL language. The programming of business applications for the computer is stressed.

### 131 Elementary Statistics (3)

Prerequisite: Mathematics 102. An introduction to statistical methods and concepts used in the decision processes of business problems. Statistical measures and estimators are examined in relation to the estimation and testing problems of statistical inference.

### 140 Fundamentals of Financial Accounting (3)

Prerequisite: Sophomore standing. A one-semester course in financial accounting theory and practices, with primary emphasis upon the accounting cycle and the preparation of financial statements for proprietary, partnership, and corporate entities.

### 145 Managerial Accounting (3)

Prerequisite: Business Administration 140 or equivalent. This is an advanced course that goes beyond the scope of a second-semester course in fundamentals of accounting. The development, interpretation, and use of relevant cost behavior, control, and traceability concepts for management planning, controlling, and decision making are emphasized. Topics include: an introduction to product costing, the contribution concept, direct costing, performance standards and variance analysis, responsibility accounting, segment profitability, alternative choice decisions, and capital budgeting.

### 156 Legal Environment of Business (3)

Prerequisites: Economics 51 and Business Administration 140. An introduction to the nature and meaning of law, sources of law, legal process and institutions. The legal environment of business is defined as: the attitude of the government toward business, the historical development of this attitude; current trends of public control in taxation, regulation of commerce, and competition; freedom of contract, antitrust legislation and its relationship to marketing, mergers, and acquisitions; and labor management relations.

### 202 Fundamentals of Production (3)

Prerequisites: Economics 51, Business Administration 131, 145, and 103, or a higher-level programming language course. An examination of the concepts, processes, and institutions which are fundamental to an understanding of the production function in business enterprise. Emphasis is on the management and organization of production operations and upon the application of scientific and quantitative methods to the solution of production problems.

### 204 Financial Management (3)

Prerequisites: Economics 52, Business Administration 140, and Business Administration 131. The study of a firm's need for funds; the institutions, instruments, and markets concerned with raising funds; and the techniques of analysis used to determine how effectively these funds, once raised, are invested within the firm.

### 205 Management Information Systems (3)

Prerequisite: A programming language course (e.g., Business Administration 104 or 109 or Computer Science 122). The concept of an integrated management information system is explored. Data requirements and data relationships used to implement business oriented systems (e.g., accounting, marketing, financial, and production information systems) are examined. The economic tradeoffs between various data-support systems are analyzed.

### 206 Basic Marketing (3)

Prerequisites: Economics 51 and junior standing. An examination of the character and importance of the marketing process, its essential functions and the institutions performing them. Attention is focused on the major policies (such as distribution, product, price, and promotion) which underlie the multifarious activities of marketing institutions and the managerial, economic, and societal implications of such policies.

### 209 Advanced COBOL and Data Management (3)

Prerequisite: Business Administration 109 with a grade of "C" or better. The following advanced COBOL programming techniques are explored: tape and disk file design and manipulation; sort and merge techniques; report writer features; library modules; communication modules; and data-base management concepts.

# Business Administration

## 210 Management as a Behavioral Science I (3)

Prerequisites: Three hours of anthropology, psychology or sociology, and junior standing. This course involves a study of the behavior of individuals and groups in an organizational setting. Specific topics examined include: motivation, leadership, organizational design, and conflict resolution, as well as a basic coverage of management principles. In covering these topics, both "classic" and current perspectives are provided.

## 221 Financial Markets and Institutions (3)

(Same as Economics 221.) Prerequisites: Economics 51 and 52. Demand, supply, and flow of funds in the macrofinancial system, determinants of the structure of interest rates, and the impact of monetary and other governmental policies on interest rates, securities prices, and flows of funds. Examines types and historical development of financial intermediaries, including their regulatory environment, decision making within individual intermediaries, and how their portfolio decisions affect flows of funds in the economy.

## 224 Introduction to Systems Programming (3)

Prerequisite: Grade of "A" or "B" in either Business Administration 104 or 109, or Computer Science 122. Development and interpretation of machine languages, addressing techniques, symbolic coding, and assembly systems. A particular computer and programming system will be used extensively to illustrate concepts and to give students actual experience in programming.

## 253 Managerial Economics (3)

(Same as Economics 253.) Prerequisites: Economics 51 and Mathematics 101. Applications of microeconomic theory to the decision-making process in the business firm. Discussion of cost behavior, price and output determination under various competitive conditions, as well as factors affecting wages, interest, and profits.

## 256 Business Law (3)

Prerequisite: Business Administration 140 and Economics 51. Introduction to legal instruments and statutes centering on such things as contracts, agencies, partnerships, unincorporated organizations, corporations, negotiable instruments, bailment, personal and real property, bankruptcy and receivership. Includes a survey of federal regulatory legislation to motivate and preserve competition and to protect the public.

## 270 Management of Promotion (3)

Prerequisite: Business Administration 206. A study of the design, organization, and implementation of the marketing "communications mix." Various methods, such as advertising, personal selling, and publicity are analyzed as alternatives for use alone, or in combination, to stimulate demand, reseller support, and buyer preference. Particular topics considered include: media selection, sales promotionals, packaging, and selling strategy, and their relationships in the promotion process.

## 275 Marketing Intelligence (3)

Prerequisites: Business Administration 103, 131, and 206. An investigation of the acquisition, presentation, and application of marketing information for management. Particular problems considered are defining information requirements, evaluating research findings, and utilizing information. Statistical methods, models, and/or cases are employed to illustrate approaches to marketing intelligence problems, such as sales forecasts, market delineation, buyer motives, store location, and performance of marketing functions.

## 289 Career Planning (1)

Prerequisite: A minimum of junior standing. The emphasis of this course will be to assist business students to develop an understanding of themselves as related to employment, to develop an understanding of the world of work, and to integrate these so that effective career decisions can be made.

## 295 Business Administration Problems (1-10)

Prerequisite: To be determined each time the course is offered. Study of selected special problems in business and administration. May be repeated for credit with different topics.

## 296 Independent Study (1-3)

Prerequisite: Permission of the professor and the dean. Occasional special individual study topics under the guidance of a specific professor.

## 301 Buyer Behavior (3)

Prerequisites: Business Administration 206 and three hours of psychology or sociology. A study of consumer functions and concepts in economics, marketing, and related subjects, such as decision making, attitude formation, cognition, perception, and learning as related to marketing phenomena product image, brand loyalty, shopping preference, and diffusion of innovations. These are considered in context with political, social, market, and legal influences on buyer behavior.

## 302 Quantitative Marketing Methods (3)

Prerequisite: Business Administration 103, 131, and 206. Applications of stochastic, deterministic, and simulation techniques to decision areas, such as market potential, product diversification, physical distribution alternatives, retail location, media selection, and market exposure. Quantitative and computerized methods are used heavily to enhance decision making in marketing, especially the selection, allocation, budgeting, and forecasting of marketing resources.

## 303 Industrial Marketing (3)

Prerequisites: Senior standing and Business Administration 131 and 206. A study of the nature of the industrial marketplace, concentrating on those aspects that differentiate it from consumer markets. The major focus of the course is strategy, starting with analysis of the market wants and segments, concepts of pricing, the distribution arrangements, and buyer/seller relations. In this last area, consideration will be given to service, sales technical development, sales promotion, and advertising, as found in the industrial marketplace. At all times emphasis is given to relating industrial marketing strategy to basic concepts in underlying business disciplines. Lectures and case discussions are used heavily in the course.

## 305 Computer Systems (3)

Prerequisite: Business Administration 205 or 209 or Computer Science 222 or consent of the instructor. Computer systems, their hardware and basic operating software, are studied with attention to the factors involved in computer system implementation and maintenance. Examples of integrated business computer systems, including communication systems, are analyzed.

## 308 Production and Operations Management (3)

Prerequisites: Business Administration 202, Mathematics 101 and 102. Application of the tools and techniques of statistical decision theory and operations research to production and operating problems. Emphasis is on the use of mathematical modeling and simulation techniques to analyze complex and ill-structured problems in large scale systems.

## 309 Personnel Management (3)

Prerequisites: Business Administration 131 and 210. This course is a study of personnel practices and policies. Employee selection, development, job performance, compensation, safety, and collective bargaining are covered. The course emphasizes practical applications.



# Business Administration

## 310 Business System Design (3)

Prerequisite: Business Administration 209 or Computer Science 322 or 376. System analysis and design techniques are explained. System implementation and post-implementation analysis techniques are discussed. A system development project is required.

## 311 Management as a Behavioral Science II (3)

Prerequisite: Business Administration 210. Building upon 210, this course provides a more detailed examination of motivation, leadership, group process, decision-making, job design, and organizational development. In addition to providing more detail in terms of content, this course provides the student with considerable practical experience through the use of class exercises, case studies, and small group discussions.

## 312 Industrial and Labor Relations (3)

Prerequisite: Business Administration 210. Emphasis is on the dynamic relationship between management, employees, unions, and government as determinants in the efficient and effective use of human resources. Current issues and case materials are used to supplement text and lecture.

## 315 Marketing Management (3)

Prerequisites: Senior standing, Business Administration 131 and nine hours of marketing, including Business Administration 206. An intensive analysis of major marketing decisions facing the firm, such as level, mix, allocation, and strategy of marketing efforts. Specific decision areas investigated include market determination, pricing physical distribution, product policy, promotion, channel management and buyer behavior. Competitive, political, legal, and social factors that may affect such areas of decision are discussed. Cases, models, and problems are used heavily.

## 318 Industrial and Organizational Psychology (3)

(Same as Psychology 318.) Prerequisite: Psychology 101 or Business Administration 131 and 210. This course introduces the student to psychological research and theories pertaining to human behavior in the work setting. Topics covered include: selection, performance appraisal, training, leadership, motivation, job satisfaction, and organizational design.

## 319 Employee Training and Development (3)

Prerequisite: Business Administration 210 or permission of instructor. An intensive study of training in organizations, including needs analysis, learning theory, management

development, and development of training objectives and programs. Projects and exercises are used to supplement the readings.

## 329 Intermediate Statistics (3)

(Formerly Business Administration 231.) Prerequisite: Business Administration 131, Mathematics 101, Mathematics 102, and Business Administration 103. Further study of statistical tools for forecasting in a decision-making context. Topics include explanatory models (multiple regression), classical time-series decomposition, and extrapolative techniques (exponential smoothing and Box-Jenkins procedures). In addition, methods for considering problems of intervention effects, seasonality, and collinearity will be discussed. Students will perform extensive analyses of time series data using computer packages.

## 330 Applied Linear Statistical Models (3)

Prerequisites: Business Administration 131, Mathematics 101 and 102. A study of linear statistical models for regression, analysis of variance, and experimental designs as applied in management sciences.

## 331 Multivariate Analysis (3)

Prerequisites: Business Administration 131, Mathematics 101 and 102. A study of statistical techniques applicable to multivariable relationships.

## 334 Investments (3)

Prerequisite: Business Administration 204. Financial analysis of debt and equity instruments available on organized exchanges and in less tangible over-the-counter markets. Techniques of such analysis are presented in context with economic and management circumstances within the company, industry, and economy.

## 340 Intermediate Accounting I (3)

Prerequisites: Business Administration 140 with a minimum grade of "C", Business Administration 145 and 131. (Business Administration 131 may be taken concurrently.) Accounting theory and practice related to the acquisition, use, and disposal of current fixed and intangible assets (excluding long-term investments in securities). Other topics include current liabilities and income-tax accounting. Expanded coverage is afforded the theoretical foundations of financial accounting and reporting, the accounting model and information processing, and the financial statements of profit-seeking enterprises.

## 341 Intermediate Accounting II (3)

Prerequisite: Business Administration 340 with a minimum grade of "C" or consent of department. Accounting theory and practice related to issued corporate debt and equity and to long-term investments in securities. Other topics include pension accounting, statement of changes in financial position, earnings per share calculations, and inflation accounting.

## 342 Advanced Accounting (3)

Prerequisite: Business Administration 341 with a minimum grade of "C" or consent of department. Accounting theory and practice related to partnership, business combinations, consolidated financial statements, financial reporting by multinational companies, and non-profit organizations.

## 343 Accounting for Governmental and Not-For-Profit Entities (3)

Prerequisites: Business Administration 140 and junior standing. Principles of fund accounting and financial reporting for governmental and not-for-profit entities.

## 344 Computer Applications in Accounting (3)

Prerequisites: Business Administration 103, 145, and 340, or consent of area. Managerial and financial accounting applications of computers—budgeting, financial planning and analysis, and accounting information processing systems. Emphasis on development of systems for micro and mainframe computers using high level applications development software and on associated internal control and auditing problems.

## 345 Cost Accounting (3)

Prerequisite: Business Administration 145 with a minimum grade of "C" or consent of department. The study of the basic principles of cost determination for, and control of, manufacturing and distribution activities. The accumulation and tracing of costs to products, processes, and responsibility centers for purposes of financial accounting and management control are emphasized. Topics covered include: job-order costing, process costing, and the development and use of standard costs within a system of absorption costing.

## 347 Income Taxes (3)

Prerequisites: Business Administration 140 with a minimum grade of "C" and Business Administration 145 or consent of instructor. Fundamentals of federal income taxation with emphasis on individuals. Topics covered include: determination of income, exclusions, exemptions, personal and business deductions, accounting methods, capital gains and losses.

# Business Administration

## 348 Auditing (3)

Prerequisite: Business Administration 341 with a minimum grade of "C" or consent of department. Examination of fundamental audit objectives and techniques employed in the verification, analysis, and interpretation of accounting records and financial statements. The work of the independent public accountant is emphasized.

## 349 Business Income Taxation (3)

Prerequisite: Business Administration 347. A study of the federal income taxation of partnerships and shareholders and corporations, including subchapter S (small business) corporations with emphasis on problems encountered in their formation, operation, liquidation, and sale.

## 350 Financial Policies (3)

Prerequisite: Business Administration 204. The intensification and application of the concepts developed in Business Administration 204. Special emphasis is given to the development of top management policies and their application toward complex problems of finance. Techniques for identifying and dealing with these problems before they become acute will be investigated. Cases will be integrated with appropriate outside reading.

## 356 Commercial Bank Management (3)

Prerequisites: Economics 52 and Business Administration 204. Corporate finance and microeconomics are applied to matters of importance to commercial bankers. Among the subjects treated are bank-asset portfolio construction, lending policies, liabilities management, bank capital structure, short-run cash management, financial market rates and flows, and quantitative models for bank management. Commercial bank management is analyzed from an internal viewpoint in terms of what bank managers should look for in asset management and why; what market conditions they should be aware of; and what techniques they can use to meet changing economic and financial conditions.

## 368 Business Fluctuations and Forecasting (3)

(Same as Economics 368). Prerequisite: Economics 220. Discussion of factors affecting economic conditions, short-term fluctuations in business activity, and plans and policies for economic stabilization. Emphasis on problems and techniques of forecasting aggregate and industry demand.

## 375 Operations Research (3)

Prerequisites: Mathematics 101 and Business Administration 202, or Mathematics 250. Applications of the

theories and techniques of operations research to problems of business, government, and industry, with emphasis on the construction and utilization of quantitative decision models.

## 380 International Business (3)

Prerequisites: Economics 51 and Business Administration 204. The United States in the world economy; emerging nations; foreign exchange market; foreign investment; commercial documents; world trade; and management of enterprises abroad.

## 385 Operations Research II (3)

Prerequisite: Business Administration 375. Topics of special interest including mathematical programming, stochastic decision making, digital simulation, game theory and other selected techniques. (Formerly Mathematical Programming).

## 391 Business Policy and Administration (3)

Prerequisites: Senior standing and Business Administration 204, 206, and 210. Comprehensive cases are used to examine the dynamics of business management. The role of high-echelon management in the administrative process is integrated with the diverse functions of business to develop an operation system. Particular attention is given to formulation of a policy framework, planning and implementing executive action. Both team and individual analyses and reports are utilized with class evaluation and recommendation. (It is preferred that this course be taken during the student's final semester).

## 392 Entrepreneurship/Small Business Management (3)

Prerequisites: Economics 51, 52, and a minimum of six courses from the required Business Administration core. This integrative general management course is designed to communicate the academic principles of business management applicable to solving of problems of small and medium-size businesses and assist in their development. This course will provide a background in the forms of business, the development of business plans and systems integration, venture capital, accounting procurement, promotion, financing, distribution and negotiations for initial organization, and operation and expansion of the firm.

## 395 Business Administration Seminar (1-10)

Prerequisite: To be determined each time the course is offered. May be repeated for credit.

## 410 Managerial Economic Analysis (3)

Microeconomic analysis of consumers, firms, and government. The concepts and mathematical tools of economic analysis are applied to the production and distribution functions of organizations.

## 411 Analysis of National Economic Environment (3)

The character and functioning of the national economic system; analyzing and forecasting fluctuations in national income and product, employment, and prices; the influence of monetary and fiscal policies. Emphasis is on the acquisition of knowledge concerning forces affecting all business firms.

## 412 Public Policies Toward Business (3)

Analysis of public policies, as represented by laws, court decisions, and other governmental activities, as they affect efficiency in the public and private sectors, employment and price levels, and business decision making.

## 415 Societal, Environmental, and Management Decisions (3)

Prerequisites: Business Administration 410 and 411. An examination of the external relationships of a business enterprise with the broad and diverse interests of society. These are government and social forces that sometimes operate counter to the potential dictates of theoretical internal economic policies for an individual organization. The primary objective is to examine the increasingly complex set of interrelationships among business, government, other economic groups, and "the public." A series of major current problems, chosen to raise some of the major issues involved in these interrelationships, and in particular to explore the development of public policy on such problems.

## 416 International Finance, Investment, and Commercial Relations (3)

Prerequisite: Business Administration 411. The international monetary system; balance of payments; liquidity; foreign-exchange market; foreign investment; international and regional financial institutions. Commercial documents; United States trade patterns, composition, and structures; United States commercial policy; regional trade groupings; trade of emerging nations; and international trade organizations.

# Business Administration

## 417 International Business Operations (3)

Prerequisite: Business Administration 416. Functional management within multinational corporations; case studies of operations abroad; and focus on managerial decision making.

## 418 Governmental Budgeting and Financial Control (3)

(Same as Public Policy Admin. 418.) Prerequisite: Accounting 440. A study of municipal and federal financial control and budgeting procedures with emphasis on public policy. The impact of financial control on top management decisions and the effect of budget strategies on the allocations of public funds.

## 420 Seminar in Business Administration (3)

An intensive study of a specific area of business administration of some specific business or economic phenomenon, or a specific problem or theory. Several different courses may be offered under this course number.

## 424 Seminar in Current Management Information System Topics (3)

Prerequisite: Quantitative Management 488 or 491. Advanced topics of current interest in management information systems. Content to be determined each time the course is offered. May be repeated for credit.

## 430 Individual Research (1-10)

Prerequisite: Consent of instructor and graduate director. Special individual research topics under the guidance of a specific professor.

## 490 Policy Formulation and Administration (3)

Prerequisites: Accounting 440, Finance 450, Management 460, Marketing 470, and Quantitative Management 482. This course should be taken during the semester prior to graduation. In no case may it be taken sooner than two semesters prior to graduation. A capstone case course which views policy problems and issues from the perspective of top management. Policy formulation, decision-making processes, and corporate strategy. Implementation of corporate policy requires an examination of leadership, communication, organizational structure, and social responsibility.

## Accounting (400-level)

### 419 Management Accounting and Auditing in Governmental and Not-for-Profit Entities (3)

Prerequisite: Business Administration 418 and 441 or consent of instructor. A study of accounting for use in the public sector and in not-for-profit organizations. Cost behavior controlability, and traceability concepts for management planning and control will be investigated as well as auditing in the public sector.

### 421 Seminar in Corporate Accounting (3)

Prerequisite: Accounting 448 or consent of instructor. Consideration of current literature and research in corporate accounting.

### 422 Seminar in Governmental and Non-Profit Accounting (3)

Prerequisite: Business Administration 418 and Accounting 445 or consent of instructor. Consideration of the positions of authoritative groups concerning accounting theory and practice for governmental and nonprofit entities. Evaluation and critical analysis of these positions in view of current accounting literature and research finding.

### 440 Financial Accounting: Theory and Practice (3)

Business organization, operations, and terminology. A survey of the broad areas of accounting, including its mechanisms. Emphasis on the development of a logical framework of underlying concepts upon which practices and procedures are superimposed. Intensive study of balance sheet, income statement and other financial reports; together with the accounting principles underlying them. Statements designed for stockholders and creditors. The interpretative and analytical point of view is stressed.

### 441 Concepts in Management Accounting (3)

Prerequisite: Mathematics 101 or 102 with minimum grade of "C" and Accounting 440. The development, interpretation, and uses of accounting reports and supplementary information for management planning, control, and decision making. Emphasizes the application of relevant cost behavior, control, and traceability concepts in the preparation of internal accounting reports, with a secondary emphasis upon product costing techniques as appropriate to financial accounting needs. Topics include break-even analysis, operational budgeting, direct costing, absorption costing, standard costs and variance analysis, business segment analysis,

responsibility accounting, distribution cost accounting, and gross profit analysis.

### 443 International Accounting (3)

Prerequisite: Business Administration 341 or Accounting 445 or consent of instructor. Accounting practices for multi-national businesses. Discussion of comparative financial accounting practices, the development of international accounting standards, and managerial accounting practices related to multi-national operations.

### 445 Financial Accounting: Advanced Theory and Analysis (3)

Prerequisite: Accounting 440 or equivalent. Development of a structure of financial accounting theory and analysis of asset and equity valuation methods and their related effects on income determination.

### 446 Topics in Professional Accounting (3)

Prerequisites: Accounting 440 and Quant. Mgt. Science 481. An investigation of the impact of past, current, and prospective developments upon the role of the professional accountant. Topics include professional ethics, generally accepted auditing standards, types of auditor's opinions, internal control, and internal auditing; the use of probability theory and statistical sampling methods in the conduct of an audit; management advisory theory and statistical sampling methods in the conduct of an audit; management advisory services; auditing in mechanized and electronic data-processing systems; the requirements imposed by the S.E.C. and other regulatory agencies; and the legal responsibilities.

### 447 Accounting Systems for Management Planning and Control (3)

Prerequisite: Accounting 441. A study of advanced managerial accounting techniques useful in facilitating the planning and control process in the modern organization. Emphasis on the implementation and administration of these techniques, their integration with management information systems, and the organizational role of the corporate accountant.

### 448 Seminar in Advanced Theory and Contemporary Issues in Accountancy (3)

Prerequisite: Accounting 440. Consideration of the positions of several authoritative groups concerning the structure of accounting theory-assumptions, postulates, principles, and practices. Evaluation of these positions in view of confirming and conflicting periodic literature. Critical analysis of topics of current interest and importance in accounting literature.

# Business Administration

## 449 Systems Auditing (3)

Prerequisites: Accounting 440, Quant. Mgt. Science 480 or consent of instructor. Study of techniques involved in the control and audit of computer-based accounting information systems. Emphasis on the review of internal controls at operational and administrative levels and on computer-assisted audit techniques.

## Finance (400-level)

### 450 Financial Management (3)

Prerequisites: Accounting 440, Quant. Mgt. Science 481 (or Business Administration 131), Business Administration 410 (or Economics 51 equivalent), and Business Administration 411 (or Economics 52 equivalent). A consideration of the methods used to determine the firm's need for short and long-term capital, the possible means of securing such capital once a need has been determined, and the techniques for judicious use of the capital in terms of asset investment and asset management decisions. Topics include the finance function, operating and financial methods of capital budgeting decisions, cost of capital, dividend policy, long-term financing, management of current assets, intermediate and short-term financing, and corporate valuation in mergers and consolidations.

### 451 Advanced Financial Management (3)

Prerequisites: Finance 450 and Quant. Mgt. Science 481. Exposure to recent financial management theory through selected readings. Financial management problems are considered by the use of cases and simulation models. An original research project under the supervision of the instructor is required.

### 455 Security Analysis (3)

Prerequisite: Finance 450 and Quant. Mgt. Science 481. An in-depth study of techniques used in evaluating various financial assets as investment opportunities. Financial assets studied include common stock, preferred stock, and fixed income securities. Other related topics such as sources of investment information and current market trends are discussed.

### 456 Management of Financial Intermediaries (3)

Prerequisite: Finance 450. A consideration of the unique problems of management of institutions which form the money and capital markets in the United States. The impact of monetary and fiscal policies on

the dynamic management of the financial assets of numerous financial intermediaries: commercial banks, insurance companies, savings and loan associations, investment bankers, and investment companies.

### 457 Portfolio Management and Special Topics in Investments (3)

Prerequisite: Finance 455. Traditional portfolio management as well as current portfolio theory is studied. The use of simulation and mathematical models to optimize the return on portfolios is discussed. In addition, special topics of current interest or recent developments in the field of security analysis and portfolio management are presented.

### 458 Commercial Bank Management (3)

Prerequisite: Finance 450. This course explores the various bank management techniques required to manage a modern commercial bank in a rapidly changing environment. Topics include asset and liability management, capital adequacy, bank holding companies, profitability, and bank market structure and regulation.

## Management (400-level)

### 460 Organizational Behavior and Administrative Processes (3)

(Same as Public Policy Admin. 460.) The theoretical and research contribution of the behavioral sciences to management and administration are examined and applied to selected organizational situations. Areas to be considered from the standpoint of both individual and organizational performance are communication, motivation, conflict, decision making, goal setting, leadership, organizational design, climate, development, and control. Utilizing a systems perspective, the course attempts to develop in each student an ability to analyze and solve organizational problems.

### 461 Managing Human Resources (3)

Prerequisite: Management 460. In-depth examination of selected human resource management issues from a contemporary manager's viewpoint. Topics examined include: personnel planning; employee selection; performance appraisal, training, and development; compensation; legal issues; discipline; and labor relations. The course examines these topics as they relate primarily to operational activities in organizations.

### 462 Advanced Organizational Behavior and Administrative Processes (3)

Prerequisite: Management 460. An in-depth examination of selected organizational and individual theories affecting behavior and operating performance. Organizational structure and design, formal and informal organization, decision making, communications and motivation are analyzed for their organizational impact. The course seeks to develop further the ability to analyze and evaluate organizational processes and individual behavior.

### 463 Organizational Training (3)

Prerequisite: Management 460 or 461 or permission of department. An intensive study of training and developmental methods/issues in organizations. Topics include needs analysis, learning theory, training techniques, evaluation, and management development. Other topics include memory, training objectives, and training facilities. Projects and exercises are used to supplement reading and lecture.

### 465 Union-Management Relations and Collective Bargaining (3)

Prerequisites: Management 460 and Business Administration 412. Primary concern is with the setting and the dynamics of contract negotiation and administration. Emphasis is on the development of insight and understanding of the forces affecting the decisions of the parties to a labor contract within the context of the social, political, and economic environment of the organization. A dynamic approach is taken to examine difficulties that arise in attempting to administer a collectively established relationship between employer and employee.

### 466 Personnel Administration: Theory and Practice (3)

Prerequisites: Management 461 and Quant. Mgt. Science 481. Examination of various methods and procedures (including statistical techniques) critical to the design and operation of a modern personnel management system. Personnel techniques to be studied include: job analysis, employee recruitment, selection, and placement; performance appraisal; measurement of employee attitudes, job satisfaction, and organizational climate. Consideration will be given to relevant legal issues, as well as to the theories or rationale which underlie the various personnel techniques and functions.

## Business Administration

### 467 Dynamics of Interpersonal Relations (3)

Prerequisites: Management 460 or academic background in general psychology. The self-concept, personality dynamics, and mechanisms of adjustment. Catalysts and barriers to effective communication. Examination of the functional relationship between ego-needs, perceptual distortion, and stereotypical thinking. Role-playing, the resolution of role-conflict and objective self-evaluation. The development of cooperation and trust as a prerequisite to effective human relations.

## Marketing (400-level)

### 470 Contemporary Marketing Concepts (3)

Prerequisite: Accounting 440 and Business Administration 410. Designed for students with no prior course work in the field of marketing. A wide spectrum of marketing institutions and activities is covered. The impact of marketing on the total firm, the economy and society in general is assessed. The course is intended to develop and organize the fundamental marketing concepts necessary to an analytical study of consumer behavior, the economic environment, and four managerial aspects of marketing. The acquisition and utilization of marketing research data for problem solving is stressed. Relation and integration of basic marketing knowledge to the successful development of sound marketing policy, planning, and strategy is developed.

### 471 Marketing, Planning, and Strategy (3)

Prerequisite: Marketing 470. Emphasizes the development of a total marketing program through an analytical study of the marketing-mix, the diagnosis of the business situation, along with the influence of exogenous variables and the development of an effective overall marketing strategy. Stresses importance of an integrated marketing plan and utilizes modern decision-making tools. Supplementary readings, journal articles, and current periodicals are used to place the theoretical framework of the course into the contemporary environment of the market place.

### 475 Consumer Motivation and Behavior (3)

Prerequisite: Marketing 470. An analysis of the socio-psychological foundations of consumer behavior including personality differences, needs and wants, status symbols, social change and mobility, fads

and fashions. Consumer spending and saving habits, product preferences, leisure-time patterns, shopping behavior and motivation research also are examined for their impact on advertising, selling, and marketing management.

### 476 Marketing Communications (3)

Prerequisite: Marketing 470. Deals with managerial decision making by placing particular emphasis on assimilating and integrating all forms of marketing communication in the development of promotional policies, plans, and procedures. Course approach is analytical rather than descriptive in investigating the areas of advertising, public relations, sales management, packaging, and other forms of demand stimulation.

### 477 Product Planning and Pricing (3)

Prerequisite: Marketing 471 or concurrent registration. A study of product management including the areas of new product development, the concept of the product line, deletion of nonessential products, and establishing the product's price. Also examined are pricing alternatives and the factors influencing price setting in the framework of a contemporary market structure.

### 478 Marketing and Business Research (3)

Prerequisite: Marketing 470. A broad approach to marketing research as a model for acquiring, retrieving, and analyzing decision-making information. Includes market measurement, evaluation of sales, and cost effectiveness, sales forecasting and primary marketing research studies aimed at solving specific problems. Emphasis is placed also on building a theoretical and analytical framework to provide flexibility in the design of marketing experiments and in judging recent research innovations.

### 479 Marketing Channel Strategy (3)

Prerequisites: Marketing 470 and Quant. Mgt. Science 482. A study of the marketing institutions involved in the distribution of goods and services, industrial and consumer markets, as well as the establishment and integration of marketing channels. The planning and analysis of the macrodistribution and microdistribution systems which contribute to creation of optimal time and place utility. Some attention is paid to quantitative applications to marketing situations including simulation and logistics.

## Quantitative Management Science (400-level)

### 480 Introduction to Computer Programming with Managerial Applications (3)

(Same as Public Policy Admin 480.) A particular computer compiler language and computer system (University of Missouri computer network), are used extensively to illustrate computer system concepts and to give the student actual experience in programming and implementing business oriented systems. Time sharing systems are studied and utilized.

### 481 Statistical Analysis for Management Decisions (3)

Prerequisite: Quant. Mgt. Science 480 (may be taken concurrently) and Mathematics 101 with a minimum grade of "C". The role of statistical evidence in the formation of inference and in the selection of strategies in solving business problems is developed. Probability and probability distributions are studied as a basis of statistical inference. An introduction to multivariate analysis is provided which includes analysis of variance and regression methods.

### 482 Operations Research Methods (3)

Prerequisite: Quant. Mgt. Science 481. Development of a working knowledge of operations research techniques, as applied to dynamic business problems. A study of analytical approaches to business programs, construction of mathematical models, and manipulation of model variables for managerial decision making. Topics include mathematical programming, inventory theory, game theory, queuing theory, sequencing models, and simulation models.

### 483 Production and Operations Management (3)

Prerequisite: Quant. Mgt. Science 482. The economic concepts of production and technology are integrated with practical problems encountered in the production of goods and services. Topics include design, layout, and location of facilities, forecasting, manpower and production scheduling, inventory control, queuing, material planning, and quality control. Modelling, analytical techniques, and simulation are used in studying these problems. Applications to service industries (e.g., hospitals, government) are included.

# Business Administration

## 484 Business Information Systems (3)

Prerequisite: Quant. Mgt. Science 480. A study of business-oriented information systems. The programming language COBOL will be introduced and studied in detail. Emphasis will be on program definition and the use of file structures in business-oriented applications.

## 485 Computer-Based Information Systems: Theory and Practice (3)

Prerequisite: Quant. Mgt. Science 480. Introduction to computer-based information systems. Problems of analysis, design, and implementation are examined. Various techniques commonly used in business-oriented applications are surveyed. Use of the computer is an integral part of the course.

## 486 Advanced Statistical Methods for Management Decisions (3)

Prerequisite: Quant. Mgt. Science 481. A study of statistical methods applicable to specialized areas of statistical analysis. Topics include Markov processes, distribution-free tests, sampling theory and methods, experimental design, time series analysis, and spectral analysis.

## 487 Advanced Operations Research Applications (3)

Prerequisite: Quant. Mgt. Science 482. Application of operation research techniques to business problems. After a brief review of these techniques, followed by an examination of typical applications reported in the literature, the major portion of the term is spent in analyzing and solving an actual business operations research problem. A team approach is used, with groups of two or three students responsible for finding and solving an operations research problem in a local company. Primary emphasis is placed on the use of operations research techniques to solve management problems.

## 488 Information Systems Design (3)

Prerequisites: Quant. Mgt. Science 484 and 485. A study of some advanced techniques used in information systems design including systems analysis. Data base management system concepts will be introduced. Primary emphasis of the course will be on the ability of the student to integrate the concepts and techniques of information systems into a well defined system design. Semester project required.

## 489 Data-Base Management Systems (3)

Prerequisites: Quant. Mgt. Science 484 and 485. Data management and data independence. Data-base model philosophies are reviewed. Introduction to commercially available data-base management systems is made. A data-base management package is used to illustrate basic concepts.

## 491 Computer Systems Concepts (3)

Prerequisite: Quant. Mgt. Science 480. An introduction to computer hardware and systems concepts. Assembly language is studied.

## 492 Information Systems Management (3)

Prerequisite: Quant. Mgt. Science 488. Management of computer based information systems. Topics may include cost and value of information, economic trade-offs, hardware/software evaluation and acquisition, system implementation, performance measurement and evaluation, and social implications.

## 493 Simulation for Managerial Decision Making (3)

Prerequisites: Quant. Mgt. Science 482 and 485. Introduction to simulation as a managerial decision-making aid. Application of simulation to a number of management science oriented models. The course introduces and requires use of a simulation language.

## 494 Advanced Operations Research Topics (3)

Prerequisite: Quant. Mgt. Science 482. Advanced topics from such areas as mathematical programming, stochastic processes, decision theory, or game theory are studied in depth.

## Abbreviations

### Course Area Key

The following abbreviations are used to indicate instructional areas in the School of Education:

**ADU ED**

Adult Education p. 93

**CNS ED**

Counselor Education p. 88

**ECH ED**

Early Childhood Education p. 100

**ED ADM**

Educational Administration p. 94

**ED FND**

Educational Foundations p. 95

**ED PSY**

Educational Psychology p. 89

**ED S&R**

Educational Statistics & Research p. 90

**ED TEC**

Educational Technology p. 96

**EDUC**

School-wide Education p. 86

**ELE ED**

Elementary Education p. 101

**EVL MS**

Evaluation and Measurement p. 90

**PHY ED**

Physical Education p. 104

**SEC ED**

Secondary Education p. 97

**SPC ED**

Special Education p. 91

## School-Wide Courses

### School-Wide Courses Education (EDUC)

Prerequisites may be waived by consent of the department.

**65 The University (3)**

A School of Education interdisciplinary course on the principles, development, and organized structure of the university. Special emphasis will be placed on the role of the university in modern society and upon forces affecting the direction of the university and its potential for change. Methods include outside speakers, discussion groups, and laboratory research on UMSL.

**204 Special Topics in Education (1-3)**

Prerequisites: Completion of 75 hours and consent of instructor. Examination of a special area or topic within the field of education. Topics to be considered will be announced prior to registration and may vary. For elective credit only. This course may be repeated for different topics. Not to exceed a total of six hours credit.

**297 Independent Study (1-3)**

Prerequisites: Completion of 75 hours and consent of instructor. Independent study through readings, research, reports, and conferences designed to provide depth in areas of study previously introduced in education courses. For elective credit only. May be repeated. Not to exceed a total of three hours credit.

**301 Introduction to Microcomputers in Education (3)**

Prerequisite: None. A course designed to introduce individuals to the microcomputer as an instructional medium. The course will emphasize (1) the history, role, and use of microcomputers in education; (2) learning the elements of programming for the microcomputer; and (3) beginning program construction and debugging operations.

**306 Graduate Workshop (1-10)**

Prerequisite: Consent of instructor.

**308 Graduate Institute (1-10)**

Prerequisite: Consent of instructor.

**375 Micro Computer Applications in Music Education (2)**

(Same as Music 375.) Prerequisites: Music 257 or Music 267 and Educ 301 or consent of the instructor. An examination of the potential of microcomputers in the music education field. Experiences with available hardware and software suitable for applications that include inventory, budget, music library cataloging, digital music synthesis, and computer-assisted instruction at all levels.

**376 Microcomputer-Assisted Instruction Curriculum Development in Music (2)**

(Same as Music 376.) Prerequisites: EDUC 375 or Music Education 375 and a working knowledge of BASIC or PILOT or consent of instructor. Design and development of Computer-Assisted Instruction (CAI) lessons in music. Commercial courseware and various CAI models will serve as the basis for creating original programs that can be used effectively to implement objectives of the music curriculum for a specific school or school district. The design, refinement, and production of a major CAI program for use in an elementary, secondary, or post-secondary setting is required.

**393 Practicum in Individualized Instruction (3-6)**

Prerequisites: Completion of the course(s) to which assigned for instruction and consent of instructor. Supervised instruction in individualized programs. Seminar accompanies instructional experience. May be repeated.

## School-Wide Courses

### **408 Graduate Institute (1-10)**

Prerequisite: Consent of instructor.

### **414 Common Doctoral Seminar(s) (3)**

Prerequisites: Admission to the doctoral program. **Two EDUC 414 seminars are required** for all doctoral students, for a total of six hours of EDUC 414 seminar credit. One: "Elements of Educational Leadership" is to be taken early in the program. The other: "Research: Implementing Change in Educational Systems" is to be taken following completion of the research courses identified in the student's approved program.

### **415 Emphasis Area Seminar(s) (3)**

Prerequisite: Admission to the doctoral program. All doctoral students are required to take at least two emphasis area seminars consistent with their programs. Students may take additional emphasis area seminars. Obtain a list of emphasis area seminars from Office of Graduate Studies in Education.

### **490 Internship (1-10)**

Prerequisite: Consent of instructor. Closely supervised experience in a field setting under the direction of a graduate faculty member. An appropriate level of competence and evidence of growth in the professional role must be demonstrated by the intern. The internship will include planning, research, evaluation, and related professional activities.

### **491 Staff Development and Professional Growth (1-10)**

Designed in conjunction with an individual school district or educational agency and related to problems of education confronting that specific district or agency.

### **497 Thesis Research (1-10)**

Prerequisite: Consent of instructor.

### **499 Dissertation Research (1-12)**

Prerequisite: Admission to candidacy in the Ed.D. program. Credit awarded only upon successful defense of the dissertation.



## Behavioral Studies

Courses in this section are grouped as follows: Counselor Education (CNS ED), Educational Psychology (ED PSY), Educational Statistics and Research (ED S&R), Evaluation and Measurement (EVL MS), Special Education (SPC ED).

Prerequisites may be waived by consent of the department.

### Counselor Education (CNS ED)

#### 314 Human Relations Skills (3)

Prerequisite: Consent of the instructor. A course emphasizing the development of specific skills in human relationships to help facilitate effective interaction among individuals and groups in the helping professions. Readings, discussion, and skill-building exercises will be used to develop various human relations skills.

#### 330 Principles and Procedures for Student Personnel Work (3)

Student personnel work in educational institutions, objectives of student personnel work, and certain pertinent techniques.

#### 331 Counseling the Handicapped (3)

Prerequisite: SPC ED 313 or equivalent. A course emphasizing counseling skills for individuals who plan to work with the handicapped. Emphasis is placed on using counseling strategies with school-age handicapped children.

#### 332 Youth and Chemical Dependence (3)

This course provides information about adolescent and pre-adolescent chemical dependence and its relation to the developmental problems of youth. Skills in the identification, intervention, and referral of adolescent and pre-adolescent chemical dependents will be emphasized, along with preventive measures and family and school issues.

#### 342 Occupational and Education Information (3)

Nature and use of occupational and educational information. Characteristics, requirements of occupations, and training opportunities.

#### 404 Seminar (3-10)

#### 411 Counseling Methods (3)

Counseling as a professional field; the process of counseling; counseling for educational, occupational, social, and personal adjustment.

#### 413 Organizational Foundations for Special Education (3)

Prerequisite: SPC ED 313 or 412. A study of organizational issues in special education and their implications for practices and procedures. Specific attention will be given to special education delivery systems, compliance standards, funding sources, and regulatory standards.

#### 414 Individual Inventory (3)

Prerequisites: ED S&R 427 and EVL MS 432. Uses of educational and psychological appraisal techniques in counseling. Develops counselor's abilities in assisting clients toward self-awareness through the use of test and non-test data. Ethical practices in the use of tests and the maintenance of personnel records are stressed.

#### 420 Group Procedures in Counseling (3)

Prerequisites: CNS ED 411 and 493. Emphasis is on a survey of theory and research in group structure and processes. Students are expected to participate in an intensive group experience and conduct a group themselves under the instructor's supervision.

#### 423 Introduction to Systems Theory for Marriage and Family Counseling (3)

Prerequisite: CNS ED 411. This course is an introduction to general systems theory and its application to marriage and family counseling. Students learn the theoretical basis for intervention and counseling strategies in the context of an ecology of human development. Developmental issues at individual, sibling, marital, family, and community levels and the ways in which various social systems interact with and mutually influence one another are presented.

#### 424 Enrichment Strategies for Counselors in Marriage and Family Development (3)

Prerequisite: CNS ED 423 or consent of instructor. This course provides the counselor with an intensive survey of the major approaches to marriage and family enrichment and the processes of adapting enrichment strategies for use in counseling. Life span considerations and methods for implementation in a variety of settings are explored. Students are challenged to create their own models for prevention of dysfunction and enhancement of marriage and family living.

#### 425 Family Counseling (3)

Prerequisites: CNS ED 423 and 493, or consent of instructor. This course offers an in-depth analysis of strategic, structural, experiential, communications, behavioral, and psychodynamic approaches to systems change and family counseling. The range of techniques and applied practices evolving from each orientation are explored as are normal and dysfunctional family processes. Various counseling modalities, such as individual, concurrent, collaborative, conjoint, group, intergenerational, and networking are also considered.

#### 427 Counseling the Chemical Dependent (3)

Prerequisite: CNS ED 411. This course is an introduction to the problems resulting from the abuse of alcohol and other chemicals, with an emphasis on the impact of chemical dependence on the individual, the family, the employer, and the community. The special problems resulting from chemical dependence as it affects various populations, e.g. women, minorities, handicapped, the elderly, will be analyzed and linked to appropriate counseling strategies.

#### 429 Advanced Strategies in Chemical Dependence Counseling (3)

Prerequisite: CNS ED 427, 493, or consent of instructor. This course offers an in-depth analysis of the various strategies and techniques that can be utilized in counseling chemically dependent individuals. Programs and interventions appropriate to a variety of settings will be analyzed.

#### 431 Principles and Procedures of Student Personnel Work (3)

Student personnel work in educational institutions. Objectives of student personnel work and certain pertinent techniques.

#### 436 Student Personnel Work in Higher Education (3)

A survey course in student personnel administration with an emphasis on understanding the college student and on learning ways to meet both his academic and non-academic needs.

#### 442 Career Information (3)

Nature and use of occupational and educational information. Characteristics and requirements of occupations and training opportunities. Process of vocational choice.

## Behavioral Studies

### 443 Career Development (3)

Emphasis is on current theories of vocational development and their application to interest, aptitude, and ability tests significantly related to vocational development.

### 451 Counseling Parents of Exceptional Children (3)

The development of counseling skills to enable human service professionals to interact productively with families who have handicapped children.

### 493 Guidance Practicum I (3)

Prerequisite: Consent of instructor. Supervised practice in counseling.

### 494 Guidance Practicum II (3)

Prerequisite: Grade of "B" or better in CNS ED 493 and/or consent of instructor. Supervised practice in counseling.

### 497 Problems (1-10)

## Educational Psychology (ED PSY)

### 211 Growth and Development (3)

Comprehensive study of chronological age norms and the process of growth and development throughout the entire life span. There will be special emphasis on childhood, adolescence, and senescence.

### 312 The Psychology of Teaching and Learning (3)

Prerequisites: ED FND 111, Psychology 270 or 271, and admission to the School of Education. Application of the principles of psychology to an understanding of the dynamics of teaching behavior and learning behavior. Involves both theoretical and practical approaches to analysis of the learning environment of the school. Required of all who are preparing to teach.

### 325 Education and the Psychology of Human Sexuality (3)

The course is designed to provide educators and other human services personnel with knowledge and understanding of various personal and social dimensions of human sexuality.

### 404 Seminar (1-10)

### 411 Psychology of Learning Processes (3)

An advanced course in the application of psychological theories and principles to the problems of the teacher, counselor, administrator, and others in the helping professions.

### 413 Personality Development and Adjustment (3)

A course in personality development, personality structure, and the dynamics of adjustment. Course materials are oriented to the applied problems of counselors, teachers, administrators, and others in the helping professions.

### 416 Psychology of Early Childhood Development (3)

A survey of current research on the development of children, ages birth to six, including research in the laboratory, in the home, and in day care and in early intervention projects.

### 417 Psychology of the Elementary School Child (3)

The application of educational psychology to problems of teaching in the elementary school.

### 418 The Psychology of Adolescence (3)

A critical psychological analysis of studies and investigation of the various aspects of adolescence.

### 420 Behavioral Analysis of Human Learning (3)

Prerequisite: Graduate standing. A course in the principles of human learning and the technology of behavior modification, from the perspective of the teaching and counseling professions. Emphasis is placed on its application to school learning and behavior problems and to social behavioral patterns in a variety of appropriate counseling settings.

### 497 Problems (1-10)

## Behavioral Studies

### Educational Statistics and Research (ED S&R)

#### 320 Educational Statistics (3)

Statistical methods for teachers, supervisors, superintendents, and beginning graduate students. Frequency distributions, measures of central tendency, variability, sampling, and correlation.

#### 404 Seminar (3)

Prerequisite: ED S&R 427 or equivalent. Statistics and research seminar will address special issues and topics not normally included in the regular statistics and research courses.

#### 426 Multifactor Analysis in Education (3)

Prerequisite: ED S&R 427 or equivalent. Classical parametric statistical procedures for analyzing data in which there are two or more independent factors. Primary emphasis is on factorial design. Analysis of variance and of covariance are considered.

#### 427 Educational Statistics (3)

Statistical methods for teachers, supervisors, superintendents, and beginning graduate students.

#### 428 Nonparametric Statistics in Education (3)

Prerequisite: ED S&R 427 or equivalent. Attention is given to alternate analysis procedures to the classical parametric statistics. The nonparametric methods have less stringent data requirements than their parametric counterparts and thus are often more adaptable to much of the behavioral research.

#### 429 Advanced Test Theory in Education (3)

Prerequisite: ED S&R 427 and EVL MS 432 or equivalent. Statistical test theory procedures are presented. True and error score theory in mental measurement and its effect upon other statistical procedures are considered.

#### 430 Research Design for Educators (3)

A primarily non-quantitative course surveying the various techniques and strategies available to the educational researcher for the design and execution of research, as well as for the evaluation of research carried out by others.

#### 497 Problems (1-10)

Prerequisite: At least one previous educational statistics and research course with a grade of "B" or better. Individual study on topics pertaining to educational statistics and research design.

### Evaluation and Measurement (EVL MS)

#### 310 Interpretation of Educational Tests and Measurements (3)

A study of the principles of psychometrics with emphasis upon the classroom interpretation of group tests of intelligence and achievement. Required of all majors in special education.

#### 331 Classroom Measurement and Evaluation I (3)

Tests and measurements for the classroom. Basic measurement principles; test planning; construction and use of selection type tests, supply type tests, and performance tests; item analysis procedures; methods of summarizing test scores; determining derived scores and norms; and pupil evaluation.

#### 404 Seminar (1-10)

Evaluation and measurement seminar will address special issues and topics in the field of evaluation research and measurement technology.

#### 412 Evaluation and Applications of Computers in Education (3)

Prerequisite: ED S&R 427 or consent of instructor. Review of a computer language and evaluation of the various uses and capabilities of computers in the teaching, administration, and counseling areas of education. Familiarization with computing facilities and package programs.

#### 422 Individual Intelligence Testing (3)

Prerequisite: A course in group testing. Study of the Stanford-Binet Scale and other individual tests of intelligence. Practice in administering and interpreting the tests.

#### 431 Classroom Measurement and Evaluation II (3)

Prerequisite: EVL MS 331 or equivalent is strongly recommended. Descriptive statistical procedures, norms and correlations; reliability, error of measurement and validity; measurement of aptitude, achievement, interests, and attitudes and personal-social adjustment.

#### 432 Educational and Psychological Measurement (3)

General theory of measurement; interpreting test data; derived scores; theory of psychological tests; reliability and validity; measurement of achievement and aptitude, interests and attitudes, and personal-social adjustment.

#### 434 Multivariate Analysis Methods in Education (3)

Prerequisite: ED S&R 427. The study and application of discriminant, canonical, factor, cluster, and MANOVA analyses in the evaluation of educational problems.

#### 435 Multiple Linear Regression in Education (3)

Prerequisite: ED S&R 427 or consent of instructor. Evaluation of educational programs and hypotheses using linear regression models. Application of computer programs to analyze the usefulness and efficiency of educational models for decision making in teaching, administration, and counseling.

#### 497 Problems (1-10)

Individual study on topics pertaining to evaluation and measurement.

# Behavioral Studies

## Special Education (SPC ED)

### 101 Introduction to Classroom Teaching (3)

An introduction to the study of teachers' behaviors and learners' responses in classroom settings. Students will be assigned to school sites for specified observations/analyses and limited participation. Students will have the opportunity to evaluate the teaching profession as an appropriate career choice. The course will consist of approximately one-third lecture/seminar and two-thirds clinical/field experiences.

### 192 Field Experience in Special Education (3)

Intensive early field experience involving on-site observation and limited participation with exceptional individuals in schools and/or other educational agencies. This course is open to all students.

### 242 Characteristics of Learning Disabilities (3)

A study of the divergent characteristics of children with perceptual impairments. This course consists of fifteen, half-hour tapes, designed to offer instruction at an undergraduate level on the nature of children with learning disabilities, and the roles of educators, parents, and auxiliary personnel in diagnosis and remediation. Historical perspectives and future trends will be explored. The tapes are followed by student contact with the instructor, for discussion, work evaluation, and testing.

### 290 Student Teaching in Special Education I (5)

Prerequisites: SPC ED 313, 320, 332 and admission to student teaching. Must be taken with SPC ED 291 and must immediately precede SPC ED 291 in the semester. Clinical teaching experience in special education classrooms in schools under University and school supervision. Required of all majors in special education.

### 291 Student Teaching in Special Education II (5)

Prerequisite: SPC ED 290. Must be taken with SPC ED 290, and must immediately follow SPC ED 290 in the semester. Clinical teaching in special education classrooms in schools under University and school supervision. Assignments will be in different school districts, buildings, serving families of different socio-economic and cultural backgrounds, and at different grade levels from those of the SPC ED 290 assignments. Required of all majors in special education.

### 311 Sex Education for Exceptional Individuals (3)

Prerequisite: Consent of instructor. Course is designed to give teachers a thorough knowledge and understanding of the issues, problems, teaching techniques, and the current curricular resources of teaching sex education to handicapped individuals.

### 313 The Psychology and Education of Exceptional Individuals (3)

Prerequisite: Psychology 270 or 271 or equivalent. The psychology and education of individuals with special problems and/or abilities. Survey of theories and strategies for the learning-teaching process and of sources of assistance to educators and parents. Required in certification programs.

### 315 Speech and Language Problems of Exceptional Children (3)

Prerequisites: ED FND 111, SPC ED 313, and admission to the School of Education. Study of the problems associated with speech and language development and the techniques employed by classroom teachers to lessen these problems for children. Required for all majors in special education.

### 320 Behavior Management (3)

Prerequisites: SPC ED 313 and an appropriate introductory course in the special education area of concentration. An in-depth exploration of various behavior control techniques that are particularly applicable to exceptional children. Students will be required to conduct at least one behavior modification project with exceptional children.

### 322 Teaching Mainstreamed Students (3)

Prerequisite: SPC ED 313 or SPC ED 412, or equivalent. The course is designed to assist regular classroom teachers to better understand the nature and needs of handicapped students who are likely to receive much of their daily instruction in the regular classroom. Regular teachers' roles and responsibilities, teaching strategies, and adjustment options in integrating handicapped students will be considered.

### 330 Introduction to Mental Retardation and Severe Handicapped (3)

Prerequisite: SPC ED 313. An introductory course describing characteristics, classification and causes of mental retardation and severe handicapped.

### 332 Education of the Mentally Retarded (3)

Prerequisites: ED FND 111, SPC ED 313, and SPC ED 330. Methods and techniques of use in the education of mentally retarded children. Required of all who are preparing for certification in special education for the mentally retarded.

### 342 Career Education for the Special Needs Individual (3)

Prerequisite: Consent of instructor. This course is intended to provide information to teachers and other personnel charged with the responsibility of delivering career development services to special needs clientele. Topics including designing a K-12 career education curricula, techniques of improving job readiness for the unemployed and underemployed, and ways to utilize community employment resources for the handicapped.

### 345 Introduction to Emotional Disturbances and Learning Disabilities (3)

Prerequisite: SPC ED 313. A comparative approach to these two areas of specialization regarding their history, etiologies, definition, prevalence, and service delivery systems.

### 347 Teaching in the Learning Disabilities Classroom (3)

Prerequisites: SPC ED 313, and SPC ED 320. An application of the instructional techniques to be utilized with learning disabled students. Instructional techniques, appraisal for instruction, interdisciplinary team work, parental involvement, individualized education plans and classroom techniques will be presented in this class.

### 350 Instructional Techniques for the Emotionally Disturbed Student (3)

Prerequisites: SPC ED 313, SPC ED 320, and SPC ED 345. A course designed to instruct students in the management and instructional strategies necessary to educate children with emotional disturbances.

### 370 Sensory-Motor Development of the Severely Handicapped (3)

Prerequisite: SPC ED 330 or equivalent or consent of instructor. An examination of basic sensory-motor development and associated disorders to enable teachers to work more effectively with occupational and physical therapists. Basic techniques used by therapists are presented together with an exploration of the teacher's role regarding sensory-motor programming. Required for certification for teaching individuals with severe handicaps.

## Behavioral Studies

### 371 Methods and Curricula for Severely Handicapped (3)

Prerequisite: SPC ED 370 or consent of instructor. This course begins with the application of the clinical teaching model to the severely handicapped population regarding objectives, training methods, and program process monitoring. It also includes critical analysis of existing curricula and methods of classroom or living unit organization. Required for certification in Severe Handicapped.

### 372 Screening and Diagnosis of the Developmentally Delayed (3)

Prerequisites: EVL MS 310 or equivalent and SPC ED 313. This course addresses the content, techniques and special problems related to the assessment of handicapped individuals in the birth to five developmental range. Students gain experience in construction, administration, and interpretation of assessment tools used with low functioning handicapped individuals. Required for certification in Severe Handicapped and Early Childhood-Special Education.

### 382 An Introduction to Gifted Children (3)

Prerequisite: SPC ED 313. This course provides an introduction to gifted children. Their characteristics, cognitive abilities, special abilities, and creativity will be reviewed. Current problems, research, and issues concerning the gifted are covered.

### 384 The Education of Gifted Children (3)

Prerequisite: SPC ED 313. This course deals with methods, techniques, and curricular modifications necessary for the effective education of gifted children.

### 390 Student Teaching in Special Education III (5)

Prerequisites: SPC ED 291 or equivalent and admission to student teaching. Clinical teaching experience in special education classrooms in schools under University and school supervision with seminar included. For students who wish an additional student teaching experience.

### 412 Psychology of Exceptional Children (3)

An in-depth analysis of the unique psychological problems of exceptional children and youth. Current psychological theories and research emphasized.

### 416 Current Research in Psychology of Exceptional Children (3)

Prerequisite: Permission of instructor/adviser. A study of current issues, trends, and major research in special education. Areas of investigation shall center around major developments in exceptionalities, situations relative to programming projected needs, and considerations and utilization of investigation of the exceptional individual. Graduate students should have experience or an undergraduate background in exceptionalities prior to admission to this course.

### 421 Prescriptive Teaching of Exceptional Children (3)

Prerequisite: SPC ED 412. Course will instruct teachers on how to develop and implement prescriptive educational programs for exceptional children and adolescents based upon available information. Students will become familiar with prescriptive systems which will enable them to utilize sources of information for remedial and developmental needs.

### 430 Education of the Mentally Retarded (3)

A study of the psychological aspects of mental retardation with regard to etiology, intellectual capabilities, characteristics, and personality structure. Application to learning theories with emphasis upon curricular approaches and materials. Administrative organization and structure for provision of services.

### 431 Problems in Mental Retardation (3)

Prerequisite: Permission of instructor. A study of learning characteristics, evaluation, teaching techniques and methods, and curriculum adaptations for the mentally retarded.

### 443 Learning Disabilities (3)

Prerequisite: SPC ED 412. An advanced study of the pedagogical and theoretical problems germane to the area of learning disabilities with particular emphasis on the application of current research findings to the solutions of these problems.

### 444 Education of Children With Learning Disabilities (3)

Prerequisite: SPC ED 443. A systematic study of modern educational procedures for children with learning disabilities. Methods and materials for educating children with learning disabilities are stressed.

### 450 Introduction to Behavioral Disorders (3)

Prerequisite: SPC ED 412. An advanced study of the pedagogical and sociological problems germane to behavioral disorders with particular emphasis on the application of current research findings to the solutions of these problems.

### 452 Education of Behaviorally Disordered Children (3)

Prerequisite: SPC ED 450. A systematic study of modern educational practices for behaviorally disordered children. Methods and materials for educating behaviorally disordered children are stressed.

### 462 Introduction to Early Childhood-Special Education (3)

Prerequisite: SPC ED 412. A study of issues and concepts central to special education for the young handicapped child. Focus will be placed upon program models, screening and assessment procedures, and curriculum concepts. An ecological approach to special education will be emphasized.

### 463 Curriculum, Methods, and Materials for Early Childhood Special Education (3)

Prerequisites: SPC ED 412 and 462. In-depth study of integrated assessment-based curriculum development for pre-school handicapped children. Emphasis will be on individualized educational planning and implementation.

### 492 Practicum in Special Education (3-6)

Prerequisite: Two courses in area of concentration. A supervised internship in educating exceptional children in a school setting or other appropriate site.

### 497 Problems (1-10)

Prerequisite: SPC ED 412 or equivalent. Selected problems on student-learner exceptionalities for individuals at the post-baccalaureate level.

## Educational Studies

Courses in this section are grouped as follows: Adult Education (ADU ED) Educational Administration (ED ADM) Educational Foundations (ED FND) Educational Technology (ED TEC) and Secondary Education (SEC ED).

Prerequisites may be waived by consent of the department.

### Adult Education (ADU ED)

#### 310 Community and Adult Education (3)

Prerequisite: For upper division students, practitioners, or by consent of instructor. This course presents an overview of the models, practices, programs, and processes of community and adult education.

#### 311 Teaching Basic Reading Skills to Adults (3)

A study of the reading process and of the characteristics of adult learners with a focus on instructional techniques and materials useful in upgrading the performance of adults with deficient reading skills.

#### 412 Foundations of Adult Education (3)

A comprehensive, systematic foundation for adult education. It will relate (a) the pragmatic philosophy and objectives of adult education in America to (b) the continuing education of the adult in a progressive social context.

#### 413 Improvement of Instruction in Adult Education (3)

Prerequisite: ADU ED 412 or consent of instructor. A study of selected methods and instructional techniques appropriate for the teaching of adults. An examination of current research will be made as it relates to the problems of instructing adults.

#### 414 Curriculum Theory and Development in Adult Education (3)

Prerequisites: ADU ED 412 and 413 or consent of instructor. A study of curriculum theory and its application to adult education. Particular emphasis will be placed on the development of model curricula for various programs in adult education.

#### 425 Principles of Business Education (3)

Prerequisites: Business education certification and consent of instructor. Designed for the business education teacher, this course examines in depth the principles, practices, and problems of business education programs. It emphasizes research into historical and philosophical implications, the influence of contemporary attitudes on business education, evaluation of current programs, and development of innovative approaches. It may be applied toward Missouri Vocational Business Education certification.

#### 426 Coordination of Cooperative Education Programs (3)

This course deals with student selection procedures. Coordinating vocational instruction and planned employment experiences; research techniques for collecting and analyzing data for process and product evaluation; procedures for implementing new ideas and innovations in cooperative education programs. The course is designed for vocational teachers interested in secondary school cooperative programs and for teachers who wish to qualify as coordinators of cooperative education programs.

#### 427 Improvement of Instruction in Secretarial Subjects (3)

Prerequisites: Business education certification and consent of instructor. Designed for business education teachers, this course examines current trends in planning, organizing, developing, and evaluating instructional materials relevant to business education classes. Emphasis is placed on research techniques and strategies for selecting and utilizing appropriate curriculum materials, resources, and media to match learning needs.

#### 432 Teaching in the Community College (3)

This course is designed for students considering a teaching career in the community college. The main emphasis of the course will be to expose students to the unique features of the community college with respect to the special goals of the institution, variety of degree and nondegree programs, and diversity of community college students. A second objective will be to offer a brief review of teaching techniques that will be useful in the community college classroom.

#### 435 Problems in Teaching College Biology (3)

(Same as Biology 485.) Prerequisites: Teaching experience, 30 semester hours in biology, and consent of the instructor. Basic philosophies underlying undergraduate biology education at the college level will be presented and examined with concern for establishment of an individual philosophy in the prospective college teacher. Teaching techniques suitable for college-level instruction will be considered, practiced, and evaluated. Advantages and limitations of various methods of instruction will be considered with respect to current research findings.

#### 497 Problems in Adult Education (1-10)

Prerequisite: ADU ED 412 or consent of instructor. Independent study on topics in adult education.

# Educational Studies

## Educational Administration (ED ADM)

### 404 Seminar (1-10)

### 411 Theory and Organizational Development in Educational Administration (3)

Course is designed to examine the theory and organizational development in the area of educational administration. A comprehensive examination of the work of scholars in the field will provide an insight into practical functions of theory.

### 414 Foundations of School Administration (3)

Emphasis on processes common to all phases of educational administration. Conceptual framework for administration of education, decision making, and organizational theory.

### 416 Educational Administration and Policy Making (3)

Prerequisite: ED ADM 411 and 414. Course will provide the prospective school administrator with a unified, comprehensive, and systematic approach to the understanding of the role of the school administrator in policymaking in American public education.

### 422 Leadership in Educational Administration (3)

Course is designed to acquaint the administrator with the factors of groups and interpersonal relationships directly affecting him in his job performance. The consequences of various types of group relationships upon the institution will be studied in detail. The administrator will study various rationales for and methods of improving interpersonal relationships within his institution.

### 425 Administration of Organizational Change Strategies in Schools (3)

Prerequisite: ED ADM 414. This course deals with (1) developing strategies for assessing educational needs, (2) methods of assessing the schools "organizational health," (3) the designing of educational change strategies involving theory-based models, (4) using systems-analysis techniques to implement educational change, and (5) methods of involving students and staff in incorporating meaningful organizational change strategies in educational institutions.

### 430 School District Administration (3)

Prerequisite: ED ADM 414 or consent of instructor. Course focuses on current research about school district administration; also deals with major central office issues including: board/superintendent relations, central office organization, the function and authority of assistant superintendents and program directors, and the administrative team approach to school district administration.

### 432 Problems in School Public Relations (3)

Principles of good school public relations, unique public functions of various school and community groups. Techniques for conducting school public relations.

### 441 Elementary School Administration (3)

Specialized course in elementary school administration for school administrators, supervisors, and teachers.

### 451 Secondary School Administration (3)

Specialized course in secondary school administration for school administrators, supervisors, and teachers.

### 456 Extracurricular Activities (3)

Activities related to the extracurricular program of secondary schools will be studied in depth. Analysis of appropriate activities will include the nature and purposes of these activities.

### 460 Legal Aspects of Educational Administration (3)

Principles of law as derived from court decisions; statutory and constitutional provisions affecting education. Legal status (power and responsibilities) of school board members, superintendents, principals, teachers, and pupils.

### 465 State and Federal Financing of Public Education (3)

Economic implications of public education. Determination of policy and practice in financing of public schools by local, state, and federal agencies. Developing principles of adequate tax programs and designing systems of state support of public education.

### 466 Principles of Public School Finance in Missouri (3)

Course is designed to analyze and study critical areas of public school finance at the local and state levels, highlighting the role of such factors as legislative procedures, principles of local and state support, budgeting and accounting procedures, assessment of property, etc.

### 470 Administration of Professional Personnel (3)

Problems of procurement, employment, induction, in-service development, salary, negotiation, and welfare policies influencing professional personnel of schools.

### 471 The Administration of Staff Development (3)

Prerequisite: Educational Administration 411. This course provides an examination of the conceptual bases and practical applications of staff development programs in educational settings. The course will explore the assumptions and implications of several relevant theories and conceptual models, including social systems theory and organizational development. Students will be introduced to a variety of techniques used in education to assess needs, plan, deliver, and evaluate staff development programs.

### 473 Collective Negotiations in Educational Organizations (3)

This course focuses on the concepts, issues, and processes involved with collective negotiations (bargaining) in American educational organizations. The major issues addressed in the course include recognition procedures bargaining unit, determination, the scope of negotiations, the proposal and counter-proposal compromise, impasse procedures, and master contract management.

### 475 School Buildings and Sites (3)

Course is designed to acquaint the administrator with methods and procedures for projecting the future building and facility needs of a public school district and for supervising actual planning of facility construction. Maximizing utilization of current facilities will be studied in detail.

## Educational Studies

### 480 Administration of Adult and Community Education (3)

A course designed to familiarize the student with the structure, purpose, and processes of community education with particular emphasis being placed on the administrative theories and functions of adult education.

### 481 Programming in Community and Adult Education (3)

Prerequisite: ED ADM 480. Study and analysis of basic situations in which community and adult educational programming take place. Within this framework, application will be made of a fundamental series of steps essential to sound educational programming.

### 485 Financing of Community Education (3)

The student will develop the necessary skills needed to construct an operational budget for the administration of community education programs. Emphasis will be placed on developing a support base from federal, state, and local funding resources. The student will be exposed to proposal writing and funding procedures.

### 497 Problems (1-10)

## Educational Foundations (ED FND)

### 111 The School in Contemporary Society (3)

The introductory course in teacher education. An examination of the organization and purpose of the school in its social setting. Selected representative educational themes and issues will be studied. Required of students admitted to the School of Education. Prerequisite to other professional courses.

### 251 Black Americans in Education (3)

An examination and analysis of conditions affecting the education of black Americans and their schools, with emphasis on relationships between schools and the black community, and needed changes in education.

### 330 History of American Education (3)

Prerequisite: A course in American history or consent of instructor. An overview of the evolutionary development of American educational theory and practice from the early colonial period to the present. Attention is also given to selected issues in professional education.

### 332 Progressivism and Modern American Education (3)

Relationship between American progressive school theory and contemporary classroom practices, including the open classroom, the community school, the alternate school, open admissions, and learning by individual contract. Trends will be interpreted in the light of various roles of the classroom teacher in the modern school.

### 340 Comparative Education (3)

A comparative study of representative systems of education in South America, Europe and Asia in contrast with the American system.

### 410 Development and Organization of Urban School Systems (3)

An examination and analysis of the development and existing conditions affecting urban education, with emphasis on current efforts to bring about quality education in urban areas. A review of current projects and research as well as the effect of these projects upon the school systems would be included.

### 421 Philosophy of Education (3)

A study of the fundamentals of education in the light of modern science and philosophy.

### 422 Analysis of Educational Issues (3)

Prerequisite: A course in philosophy of education or a course in history of education, or consent of instructor. A critical examination of issues about the elementary and secondary schools. This is done through the analysis of the procedures, resources, and goals that guide school policies and practices.

### 435 History of Western Education (3)

A course designed to survey the educational development of Western civilization from approximately the eighth century B.C. until the present. Salient educational theory and practice will be considered in their appropriate social context.

### 497 Problems (1-10)



# Educational Studies

## Educational Technology (ED TEC)

### 245 Audiovisual Equipment Operation for Classroom Teachers (1)

An entry-level course for all teacher education students. May be taken concurrently with ED TEC 246. A self-paced, modularized, and criterion-referenced course. Students will demonstrate competence in operating standard audio-visual equipment normally found in the schools.

### 246 Preparation of Inexpensive Materials for the Classroom (1)

An entry-level course for teacher education students. May be taken concurrently with ED TEC 245. A lecture-demonstration-laboratory course in material preparation for classroom use.

### 247 Integration of Media and Materials in Instructional Planning (1)

Prerequisites: ED TEC 246, and for secondary education students, SEC ED 213. Course concentrates on the integration of media and materials in lesson planning. Through lecture, demonstration, and individualized instruction the student designs an instructional unit and prepares appropriate material for that unit. ED TEC 246 must be taken prior to, or concurrently with this course.

### 340 Selection and Utilization of Educational Media (3)

Introduction to the selection, use, and evaluation of audiovisual materials and equipment including films, slides, transparencies, projectors, globes, charts, maps, bulletin boards, plus programmed materials, information retrieval systems, and instructional television.

### 345 Preparation of Graphic Materials for Audiovisual Education (3)

Prerequisite: ED TEC 340 or consent of instructor. Not open to lower division students. A lecture-demonstration-laboratory course that emphasizes the graphic arts component of audiovisual material production. Theories of learning and communication are used in the design and production of materials used for classroom settings.

### 346 Instructional Television (3)

Prerequisite: ED TEC 340 or consent of instructor. Not open to lower division students. A lecture-demonstration-laboratory course designed to concentrate on the use of instructional television in formal and informal learning situations. Basic script writing, management of ITV systems, and design and production of low-budget programs will be emphasized.

### 353 Principles of Photographic Production for Education (3)

Prerequisite: ED TEC 340 or consent of instructor. A lecture-demonstration-laboratory course which stresses the application of theories of learning, perception, and retention to the visual medium of still photography. Emphasis on designing and producing photographic material that enhances the teaching/learning process.

### 354 Principles of Motion Picture Production for Education (3)

Prerequisite: ED TEC 340 or consent of instructor. A lecture-demonstration-laboratory course. Emphasis on application of theories of learning, perception, and retention as they relate to motion-picture production. Special attention will be given to the design and production of motion-picture material that enhances the learning process.

### 404 Seminar in Educational Technology Research (3)

Prerequisites: ED TEC 340 and twelve hours of graduate work in educational technology. A review of research in educational technology with individual in-depth study. The student selects a research problem in conjunction with the instructor and completes a review project. Open to graduate students who have completed twelve hours of work in educational technology.

### 432 Educational Technology Systems Design (3)

Prerequisite: ED TEC 340. A lecture-demonstration course in the application of learning theory to the design of audiovisual materials. Emphasis on educational technology systems design, objectives, constraints, limitations, and evaluation. Methods of analyzing target populations and instructional demands along with decision-making models will be reviewed.

### 433 Educational Technology Systems Management (3)

Prerequisite: ED TEC 340. Basic principles of management in design and operation of media programs and systems in various educational settings. Emphasis on strategies and alternative structures for achieving and evaluating functions of media centers.

### 435 Diffusion and Adoption of Innovations in Educational Technology (3)

Prerequisite: ED TEC 340. A lecture course designed to provide an overview of the diffusion and adoption of technical innovations in the educational system. This course will include the technological, sociological, psychological, and political aspects of the process of diffusion and adoption. Various models, techniques, and applications of the diffusion and adoption process emphasized.

### 446 Advanced Instructional Television Production (3)

Prerequisite: ED TEC 340 and 346. Advanced management, script writing, and production of ITV programs. Laboratory activities in production of systematically designed instruction. Each student will produce ITV programs involving writing, production of graphics, directing, editing, and validating the programs.

### 493 Practicum in Educational Technology (3)

Prerequisite: ED TEC 340 or consent of instructor. Focus is on the application of principles of instructional development to teaching problems in educational technology. Selecting, developing, adapting, and using instructional technology appropriate to the specific teaching problems is an integral part of this course.

### 497 Problems (1-10)

Prerequisite: ED TEC 340 or consent of instructor. Individual study on topics pertaining to educational technology.

# Educational Studies

## Secondary Education (SEC ED)

### 160 Shorthand Theory I(3)

Prerequisite: Typewriting. Study of Gregg shorthand theory with emphasis on reading, writing, and taking dictation at moderate rates. Not open to students with previous training in Gregg shorthand theory.

### 161 Shorthand Theory II(3)

Prerequisites: SEC ED 160, Shorthand Theory I or equivalent; SEC ED 162, Business and Professional Typewriting I or equivalent. Review of Gregg shorthand theory; development of speed and accuracy in taking dictation; emphasis on transcribing techniques and office-style dictation.

### 162 Business and Professional Typewriting (3)

Prerequisite: Intermediate typewriting or equivalent. Review of typewriting techniques and skills; development of speed and accuracy; instruction in the preparation of business and professional papers and forms with emphasis on formatting and information processing skills.

### 213 Techniques of Secondary School Teaching and Field Experience (4)

Prerequisites: ED FND 111 and admission to the School of Education. Activities and interaction of teachers and pupils in development of conditions for learning in secondary schools. Analysis of teaching/learning and field experience observations in secondary-school classrooms. (Note: It is suggested that student complete Educational Psychology before taking this course.)

### 222 Middle School/Junior High School Organization, Philosophy and Curriculum (3)

Prerequisite: ED FND 111. A study of the unique history, goals, philosophy, and organization of the middle school/junior high school with a focus on curriculum and instruction. Intended to aid future teachers interested in middle school/junior high school teaching.

### 232 The Curriculum and Methods of Teaching English (3)

(Same as English 262.) Prerequisites: SEC ED 213 and a near major in the subject matter. A study of the scope and sequence of the English course in the school curriculum with emphasis on the selection and organization of materials and methods of instruction and evaluation. Attention is also directed toward learning the techniques and research tools of the scholar in the field of English. To be taken concurrently with student teaching.

### 240 The Curriculum and Methods of Teaching Physical Sciences (3)

(Same as Chemistry 280 and Physics 280.) Prerequisite: SEC ED 213 and a near major in the subject matter. A study of the scope and sequence of the physical science courses in the school curriculum, with emphasis on the selection and organization of materials and methods of instruction and evaluation. Attention is also directed toward learning the techniques and research tools of the scholar in the field of science. To be taken concurrently with student teaching.

### 244 Laboratory in Teaching the Life Sciences (2)

(Same as Biology 286.) Prerequisite: SEC ED 213. Discussion, development, utilization, and evaluation of equipment, materials and techniques applicable to instruction in the life sciences. Must be taken concurrently with Biology 285/SEC ED 245.

### 245 The Curriculum and Methods of Teaching the Life Sciences (3)

(Same as Biology 285.) Prerequisites: SEC ED 213 and a near major in the subject matter. A study of the scope and sequence of the life sciences courses in the school curriculum, with emphasis on the selection and organization of materials and methods of instruction and evaluation. Attention is also directed toward learning the techniques and research tools of the scholar in the field of science. To be taken concurrently with student teaching.

### 246 The Curriculum and Methods of Teaching Mathematics (3)

Prerequisites: SEC ED 213 and a near major in the subject matter. A study of the scope and sequence of the mathematics courses in the school curriculum with emphasis on the selection and organization of materials and methods of instruction and evaluation. Attention is also directed toward learning the techniques and research tools of the scholar in the field of mathematics. To be taken concurrently with student teaching.

### 255 The Curriculum and Methods of Teaching History and Social Studies (3)

(Same as History 255.) Prerequisites: SEC ED 213 and a near major in the subject matter. A study of the scope and sequence of the history and social studies courses in the school curriculum with emphasis on the selection and organization of materials and methods of instruction and evaluation. Attention is also directed toward learning the techniques and research tools of the scholar in the field of history and social studies. (Not counted as credit for a major in history.) To be taken concurrently with student teaching.

### 261 Methods of Teaching Typewriting (3)

Prerequisite: Intermediate Typewriting or equivalent. Instruction in the methods and techniques used to teach basic and advanced typewriting.

### 262 Methods of Teaching Shorthand (3)

Prerequisites: SEC ED 161 or equivalent. Instruction in methods and techniques used in Gregg shorthand, dictation, and transcription with emphasis on planning and organizing a shorthand laboratory and a secretarial practice laboratory.

### 263 Methods of Teaching Accounting and Data Processing (3)

Prerequisites: Business Administration 140, 340, or equivalent. Methods and techniques of teaching data processing and accounting in the secondary schools.

### 264 Methods of Teaching Basic Business Subjects (3)

Prerequisite: Economics 51, Business Administration 206 and 256. Methods and techniques of teaching basic business, business law, economics, consumer economics, and business principles and management in the secondary curriculum.

### 265 Secretarial Practice (3)

Prerequisite: SEC ED 161 and 163 or consent of instructor. Study of secretarial office procedures; office-style dictation for transcription; word processing; office machines; records management.

## Educational Studies

### 267 The Curriculum and Methods of Teaching Business Subjects (3)

Prerequisites: SEC ED 213, 261, 262, 263, 292, and near major in subject matter. Study of the scope and sequence of business education courses in the high school curriculum, with emphasis on Business English, distributive education programs, organizations, and publications. Attention is also directed toward learning the techniques and research tools of the scholar in the field of business education. To be taken concurrently with student teaching. Course meets first four weeks and last week of semester.

### 273 The Curriculum and Methods of Teaching Art (3)

Prerequisite: SEC ED 213 and a near major in the subject matter. A study of the scope and sequence of art courses in the school curriculum, with emphasis on the selection and organization of materials and methods of instruction and evaluation. Attention is also directed toward learning the techniques and research tools of the scholar in the field of art. To be taken concurrently with student teaching.

### 274 The Curriculum and Methods of Teaching Foreign Language (3)

(Same as French, German and Spanish 264.) Prerequisites: SEC ED 213 and a near major in the subject matter. A study of the scope and sequence of the foreign language courses in the school curriculum with emphasis on the selection and organization of materials and methods of instruction and evaluation. Attention is also directed toward learning the techniques and research tools of the scholar in the field of foreign language. To be taken concurrently with student teaching.

### 275 Philosophic and Practical Foundation of the Secondary Music Education Curriculum(1)

(Same as Music 267.) Prerequisites: Music 112, Music 257/ELE ED 277, and ED FND 111; Concurrent registration in Music 261, Music 268/SEC ED 276 or Music 269/SEC ED 277 and Music 270/SEC ED 278 or Music 271/SEC ED 279. For music education majors. A study of the secondary school music program: curricular objectives, philosophy, and general administrative procedures common to all secondary music classes.

### 276 Curriculum and Methods of Teaching Elementary/Middle School/Junior High Instrumental Music (2)

(Same as Music 268.) Prerequisites: Music 112, Music 257/ELE ED 277, and ED FND 111; Concurrent registration in Music 261; Music 267/SEC ED 275 and Music 270/SEC ED 278. A study of the teaching techniques, materials, curriculum, and organization of the beginning instrumental music program in the elementary and middle school/junior high school.

### 277 Curriculum and Methods of Teaching Middle School/Junior High School General Music (2)

(Same as Music 269.) Prerequisites: Music 112, Music 257/ELE ED 277, and ED FND 111; concurrent registration in Music 261. Music 267/SEC ED 275 and Music 271/SEC ED 279. For the music education major. A study of the middle school/junior high school general music program emphasizing a conceptually based curriculum; objectives, methodologies, materials, innovations, classroom organization, and management.

### 278 Curriculum and Methods of Teaching High-School Instrumental Music (2)

(Same as Music 270.) Prerequisites: Music 112, Music 257/ELE ED 277, and ED FND 111; concurrent registration in Music 261, Music 267/SEC ED 275, Music 268/SEC ED 276. For the music education major. A study of the high-school instrumental music program; curriculum, methods, teaching techniques, organization, and administrative procedures for instrumental performance classes.

### 279 Curriculum and Methods of Teaching Secondary Choral Music (2)

(Same as Music 271.) Prerequisites: Music 112, Music 257/ELE ED 277, and ED FND 111. Concurrent registration in Music 261, Music 267/SEC ED 275, Music 269/SEC ED 277. For the music education major. Study of secondary school choral music program; curriculum, methods, teaching techniques, organization, and administrative procedures for choral performance classes.

### 290 Secondary School Student Teaching (6)

Prerequisites: SEC ED 213 and admission to student teaching. Clinical teaching experience in secondary school classrooms under University and school supervision. To be taken concurrently with appropriate curriculum and methods course.

### 293 Student Teaching in Music Education, K-6 (5)

Prerequisites: ELE ED 210, SEC ED 213, Music 257/ELE ED 277, Music 267/SEC ED 275, Music 118, Music 268/SEC ED 276, Music 270/SEC ED 278 (instrumental emphasis majors); Music 120, Music 269/SEC ED 277, Music 271/SEC ED 279 (Choral/vocal emphasis majors); and admission to student teaching. Must be taken "in block" with SEC ED 294 and must immediately precede it in the semester. Clinical teaching experience in music education settings in the schools under University and school supervision with seminar included. Required of all majors in music education.

### 294 Student Teaching in Music Education, 7-12 (5)

Prerequisite: SEC ED 293. Must be taken "in block" with SEC ED 293 and must immediately follow it in the semester. Clinical teaching experience in music education settings in the schools under University and school supervision with seminar included. Assignments will be in different settings from those of SEC ED 293. Required of all majors in music education.

### 305 Writing for Teachers (3)

(Same as English 305.) Prerequisite: English 160 or a comparable course in advanced composition. Designed for prospective as well as inservice teachers, the course includes: (1) writing—short papers to be shared in workshop groups; (2) reading—current theory and research on writing and the implications for teachers; (3) teaching—classroom activities that foster growth in writing.

### 312 Secondary School Curriculum (3)

Prerequisite: SEC ED 213. Sources, scope, and organization of the curriculum, modern trends, and methods of investigation.

### 316 Gateway Writing Project (1-6)

(Same as English 316.) An intensive course in the writing process and the writing curriculum, designed for experienced teachers. Readings of current theory and research will be related to participants' experience as writers and as teachers. Topics may vary. May be repeated for credit. No more than six hours may be applied toward the M.Ed.

## Educational Studies

### 360 Administration and Supervision of Office Personnel (3)

Prerequisite: Consent of instructor. An advanced course in office administration and supervision designed to meet the needs of business personnel involved in administrative office management work; emphasis on updating leadership and human relations skills, organizing, planning, controlling office services, and business data processing systems.

### 361 Word Processing (3)

Prerequisite: SEC ED 162, 261, or equivalent, or consent of instructor. The course will focus on the needs of preservice and inservice teachers who instruct courses in word processing. The content will include training students to teach how to use word processing equipment and the procedures utilized in word processing offices.

### 385 Problems of Teaching Reading in Secondary Schools (3)

Prerequisite: ED FND 111. Methods and materials for improving reading in secondary school classes, including content fields.

### 391 Field Study in Secondary Education (1-10)

Identification of specific problems in the area of secondary education. Course is conducted as a field study in the public schools. A maximum of eight credit hours may be applied toward an advanced degree contingent upon adviser approval.

### 393 Student Teaching in Music Education, K-12 (5)

Prerequisite: SEC ED 294 or equivalent and admission to student teaching. Clinical teaching experience in music education settings in the schools under University and school supervision with seminar included. For students who wish an additional student teaching experience.

### 404 Seminar (1-10)

### 413 Secondary Teaching with Microcomputers (3)

Prerequisites: Educ 301 or consent of instructor. A course designed for teachers, department heads and school administrators. Research and theory on microcomputer-assisted instruction as a teaching method in the secondary schools will be presented. Both hardware and software suitable for microcomputers will be used and analyzed.

### 414 Teaching the Gifted/Talented Student in Secondary School (3)

A survey of research and theory on teaching the gifted/talented student in secondary school. Ways to identify the gifted/talented with emphasis on teaching the gifted/talented in both heterogenous and homogenous secondary classrooms. Models of gifted/talented programs in a school setting.

### 415 The Secondary School Curriculum (3)

For secondary school principals, teachers, and superintendents. Present methods in curricular change and methods of curricular investigation.

### 416 Curriculum Construction for Secondary Schools (3)

Prerequisite: SEC ED 415 or consent of instructor. Designed for those engaged in curriculum revision work and construction of new secondary school courses.

### 418 The Junior High/Middle School (3)

Survey of the progress of the junior high school, including the study of more important problems of organization and administration.

### 420 The Improvement of Secondary School Teaching (3)

For secondary school teachers, principals, and superintendents with considerable training in education and experience in teaching. Recent developments in secondary school teaching.

### 422 Individualizing Instruction in Secondary Schools (3)

The course, based on research and theory, will serve as a model of secondary school individualized instruction and is designed for both teaching and administrative personnel. Macro concepts such as: (1) the model schools project, (2) IGE procedures for individualization, (3) I/D/E/A theories of individualization and other models of individualized instruction may be chosen for individual concentration. Teachers will focus on learning packages, learning contracts, learning centers, audio-tutorial teaching, the Keller plan, independent study, mini-courses, and other techniques of individualization.

### 425 Secondary School Supervision (3)

Methods of improving instruction in junior and senior high schools.

### 427 Supervision of Clinical Experiences in Teacher Education (3)

Prerequisite: Teaching experience and consent of instructor. A consideration of the clinical phase of the teacher education program, with special emphasis on student teaching. Examination of role responsibilities and supervisory practices. Study of professional literature for research findings, theoretical formulations, and recent developments in the field.

### 429 The Department Head (3)

This course emphasizes the role of the department chairperson as an educational leader. Theoretical concepts are related to sound practice. The potential for the job is discussed as well as the roadblocks to successful execution. Appropriate for practicing department chairpersons, school administrators, or classroom teachers interested in acquainting themselves with this position.

### 430 Problems of Teaching English in the Secondary School (3)

A review of recent developments in the teaching of secondary English. Special attention is given to research involving instructional problems in urban and suburban schools. The course is designed for teachers, department heads, and supervisors in secondary English programs.

### 452 Problems of Teaching Social Studies in the Secondary Schools (3)

A review of recent developments in the teaching of secondary school social studies. Special attention is given to research and scholarship involving instructional and curricular problems, especially in the metropolitan St. Louis area. Emphasis is placed upon development of effective materials, techniques, and resources. The course is designed primarily for teachers and supervisors in secondary school social studies programs.

### 486 Techniques in Teaching College Biology for Graduate Assistants (2)

(Same as Biology 486.) Discussion and practice of techniques specific to instruction in biology. Consideration will be given to teaching strategies, curriculum design, evaluation, instrumentation, and student/teacher interactions. Recommended for all graduate students with teaching assistantships.

### 497 Problems (1-10)

## Elementary and Childhood Education

Courses in this section are grouped as follows: Early Childhood Education (ECH ED) and Elementary Education (ELE ED).

Prerequisites may be waived by consent of the department.

### Early Childhood Education (ECH ED)

#### 290 Student Teaching in Early Childhood Education I (5)

Prerequisites: ELE ED 230, 336 or 385; ECH ED 333, 341 and 351; and admission to student teaching. Must be taken with ECH ED 291, and must immediately precede ECH ED 291 in the semester. Clinical teaching experience in early childhood education classrooms in the schools under University and school supervision. Required for all majors in early childhood education.

#### 291 Student Teaching in Early Childhood Education II (5)

Prerequisite: ECH ED 290. Must be taken "in block" with ECH ED 205 and 290 and must follow ECH ED 290 in the semester. Clinical teaching experience in early childhood education classrooms in the schools under University and school supervision. Assignments will be in different school districts, buildings serving families of different socio-economic and cultural backgrounds, and at different age/grade levels from those of the ECH ED 290 assignments. Required of all majors in early childhood education.

#### 312 Principles of Early Childhood Education (3)

Prerequisites: ED FND 111 and ED PSY Psychology 312. Study of basic principles underlying good schools for young children. Students will use theoretical base as well as on-site observations to develop an awareness of teaching-learning strategies appropriate for the developmental needs of children from birth through age eight. Scheduling, classroom arrangement, and child management practices will be considered. Throughout the course, students will be expected to begin developing their own philosophy of early childhood education.

#### 314 Curriculum Methods and Materials for Early Childhood Education (3)

Prerequisites: ECH ED 312. Curriculum development for pre-school and early primary, including writing and sequencing objectives, constructing activities and materials, and using lesson plans with young children. Curriculum areas also include science and social studies. Individualization for special needs is emphasized.

#### 317 Assessing Individual Needs for Early Childhood Instruction (3)

Prerequisites: ED FND 111 and ED PSY 312. Techniques of observing children and using assessment instruments to plan an individualized program for early childhood.

#### 321 Parent and Community Resources in Early Childhood Education (3)

Prerequisite: Admission to the School of Education or graduate status. Competencies for working with parents and community agencies will be developed through a study of community and community resources. Procedures for parent participation and use of service agencies in the education of all young children, including those with special needs, will be examined.

#### 331 Language Acquisition and Development in Early Childhood (3)

Prerequisite: ED PSY 312. Development of language and the effects environmental and cultural factors have on the acquisition process. Identification of language problems for purpose of referral. Practicum experiences included.

#### 333 Creative Experiences for Young Children (3)

Prerequisite: Admission to the Teacher Education Program or consent of instructor. Materials, techniques, and resources for promoting cognitive, affective, and perceptual motor development through the use of art media, songs, and rhythms, play and creative dramatics. Course includes a 20-hour practicum.

#### 341 Exploring the Physical World With Young Children (3)

Prerequisites: ECH ED 312 and completion of science requirements in general education. A study of and experiences with materials, techniques, and resources for broadening the child's awareness and understanding of science.

#### 346 The Acquisition of Mathematical Concepts (3)

Prerequisites: ELE ED 246 or equivalent and consent of instructor. Applications of the major theorists (Bruner, Piaget, Gagne, etc.) to mathematics for children of mental ages 3-8. Considerations suggested by research and implications in the areas of logical thinking, pre-number ideas, geometry, topology, problem solving, and arithmetical operations.

#### 351 Exploring the Social World With Young Child (3)

Prerequisites: ECH ED 312 and completion of social science requirements in general education. A study of and experience with materials, techniques, and resources for furthering the child's mastery of the skills of communication; understanding of people, social roles, society, and various cultures; and ability to develop satisfying relationships with peers and adults.

#### 390 Student Teaching in Early Childhood Education III (5)

Prerequisites: ECH ED 291 or equivalent and admission to student teaching. Clinical teaching experience in early childhood education classrooms in the schools under University and school supervision with seminar included. For students who wish an additional student teaching experience.

#### 410 Foundations of Preschool Education (3)

Prerequisite: A course in child psychology or equivalent. A study of the various types of early childhood programs and the philosophy upon which they are based. Attention will also be directed to the implementation of such programs, problems of parent involvement, and the social environment of the children.

#### 497 Problems (1-10)

Prerequisite: Graduate standing. Individual study on topics pertaining to early childhood education.

# Elementary and Childhood Education

## Elementary Education (ELE ED)

### 82 Effective Reading and Study Skills (2)

Designed to increase reading rate and comprehension and to develop study techniques appropriate to the purpose and difficulty of materials. Use is made of mechanical pacer, comprehension tests, vocabulary materials, and lecture demonstrations. **No credit toward a degree.**

### 101 Introduction to Classroom Teaching (3)

An introduction to the study of teachers' behaviors and learners' responses in classroom settings. Students will be assigned to school sites for specified observations/analyses and limited participation. Students will have the opportunity to evaluate the teaching profession as an appropriate career choice. The course will consist of approximately one-third lecture/seminar and two-thirds clinical/field experiences.

### 177 Elementary School Music (2)

Prerequisite: Consent of department. The role of the classroom teacher in the development of the elementary school general music program; selection of music, demonstration and practice of methods, and study of resources. This course will not apply toward requirements for a music major.

### 179 Art Activities for Elementary Schools (3)

(Same as Art 134). A study of art principles; provides laboratory experiences with various media and materials. Stresses curriculum planning and developments of the elementary school program in art.

### 192 Educational Laboratory/Field Experience (1-3)

A laboratory/field experience requiring systematic observation and/or participation in appropriate educational settings. To precede student teaching. May be repeated to maximum of three hours.

### 230 Children's Literature and Reading (3)

Prerequisite: Junior standing. A course designed to provide a knowledge of the various types of literature for young people, including books, magazines, comics, television, and films; criteria for evaluating and selecting material; uses of material in the classroom and home; and motivating reading for enjoyment and information, bibliotherapy, and communication.

### 241 Teaching of Science in the Elementary School (3)

Prerequisites: ED FND 111, junior standing, and completion of science requirements in general education. A study of elementary school science emphasizing the current science curricular content, methods of teaching and instructional materials. Analysis of forces affecting objectives, materials and teaching techniques.

### 246 Teaching Mathematics in the Elementary School (3)

Prerequisites: ED FND 111, junior standing, and completion of mathematics requirements in general education. Organization and implementation of a modern elementary school mathematics program.

### 253 Teaching of Social Studies in the Elementary School (3)

Prerequisites: ED FND 111, junior standing, and completion of social science requirements in general education. Study of elementary school social studies emphasizing the current social studies curricular content, methods of teaching, and instructional materials. Analysis of forces affecting objectives, materials, and teaching techniques.

### 277 Teaching Music in the Elementary School (3)

(Same as Music 257.) Prerequisites: Music 112 and ED FND 111. For the music education major. A study of the elementary school music curriculum emphasizing the objectives, methods of teaching and staffing music classes, and analysis of instructional materials and resources.

### 290 Elementary School Student Teaching I (5)

Prerequisites: ELE ED 230 or 336; 241, 246, 253, 385 and admission to student teaching. Must be taken with ELE ED 291, and must immediately precede ELE ED 291 in the semester. Clinical teaching experience in elementary school classrooms under University and school supervision. Required for all majors in elementary education.

### 291 Elementary School Student Teaching II (5)

Prerequisite: ELE ED 290. Must be taken "in block" with ELE ED 205 and 290, and must immediately follow ELE ED 290 in the semester. Clinical teaching experience in elementary school classrooms under University and school supervision. Assignments will be in different school districts, buildings serving families of different socio-economic and cultural backgrounds, and at different grade levels from those of the ELE ED 290 assignments. Required for all majors in elementary education.

### 310 Elementary School Curriculum (3)

Prerequisite: ED FND 111 and junior standing. Study of modern education with regard to objectives, content, and methods in elementary school curriculum.

### 336 Teaching Language Arts and Reading N-9 (3)

Prerequisites: Six hours of English/Speech; ED PSY 312. Involves study of methods and materials for implementing a total language arts program, including reading in the elementary school. Emphasis is placed on using the language experience approach in teaching listening, reading, spelling, handwriting, grammar, and spoken or written composition as basic skills.

### 342 Teaching Remedial Mathematics (3)

Prerequisite: ELE ED 246. Methods for diagnosing and remediating mathematical skills and concepts of the special needs learner.

### 346 Advanced Methods in Elementary School Mathematics (3)

Prerequisites: ELE ED 246 and consent of instructor. Review, evaluate, develop, and provide classroom trial of instructional components prepared for teaching mathematics. Course will develop greater depth of preparation in: elementary program content; programs for exceptional children; and curricular extensions such as transformational geometry, rational numbers, and intuitive algebra.

### 385 Teaching Reading in the Elementary School (3)

Prerequisites: ED PSY 312 and junior standing. Methods and materials of improving word perception, vocabulary, comprehension, and interests in independent reading.

### 387 Teaching Reading and Language Arts to Culturally Diverse Children (3)

Prerequisites: ED FND 111 and senior standing. Systematic study of the problems of teaching reading and related language arts in ghetto schools. Attention is given to the ways in which the selection of materials and methodology of teaching reading to inner city children is influenced by their physical and psychological needs, their experience backgrounds, their spoken language patterns, their cultural heritage, and the sociology of their environment.

### 389 The Analysis and Correction of Reading Problems in the Classroom (3)

Prerequisites: ELE ED or SEC ED 385 or equivalent. Study of causes of reading difficulties and procedures that may be used to analyze and correct them in the group setting.

## Elementary and Childhood Education

### 390 Elementary School Student Teaching III (5)

Prerequisites: ELE ED 291 or equivalent and admission to student teaching. Clinical teaching experience in elementary school classrooms under university and school supervision with seminar included. For students who wish an additional student teaching experience.

### 405 Seminar (1-10)

### 410 Current Research in the Elementary School Curriculum (3)

A systematic examination of research related to elementary school curriculum. Students will be expected to become effective consumers of educational research and to utilize appropriate research findings in their decision-making processes when planning instruction.

### 411 The Elementary Teacher: Humanizing Decision Making (3)

Instructional decision-making skills will be developed through the analysis of problem situations. Through the implementation of decision-making models, students will analyze concrete classroom problems, consider alternative solutions, plan, and evaluate subsequent outcomes.

### 422 Curriculum Construction in Elementary Schools (3)

A study of the elementary curriculum with regard to selection of objectives and content and to provisions for curricular change.

### 423 Curricular Implementation in the Elementary School (3)

Prerequisite: ELE ED 422. Culminating experience for curricular project in ELE ED 422. Course will include procedures and techniques for curricular design implementation in the field.

### 425 Elementary School Supervision (3)

Organized to study such problems in field of supervision as will meet needs of superintendents, principals, and special supervisors.

### 427 Supervision of Clinical Experiences in Teacher Education (3)

Prerequisite: Teaching experience and consent of instructor. A consideration of the clinical phase of the teacher education program, with special emphasis on student teaching. Examination of role responsibilities and supervisory practices. Study of professional literature for research findings, theoretical formulation, and recent developments in the field.

### 430 Problems of Teaching the Language Arts (3)

Procedures used in teaching integrated language arts in elementary schools.

### 432 Problems and Research in Elementary School Language Arts (3)

Prerequisites: ELE ED 430, EVL MS 431, and six hours of English. A systematic study of research in teaching speaking, listening, written composition, handwriting, spelling, and linguistics as it focuses on the problems of teaching these skills in the elementary school. Attention is given to innovations in the field.

### 436 Children's Literature I: Survey and Analysis (3)

A survey of children's literature published in the last ten years. Special emphasis will be placed on the relationship between children's literature and contemporary issues of society. Students will experience the materials themselves rather than reading about books. In addition, students will begin to study the literary elements that make literature interesting and meaningful for children.

### 437 Children's Literature II: Selection and Functions (3)

Prerequisite: ELE ED 436. A study of literary elements that make literature interesting and meaningful for children will be completed. Further emphasis will focus on the application of trade books for children as resources in school curricula planning.

### 441 Problems and Research in Teaching Elementary School Science (3)

Prerequisites: Eight hours of science, ELE ED 241, ED PSY 411. A thorough examination of research related to elementary school science instruction with particular emphasis on innovative programs. Includes methods of investigation and techniques for interpreting the professional literature.

### 443 Teaching Physical Science in the Elementary School (3)

Activity-oriented experiences with basic physical science concepts, laboratory skills, and techniques that are appropriate for elementary school teachers. The physical science concepts in elementary school curricula will be analysed in depth.

### 444 Environmental Studies for Elementary Teachers (3)

Activity-oriented training in developing environmental awareness, field and/or laboratory skills and techniques, and the use of elementary environmental curricula. Materials and activities appropriate for one's students and locale will be developed.

### 445 Problems of Teaching Arithmetic in the Elementary School (3)

A study of the mathematics program in the elementary school from the viewpoint of goals, content, techniques, and evaluation.

### 446 Curriculum and Methods of Teaching Measurement in Mathematics: Metric and Standard Systems (3)

Prerequisite: ECH ED 346 or ELE ED 246. Curricular development and implementation on reflecting recent research findings. Content, materials, methods of teaching the general topic: measurement. Applications in both the metric and standard systems.

### 447 Problems and Research in Teaching Elementary School Mathematics (3)

Prerequisite: ELE ED 445. A thorough examination of research related to recurrent problems in elementary school mathematics instruction, as well as current problems arising within modern programs. Includes methodology appropriate to investigation of such problems and techniques for assessment of the literature.

### 448 Diagnosis and Remediation of Disabilities in Learning Mathematics (3)

Prerequisite: ELE ED 445. Causes of mathematical disabilities. Materials and techniques for diagnoses and corrective programs for children and youth.

### 450 Problems of Teaching Social Studies in the Elementary School (3)

A classroom-oriented study of curricular and instructional problems encountered in social studies. Emphasis is placed upon development of materials, techniques, and resources.

## Elementary and Childhood Education

### **452 Problems and Research in Teaching Elementary School Social Studies (3)**

Prerequisite: ELE ED 450. An advanced study of pedagogical problems germane to social studies education with particular emphasis on application of research findings to the solution of classroom problems.

### **482 Problems and Research in Teaching Elementary School Reading (3)**

Prerequisite: Elementary Education 385 or equivalent. Systematic study of research as it focuses on the problems of teaching reading in the elementary school. Attention is given to innovations in the field.

### **484 Developmental Reading (K-13) (3)**

Prerequisite: ELE ED or SEC ED 385 or equivalent. Designed to update classroom teachers' skills in reading instruction. Study of basic reading instruction at all grade levels with special emphasis on current instruction programs, innovative approaches to reading instruction, basic techniques, commercial reading materials, and recent research findings which have a bearing on methodology.

### **486 Clinical Diagnosis and Treatment of Reading Disabilities (3)**

Prerequisites: A graduate course in reading and in measurement or statistics. Etiology of specific reading disability; procedures that are used to diagnose and treat in the clinical setting.

### **488 Supervision of School Reading Programs (3)**

Prerequisite: ELE ED or SEC ED 385. Processes and techniques of developing, evaluating and/or modifying the reading program in a school or district. The course would enable those seeking positions as consultants, coordinators, and directors of reading to conform with standards specified by the International Reading Association.

### **493 Clinical Methods in Child Study I (3)**

Prerequisites: ELE ED 486, EVL MS 422. Clinical experience in diagnosing learning problems, especially reading disability, in school children.

### **494 Clinical Methods in Child Study II (3)**

Prerequisite: ELE ED 493. Clinical experience in applying remedial procedures to school children with learning problems, especially reading disability.

### **495 Supervision of Practicum in Clinical Reading (3)**

Prerequisites: ELE ED 385 or SEC ED 385; ELE ED 486, 493, 494; EVL MS 385 and 422. Supervising graduate students in diagnosis and remedial process within the reading clinic.

### **497 Problems (1-10)**

Selected problems to meet the needs of individual students.



## Physical Education

Prerequisites may be waived by consent of the department or the instructor.

### 101 Introduction to Classroom Teaching (3)

An introduction to the study of teachers' behaviors and learners' responses in classroom settings. Students will be assigned to school sites for specified observations/analyses and limited participation. Students will have the opportunity to evaluate the teaching profession as an appropriate career choice. The course will consist of approximately one-third lecture/seminar and two-thirds clinical/field experience.

### 121 Analysis and Teaching of Physical Activities I (2)

The study of skill analysis and techniques of teaching specific physical activities selected in PHY ED 123. Particular emphasis will be given to biomechanical analysis of movement, application of concepts of motor learning, and organization and management of instructional settings. Must be taken concurrently with four of the PHY ED 123 laboratory sections.

### 122 Analysis and Teaching of Physical Activities II (2)

A continuation of PHY ED 121. Must be taken concurrently with four of the PHY ED 123 laboratory sections.

### 123 Analysis and Teaching of Physical Activities Laboratory (4-10)

The study and performance of physical activities. Emphasis will be given to skill analysis, drills, strategy, rules, materials, and teaching of the various activities. Registration in four laboratory sessions is required. Must be taken concurrently with PHY ED 121 or PHY ED 122.

### 130 Elements of Health Education (3)

Prerequisite: ED FND 111 and admission to the School of Education. Basic school health for teachers. Considers health as it relates to the school and the child.

### 132 Personal Health (3)

A study of factors that contribute to physical and mental well-being at all stages of the life cycle. Particular attention will be given to the identification and analysis of individual health behaviors.

### 134 Personal Physical Fitness (3)

Prerequisite: Consent of instructor. A study of the relationship between vigorous physical activity and individual well-being. Emphasis will be placed on an individualized analysis of health fitness, resulting in a prescribed program to develop optimal

levels of physical fitness, including aerobic fitness, strength, muscular endurance, flexibility, body composition, and lifetime sports considerations.

### 190 Clinical Experience in Physical Gerontology (3)

Prerequisite: Consent of instructor. Early supervised experience in gerontological physical activity programming. Seminar precedes and accompanies clinical experience.

### 193 Clinical Experience in Youth Sport Programs (3)

Prerequisite: Consent of instructor. Supervised clinical experience in youth sport programs. Seminar precedes and accompanies clinical experience.

### 204 Special Topics in Physical Education (1-3)

Prerequisite: Consent of instructor. Independent study through readings, reports, field study or research.

### 232 Sports Medicine (3)

Prerequisite: PHY ED 280. Study of the medical supervision of sports participants, training, and prevention and care of injuries. Course grants Red Cross first aid certificate.

### 261 Physical Activity of the Exceptional Learner (3)

Prerequisites: SPC ED 311 and 313. A study of the special physical activity and exercise needs, interests, and problems of the exceptional learner with considerable emphasis on the development of methods and competencies in modifying physical activities.

### 268 Curriculum and Methods of Teaching Physical Education (3)

Prerequisite: ELE ED 210 or SEC ED 213. Study of the scope and sequence of the physical education courses in the school curriculum with emphasis on the selection and organization of materials and methods of instruction and evaluation. Attention is also directed toward learning the techniques and research tools of the scholar in the field of physical education. To be taken concurrently with student teaching.

### 275 Psychology of Sport (3)

Prerequisites: Psychology 3 and 270 or 271. A study of the following aspects of psychology as they influence performance in sport and physical activity: learning, retention, transfer, practice, feedback, motivation, anxiety, perception, motor control, social facilitation, cohesion, leadership, and reinforcement.

### 276 Sociology of Sport (3)

Prerequisite: Sociology 10. Study of sport in the sociocultural process of school and society.

### 277 History and Philosophy of American Physical Education and Sport (3)

Prerequisite: Junior standing. A chronological study of the role of sport in American society and the development of physical education as a profession. Of particular interest will be the effect of religion, philosophy, economics, politics, and education upon physical education and sport.

### 280 Human Anatomy and Physiology (5)

Prerequisite: Biology 1 and 3 or consent of instructor. Study of the basic aspects of human anatomy and physiology and their relationship to concepts in sport and physical activity. Two hours of laboratory per week.

### 282 Physical Growth and Motor Development (3)

Prerequisites: Psychology 270 or 271. An examination of the physical growth and aging, and motor development of the human being over the lifespan. Emphasis on evaluative tools, techniques, and studies of research findings. Laboratory field experience for observing individuals. Attention is directed toward acquisition of basic skills, perceptual-motor development, fitness development, and age-related changes in information processing. A required course for physical education majors, an elective course for early childhood, special, and elementary education majors.

### 283 Kinesiology (3)

Prerequisite: PHY ED 280. Study of the biomechanics of human motion with particular application to performance in sport activities.

### 284 Physiology of Human Exercise (3)

Prerequisite: PHY ED 280. Study of the physiological effects of human exercise, training, and sport activities upon the human body; understanding and evaluation of physical fitness components, with consideration given also to areas including work, fatigue, nutrition, age, sex, and environment.

# Physical Education

## **290 Student Teaching in Physical Education I (5)**

Prerequisites: SEC ED 213; eight of the following courses: PHY ED 121, 122, 123, 130, 232, 275, 276, 277, 283, and 284; and admission to student teaching. Must be taken "in block" with PHY ED 268 and 291 and must immediately precede PHY ED 291 in the semester. Clinical teaching experience in physical education settings in the schools under University and school supervision. Required for all majors in physical education.

## **291 Student Teaching in Physical Education II (5)**

Prerequisite: PHY ED 290. Must be taken "in block" with PHY ED 268 and 290, and must immediately follow PHY ED 290 in the semester. Clinical teaching experience in physical education settings in the schools under University and school supervision. Assignments will be in different socioeconomic and cultural backgrounds, and at different grade levels from those of the PHY ED 290 assignments. Required of all majors in physical education.

## **292 Internship in Physical Gerontology (6-12)**

Prerequisite: PHY ED 190. Clinical experience in gerontological physical education. Clinical experience in selected gerontological setting as a physical education practitioner under University and institutional supervision. Experiences will include at least two separate experiences completed concurrently or successively. Seminar accompanies internship experiences.

## **306 Dance Workshop (1)**

## **312 Management of Sports Programs (3)**

Prerequisite: Consent of instructor. A study of administrative theory, roles, responsibilities, and functions in the management of sports programs.

## **330 Prescribing Physical Activity (3)**

Prerequisite: PHY ED 280 or consent of instructor. Prescription of physical activity for individualized and group programming based upon physical fitness assessment. Health, nutrition, age, physical fitness, and testing aspects are considered in developing specialized exercise programming based upon current physiological and biomechanical research.

## **390 Student Teaching in Physical Education III (5)**

Prerequisite: PHY ED 291 or equivalent and admission to student teaching. Clinical teaching experience in physical education settings in the school under University and school supervision with seminar included. For students who wish an additional student teaching experience.

## **462 The Physical Education Curriculum (3)**

Prerequisite: Consent of instructor. A study of current practices, problems, trends, and research involved in the analysis and development of the physical education curriculum.

## **464 Analysis of Teaching in Physical Education (3)**

Prerequisite: Consent of instructor. A study of trends and research relating to teaching methodology, teacher effectiveness, and supervision of instruction in physical education. Emphasis will be given to the application of research on teacher effectiveness in the instructional process in physical education.

## **475 Psychomotor Learning (3)**

Prerequisite: PHY ED 275. Application of specific principles of psychology to the teaching of physical education and sport. Involves both practical and theoretical approaches to motor learning. Explores techniques of improving physical education in the school through the understanding of various concepts of motor learning and skill acquisition.

## **476 Social Inquiry of Sport (3)**

Prerequisite: PHY ED 276 or consent of instructor. A study of basic social processes in sport, such as socialization, social facilitation, and assimilation.

## **483 Biomechanics of Sport Techniques (3)**

Prerequisite: PHY ED 283 or consent of instructor. A study of the biomechanical concepts important to analysis of techniques used in selected sports. Explores recent research findings on efficient sports techniques. Provides experience in the analysis of skill performance.

## **484 Physiological Bases of Physical Performance (3)**

Prerequisites: PHY ED 280 and 284 or consent of instructor. Physiological bases and contemporary trends in the study of human performance and exercise stress; will analyze research literature and study experimental strategies with the focus upon application to teaching and coaching.

## **497 Problems (1-10)**

Selected problems to meet the needs of individual students.

## Public Policy Administration

### **365 Economic Statistics and Econometrics (3)**

(Same as Economics 365.) Prerequisites: Economics 51 and 52 or Business Administration 410; and Mathematics 31 or 132, or Business Administration 131 or 481, or Public Policy Admin. 401; and Mathematics 80 or 101; or equivalents. An introduction to statistical methods used in economic and public policy research. The course covers the use of the general linear regression model with emphasis given to statistical problems that arise in the context of data collected under non-experimental conditions. Material is limited to single-equation models.

### **401 Introduction to Policy Research (3)**

(Same as Political Science 401.) Procedures for testing explanations, including research design, principles of measurement, probability sampling, methods of data collection, and techniques for analyzing data.

### **410 Introduction to Policy Analysis (3)**

(Same as Political Science 410.) Systematic development of a critical/analytic base for dealing with public policy.

### **418 Governmental Budgeting and Financial Control (3)**

(Same as Business Administration 418.) Prerequisite: Business Administration 440. A study of municipal and federal financial control and budgeting procedures with emphasis on public policy. The impact of financial control on top management decisions and the effect of budget strategies on the allocations of public funds.

### **419 Cases in Public Policy Analysis (3)**

(Same as Political Science 419.) Intensive analysis of several public policy cases. Cases will be problem-solving exercises in areas such as personnel management, program financing, budget preparation and planning.

### **421 Public Sector Microeconomics (3)**

Prerequisites: Economics 251 or Business Administration 410 or equivalent. Survey of economics of bureaucracy, fiscal federalism, entrepreneurship in non-profit organization benefit cost analysis, tax welfare, property rights, and externalities.

### **440 Proseminar in Public Policy Administration (3)**

(Same as Political Science 440.) Examination of major approaches to analyzing public policies and their administration. Emphasis is on the effects of administrative organization and procedures on policy decisions and their impacts. Specific topics may include administrative accountability, inter-governmental relations, public-private interaction, implementation processes, bureaucratic expertise, the legal environment of public policy administration, and public service and merit issues.

### **460 Organizational Behavior and Administrative Processes (3)**

(Same as Business Administration 460.) The theoretical and research contribution of the behavioral sciences to management and administration are examined and applied to selected organizational situations. Areas to be considered from the standpoint of both individual and organizational performance are communication, motivation, conflict, decision making, goal setting, leadership, organizational design, climate, development, and control. Utilizing a systems perspective, the course attempts to develop in each student an ability to analyze and solve organizational problems.

### **475 Introduction to Evaluation Research Methods (3)**

(Same as Psychology and Sociology 475.) Prerequisite: Public Policy Admin. 401. A comparative study of research strategies with regard to data sources, data collection, and modes of analysis that are appropriate for program evaluation research. Attention is given to observational, survey, and quasi-experimental designs.

### **480 Introduction to Computer Programming and Management Applications (3)**

(Same as Business Administration 480.) A particular computer compiler language and computer system (University of Missouri computer network) are used extensively to illustrate computer system concepts and to give the student actual experience in programming and implementing management oriented systems. Time sharing systems are studied and utilized.

### **495 Internship (1-6)**

(Same as Political Science 495.) Independent study involving work with an appropriate public or private agency.

## Nursing Courses

### 111 Issues in Geriatric Health Care (2)

(Same as Biology 111.) A course designed to acquaint the student with aspects of chronic disease frequent in later life, as well as a synopsis of biological aging processes. Disease symptomology aspects of health maintenance and medical intervention with an older adult population will be discussed. In addition, issues in health-care delivery will also be explored.

### 200 Dimensions of Professional Nursing Practice (3)

Prerequisites: Admission to the School of Nursing and junior standing. Explores issues of professional nursing practice from a contemporary and historical perspective. Introduces the major concepts of the theory of self-care, self-care deficits, and the theory of nursing systems. (This course must be taken in the student's first semester in the nursing sequence.)

### 210 Interpersonal Systems in the Practice of Nursing (3)

Prerequisites: Junior standing and Nursing 200. Focuses on therapeutic communication and the development of helping relationships in nursing settings. This course includes a clinical component.

### 220 Health Assessment (3)

Prerequisites: Junior standing and Nursing 200. Focuses on development of systematic approaches to assessment of universal and developmental self-care requisites. This course includes a clinical component.

### 230 Teaching and Guidance in the Practice of Nursing (3)

Prerequisites: Junior standing and Nursing 200. Focuses on concepts of learning theories, health education, and application of teaching and guidance in meeting self-care needs of clients. This course includes a clinical component.

### 240 Leadership and Management in Nursing (3)

Prerequisites: Junior standing and Nursing 200. Focuses on concepts in organization and management, leadership, collaboration, authority, autonomy, and accountability. This course includes a clinical component.

### 250 Research in Nursing (3)

Prerequisites: Junior standing and Nursing 200. Introduces basic research concepts, the critical analysis of research studies, and the application of research findings in clinical practice.

### 265 Women's Issues in Health Care (3)

Prerequisites: None. Seminar explores selected women's issues in health care from the perspective of both providers and consumers of health care. Wellness, rather than pathology, is emphasis of discussions. Current relevant issues determine specific topics to be examined.

### 299 Special Study in Nursing (1-3)

Prerequisite: Consent of instructor. In-depth study of selected topics in nursing under the guidance of a specific instructor. No more than six hours may be taken under this option.

### 310 Designing Nursing Systems: Families (3)

Prerequisites: Senior standing, statistics, Chemistry 2, advanced physiology, and completion of all required junior-level nursing courses. Focuses on assisting with self-care needs of families and/or family members, considering family development, life-cycle events, changing family structure, and cultural, environmental, and social influences on the family. This course includes a clinical component.

### 320 Designing Nursing Systems: Groups (3)

Prerequisites: Senior standing, statistics, Chemistry 2, advanced physiology, and completion of all required junior-level nursing courses. Focuses on group process concepts, decision-making, and the change process in designing nursing systems to meet self-care requisites of client groups. This course includes a clinical component.

### 330 Community Health Nursing (4)

Prerequisites: Senior standing, Statistics, Chemistry 2, Advanced Physiology, and completion of all required junior-level nursing courses. Focuses on the epidemiological approach to identification of health problems, analysis of community factors that influence ability to meet health-care needs, and community resources available to assist with meeting these needs. This course includes a clinical component.

### 340 Synthesis in Nursing Practice (2)

Prerequisites: Nursing 310, 320, and 330. Focuses on application of professional nursing in a traditional practice setting, utilizes the self-care deficit theory of nursing in the care of clients within these settings. This course includes a clinical component.

### 350 Senior Seminar (2)

Prerequisites: Nursing 310, 320, 330, and 340 (Nursing 340 may be taken concurrently). Analyzes the development of the professional nursing role in the health-care delivery system in contemporary and future society. (This course must be taken in the student's final semester.)

### 360 Independent Study in Nursing (1-3)

Prerequisite: Consent of instructor. Offers a student an opportunity to pursue a specific area of interest within the discipline of professional nursing. A variety of resources may be utilized to offer the student experiences appropriate to the area of interest. No more than six hours may be taken under this option.

# Optometry

## First Year Fall Semester

### 502 Gross Human Anatomy and Histology (4)

Structure of the human body with special emphasis on anatomy of the head and neck. The microanatomy of the basic tissue types and organs will also be examined.

### 504 Neuroanatomy (4)

Detailed gross and microscopic anatomy of the human central nervous system with a special emphasis on the cranial nerves, nuclei, and the visual system.

### 505 Geometric Optics (4)

The principles of geometrical optics as applied to refracting and reflecting surfaces, thin lenses, thick lenses and lens systems. The optics of various ophthalmic instruments and techniques will be examined.

### 506 Optometric Orientation (1)

An introduction to the contemporary practice of optometry, beginning with a consideration of the history of the optometric profession and concluding with the consideration of the present-day scope of optometric practice. The role of optometry in the total health-care system will be evaluated along with future projections.

### 511 Human Physiology (3)

Study of the function of the body's major organ systems. Physiology of the central, peripheral, and autonomic nervous systems, cardiovascular, respiratory, endocrine, digestive, and reproductive systems.

### 512 Biochemistry (3)

Basic concepts of general and cellular biochemistry. Study of nomenclature structure, and reactions of organic molecules. Some emphasis on visual system—tears, intraocular fluids, lens, and photochemistry.

## First Year Winter Semester

### 510 Ocular Anatomy (4)

Detailed macroscopic, and light and electron microscopic study of the eyeball, orbit, optic nerve, and visual pathways. Embryology of the eye. (3 hrs. lec., 2 hrs. lab.)

### 513 Physical Optics and Photometry (3)

Radiometry and photometry. Physical optics including diffraction, interference, polarization, scatter, birefringence, and holography. Fundamentals of photography.

### 514 Clinical Optometry I (2)

Selected tests for ocular health, to include perimetry, ophthalmoscopy, biomicroscopy, and tonometry.

### 515 Ocular Optics (3)

The eye as an image-forming mechanism, the schematic eyes, the optical role of the pupil, the retinal image and its evaluation. Nature, classification and etiology of ametropia. Mechanism and optical aspects of accommodation.

### 516 Physiological Optics Laboratory (1)

Experiments designed to accompany courses 512 and 515.

### 517 Ocular Motility (3)

The anatomy, physiology, neurology, measurement, characteristics, and control of the intra- and extraocular system.

### 522 Systemic Pathology (4)

Principles of health and disease. A survey of disease, disease processes, and disease manifestations. A study of tissue changes in inflammation, tumor formation, allergies, disturbances of metabolism and circulation, and injuries.

## Second Year Fall Semester

### 520 Ophthalmic Optics (3)

History of ophthalmic materials; physical characteristics of lenses, aberration theory and its application to lens design, lens design, ophthalmic prisms, multifocal lenses, lens specifications, special lenses, multifocal lenses, lens specifications, special lenses, unique designs, low vision aids, aniseikonic lenses, protective eyewear.

### 521 Clinical Optometry II (5)

Continuation of clinical optometry. Essentials of the case history, patient care in the areas of refraction, binocular integration, and visual performance.

### 523 Ocular Physiology (3)

The physiology of the eye, aqueous production and drainage, intraocular pressure, corneal metabolism, ocular circulation, retinal and optic nerve metabolism, tear fluid formation and physiology, iris and ciliary body physiology.

### 524 Monocular Sensory Processes (5)

Monocular sensory mechanisms of vision, photoreception, visual neurophysiology, spatial and temporal effects, visual acuity and resolution, adaptation, brightness discrimination, and color vision. Topics include a consideration of both the psychophysical aspects and neurophysiological bases of these mechanisms.

### 535 Epidemiology (2)

A review of descriptive statistics, probability sampling, correlation, and prediction. The essentials of epidemiological study procedures and a discussion of the epidemiology of vision disorders.

### 555 General Pharmacology (3)

General pharmacological principles, methods of administration, various systemic drugs and their pharmacological action and side effects, with emphasis on those that affect the visual system. Agencies, laws, and drug abuse.

## Second Year Winter Semester

### 530 Ophthalmic Dispensing (2)

Physical characteristics of frames, lens and frame specifications, fabrication and verification, fitting and dispensing concepts and procedures.

### 531 Clinical Optometry III (5)

Correlation and analysis of optometric data. Emphasis on diagnosis, prognosis, and therapy of visual problems.

### 532 Binocular Vision and Space Perception (4)

Binocular vision and space perception. Visual direction, theory of correspondence, fusion, rivalry, ocular dominance, and stereopsis. Developmental aspects and neurophysiological mechanisms.

### 533 Ocular Pathology I (4)

The etiology, epidemiology, symptoms, signs, and course sequelae of ocular disease and anomalies. Disease and anomalies of lids, orbit, conjunctiva, cornea, sclera, iris, ciliary body, lens, vitreous, retina, choroid, and optic nerve.

### 541 Interpersonal Relations (2)

Principles of human interpersonal relationships. The development of patient-doctor relationships. Emphasis will be on preparing the student to understand and deal with the many human interpersonal relationships necessary in the practice of optometry.

### 565 Ocular Pharmacology (3)

Pharmacology, uses, doses, contraindications, adverse effect of drugs producing miosis, mydriasis, cycloplegia, accommodation, and corneal anesthesia. The pharmacology, use contraindications, and adverse effect of drugs commonly used in treating visual and ocular problems.

# Optometry

## Third Year Fall Semester

### 550 General Clinic I (6)

The clinical examination and care of general clinic patients, along with the fitting and dispensing of lenses and frames.

### 553 Contact Lenses I (3)

Historical development of the contact lens and its use. Basic lens terminology, specifications, physio-chemical characteristics, optics, fabrication, and verification. Preliminary patient evaluation, indications and contraindications for contact lenses. Basic fitting philosophies for all lens types. Corneal topography and physiology. Patient and practice management considerations. Limited clinical experience.

### 554 Binocular Vision Anomalies (4)

The etiology, epidemiology, symptoms, signs, and course sequelae of the obstacles to binocular vision—sensory, integrative and motor. The detection, diagnosis, prognosis, and orthoptic treatment of such anomalies. Clinical care of aniseikonias.

### 556 Ocular Pathology II (4)

Ocular manifestations of systemic diseases and anomalies. The etiology, epidemiology, symptoms, signs, and course sequelae of visual and ocular neurological anomalies, lid and pupillary anomalies, paralytic strabismus, and visual field problems.

### 557 Vision Performance (2)

The principles of efficient illumination, vision requirements in homes, schools, business, industry, and vision safety in the environment. The relationship between vision and avocational efficiency. The importance of vision in sports is considered. The roles of patient care and human engineering in maximizing visual performance.

### 558 Geriatric Optometry (2)

Special examination and management considerations of the geriatric patient. Psychological, physiological, social and demographic aspects of aging. Ocular changes associated with the aging process.

## Third Year Winter Semester

### 560 General Clinic II (6)

Same as General Clinic I.

### 561 Specialty Clinic I (2)

The clinical examination and care of patients in the optometric specialty areas.

### 563 Contact Lenses II (3)

Advanced contact lens fitting, theories and clinical methods for aspheric, astigmatic, presbyopic, keratoconic, and aphakic designs. Special considerations including the application of lenses in high refractive errors, binocular vision training, low vision devices, color deficiency, orthokeratology, and extended wear. Use and fitting of haptic lenses, cosmetic shells, and prostheses. Patient and practice management considerations. Limited clinical experience.

### 564 Low Vision (3)

The etiology, epidemiology, symptoms, signs, and course sequelae of low-vision problems. Methods of testing, prognosis, selection of therapy, design of environmental and optical aids, problems of rehabilitation. Agencies, laws, public and social assistance for the partially sighted and blind.

### 567 Pediatric Optometry (3)

Special examination and management considerations of the pediatric patient. Psychological, physiological, social, and demographic aspects of early visual development. Discussion of the optometric considerations of children with learning and reading disabilities.

### 596 Public Health (2)

A review of local, state and federal organizations involved in health care, comprehensive health planning, new trends in health care delivery, and the assessment of the quality of health care delivery. The relationship of vision care to these topics is emphasized.

## Fourth Year Summer Session

### 570 Summer Clinic (6)

Same as General Clinic I.

## Fourth Year Fall Semester

### 580 General Clinic III (4)

Same as General Clinic I.

### 581 Specialty Clinic II (6)

Same as Specialty Clinic I.

### 582 Clinic Seminar I (2)

Presentation and discussion of interesting clinical patients. Additional clinical testing techniques and concepts. Further discussion of patient data analysis—the process of determining diagnosis, prognosis, and therapy. Further discussions in the optometric specialties.

### 584 Affiliated Clinic I (6)

The clinical examination and care of clinic patients in the School of Optometry's affiliated clinics. These clinics offer unique patient populations.

## Fourth Year Winter Semester

### 590 General Clinic IV (4)

Same as General Clinic I.

### 591 Specialty Clinic III (6)

Same as Specialty Clinic I.

### 593 Clinic Seminar II (1)

Presentation and discussion of interesting clinical patients. Additional clinical testing techniques and concepts. Further discussion of patient data analysis, the process of determining diagnosis, prognosis and therapy. Further discussions in the optometric specialties.

### 594 Affiliated Clinic II (6)

Same as Affiliated Clinic I.

### 595 Computer Applications in Optometric Practice (2)

An introduction to microcomputers and computerized office management systems. This course is designed to demonstrate the value of computers, word processing, and microprocessor technology in an optometric office.

### 597 Independent Study (3)

Accrued credit is given for the completion of an independent project. Credit may be obtained by: 1) pursuit of a laboratory, library or clinical research project in any area of vision science; or 2) development of an appropriate tool skill applicable to optometric practice; or 3) advanced study in a clinical specialty. All projects must be undertaken under the supervision of a faculty member. The project may extend over one or more academic years, but must be completed by the end of the first semester of the fourth year.

# ROTC

## Military Science

### 101 Fundamentals of Leadership and Management I (1)

Provides an overview of the organization and role of the U.S. Army and the Army ROTC. Initiates an appreciation of the military profession and its customs, traditions, and courtesies. Introduces the student to the responsibilities and obligations of an Army officer. Develops leadership and managerial abilities. Provides fundamentals of survival techniques and first aid principles.

### 102 Fundamentals of Leadership and Management II (1)

Prerequisite: Military Science 101, equivalent or consent of Professor of Military Science (PMS). Provides an introduction to theoretical and practical aspects of supervision. Emphasizes the need for proper motivation and cooperative attitudes as they pertain to both individual and group interaction. Introduces Military History. Continues development of leadership and managerial abilities and provides fundamentals of mountaineering and orienteering.

### 201 Applied Leadership and Management I (2)

Prerequisite: Military Science 101, 102, equivalent or consent of Professor of Military Science (PMS). Provides basic background in the skills necessary for military map reading and land navigation to include: (1) military grid reference system; and (2) map scale, distance, elevation, and relief. Continues development of leadership and managerial skills. Provides fundamentals of orienteering. Introduces the student to basic communication skills and develops basic awareness on how these skills affect other people.

### 202 Applied Leadership and Management II (2)

Prerequisite: Military Science 201, equivalent or consent of Professor of Military Science (PMS). Develops principles and techniques of applied leadership through discussion of some of the processes and procedures used by the leader to accomplish organizational objectives to include: (1) decision making; (2) communication; and (3) counseling. Provides practical experience in leadership of small units in the military environment. Examines principles and techniques of small-unit military tactical patrolling operations with emphasis on development of pre-planning and execution concepts. Applies of concepts practiced through in-class map exercises and field training practicum. Provides an overview of the Army ROTC advanced course. Continues development of leadership and managerial abilities. Provides fundamentals of marksmanship.

### 301 Advanced Leadership and Management I (3)

Prerequisite: Military Science 101 through 202 or equivalent and selection by Professor of Military Science (PMS). Covers the functional roles of the military leader and basic principles of management with emphasis on problem analysis and decision-making, span of control, delegation of authority and responsibility, planning and coordinating. Provides fundamentals of effective methods of instruction and includes practical exercises where each student plans, prepares, and presents part of instruction. Continues to develop the student's ability to communicate orally and in writing. Provides additional insight into areas of Army officer specialization. Stresses practical application in the development of leadership abilities in that students are placed in positions of leadership within the ROTC student structure.

### 302 Advanced Leadership and Management II (3)

Prerequisite: Military Science 301. Provides a review of basic military land navigation and map-reading techniques. Examines more advanced principles and techniques of small unit military offensive and defensive tactical operations with concentrated study of such factors as command and control, communications, weapons systems, and military geography. Continues emphasis on practical application exercises to develop students leadership abilities. Solicifies student's preparation for attendance at the ROTC advanced camp during the upcoming summer.

### 401 Seminar in Leadership, Management, Theory, and Dynamics of the Military Team I (3)

Prerequisites: Military Science 301 and 302. Explores the practical aspects of military law. Examines the organization, responsibilities, and management of the military unit staff. Provides a working knowledge of proper staffing procedures. Continues development of leadership and managerial abilities through placement of students into key leadership positions within the ROTC student organizational structure. Students plan and conduct the majority of leadership practicum for all ROTC students.

### 402 Seminar in Leadership, Management, Theory, and Dynamics of the Military Team II (3)

Prerequisite: Military Science 401. Examines military professional ethics and the ideal American values as a basis for military values. Examines techniques of resource management with particular emphasis on the military environment. Teaches proper application of tactical military doctrine at the company/team level and the planning necessary between elements of the team. Reviews the various roles of the newly commissioned Army officer. Culmination ROTC training to develop leadership and managerial skills. Students continue to be assigned positions of leadership within the ROTC student organizational structure.

# AFROTC

These courses are taught at Parks College, St. Louis University, Washington University, or UMSL. Students should check the *Schedule of Courses* each semester for locations.

## Aerospace Studies

### 101 The Air Force Today (2)

Introduction to contemporary military issues and overall Air Force structure.

Professionalism, human rights, and civilian-military relationships are stressed. Leadership Laboratory activities designed to develop leadership potential includes military customs and courtesies, drill and ceremonies, and base visitations.

### 102 The Air Force Today (2)

Continuation of AERO 101. Includes strategic offensive and defense forces, general purpose forces, aerospace support forces, and relationships with U.S. Army forces. Individual communicative skills emphasized.

### 201 The Development of Air Power (2)

Study of the development of air power from balloons and dirigibles through WWI and WWII. Leadership Laboratory activities, designed to develop each student's leadership potential, are included. Classroom activity, one hour per week; Leadership Laboratory, one hour per week.

### 202 The Development of Air Power (2)

Continuation of AERO 201 to include the history of air power in Korea, Vietnam, and the peaceful employment of United States air power in relief missions. Classroom activity, one hour per week; Leadership Laboratory, one hour per week.

Aerospace Studies courses AERO 301 through AERO 402 are advanced courses designed to improve the communicative and management skills required of Air Force officers. Credit hours for these courses may be included in the 120 hours needed for graduation at the discretion of individual departmental chairpersons.

### 301 Air Force Management and Leadership (3)

Integrated management course emphasizing the individual as a manager in Air Force milieu. Motivational and behavioral processes, leadership, communication, and group dynamics are covered for the development of the junior officer's professional skills as an Air Force officer. Basic managerial processes involving decision making, utilization of analytic aids in planning, and organizing and controlling in a changing environment are emphasized as professional concepts. Classroom activity, three hours per week; Leadership Laboratory, one hour per week.

### 302 Air Force Management and Leadership (3)

Continuation of AERO 301; includes organizational and personal values, management of forces in change, organizational power, politics, and managerial strategy and tactics within context of the military organization. Actual Air Force cases are used to enhance learning and communication processes. Classroom activity, three hours per week; Leadership Laboratory, one hour per week.

### 401 National Security Forces in Contemporary American Society (3)

The Armed Forces as an integral element of society; American civil-military relations; environmental context in which U.S. defense policy is formulated and implemented; societal attitudes toward the military leader-manager in a democratic society; fundamental values and socialization processes associated with the Armed Services. Individual and group oral and written reports. Classroom activity, three hours per week; Leadership Laboratory, one hour per week.

### 402 National Security Forces in Contemporary American Society (3)

Continuation of AERO 401. Requisites for maintaining adequate national security forces; political, economic, and social constraints on the national defense structure; impact of technological and international developments on strategic preparedness; formulation and implementation of national security policy. Classroom activity, three hours per week; Leadership Laboratory, one hour per week.



but compare

the

LHDI

100

4872A-586-7M

