

# DEPARTMENT OF SOCIOLOGY AND ANTHROPOLOGY

**Chairperson:** *Jacqueline R. Scherer*

**Professors:** *Peter J. Bertocci, Judith K. Brown, James Dow, Jacqueline R. Scherer*

**Associate professors:** *William Bezdek, Harry Gold, Gary Shepherd, Richard B. Stamps, Donald I. Warren*

**Assistant professors:** *Albert J. Meehan, Rebecca L. Warner*

**Adjunct professor:** *James D. Bannon*

**Chief advisers:** *Gary Shepherd (Sociology), Peter J. Bertocci (Anthropology)*

The Department of Sociology and Anthropology offers two separate majors leading to a Bachelor of Arts degree. Sociology is the scientific study of society and is of particular interest for students who wish to examine important social problems. Undergraduate anthropology includes course work in both cultural and physical anthropology. In sociology and anthropology, students are required to study research techniques and acquire skills in theoretical analysis. Both majors are designed to allow maximum flexibility enabling students to pursue their own intellectual interests.

Students may also select a combined major in both disciplines. The department is also developing an extended program in industrial sociology that will focus on human and industrial relations. The department actively participates in the following concentrations: archaeology, social justice and corrections, social service and urban studies.

## **Requirements for the liberal arts major in sociology and anthropology**

To earn a Bachelor of Arts in Sociology,\* students must complete SOC 100, SOC 202, SOC 381 or 400, and one anthropology course (either AN 101 or AN 102), plus a minimum of 24 additional credits in sociology (of which 4 may be taken in anthropology) for a minimum of 40 credits.

To earn a Bachelor of Arts in Anthropology,\* students must complete AN 101, AN 102 and SOC 100, plus a minimum of 28 additional credits in anthropology for a minimum of 40 credits (of which 4 may be taken in sociology). LIN 301 may be substituted for one departmental course.

To earn a Bachelor of Arts with a combined major in Sociology/Anthropology,\* students must complete a minimum of 20 credits in sociology and 20 credits in anthropology; these must include SOC 100, SOC 202, AN 101 and AN 102 and either SOC or AN 400.

\*No more than 8 total credits counted toward the major may be taken in SOC/AN 190, 392, 399 or 480.

## **Requirements for modified majors in sociology and/or anthropology with a linguistics concentration**

To earn a modified major in sociology with a concentration in linguistics, students must complete a minimum of 24 credits in sociology, including SOC 100, SOC 202, SOC 400 or 381, and a minimum of 20 credits in linguistics.

To earn a modified major in anthropology with a concentration in linguistics, students must complete AN 101 and AN 102, plus a minimum of 12 additional credits in anthropology and 20 credits in linguistics.

## Requirements for a liberal arts minor in sociology or anthropology

To earn a minor in sociology, students must complete SOC 100 plus a minimum of 16 additional credits in sociology, 12 of which must be at the 300-400 level. To earn a minor in anthropology, students must complete AN 101 and AN 102 plus a minimum of 12 credits in anthropology courses at the 300-400 level.

## Departmental honors

To earn departmental honors in sociology, students must have taken at least 20 of their major credits at the 300-400 level, have taken a minimum of 20 credits of their sociology major course work at Oakland University, have received a grade point average (GPA) of 3.50 in major course work, and receive recommendations from two departmental faculty members.

To earn departmental honors in anthropology, students must have taken at least 16 credits in major at 300 level or above, have taken a minimum of 20 credits of their anthropology major course work at Oakland University, have received a GPA of 3.50 in major course work, and receive recommendations from two departmental faculty members.

## Course Offerings

### ANTHROPOLOGY

#### AN 101 Human and Cultural Evolution (4)

Introduction to physical anthropology and archaeology as applied to human and cultural evolution. Stress placed on human adaptation to environment. *Satisfies the university general education requirement in social science.*

#### AN 102 Culture and Human Nature (4)

Introduction to cultural and social anthropology with emphasis on the continuing human adaptation to the environment and especially the interactions among culture, society and natural environment. *Satisfies the university general education requirement in social science.*

#### AN 190 Current Issues in Anthropology (4)

Designed for the general student, this course examines issues of current interest in anthropology. Topic will be announced at the time of offering.

#### AN 222 Introduction to Anthropological Archaeology (4)

Introduces the field of anthropological archaeology through examination of theory, data collection methods and techniques, and interpretive strategies used to understand human histories, life-ways and cultural processes.

#### AN 251 Peasant Society and Culture (4)

The peasant as a social type, the peasant's role in the making of great civilizations, and forces for change in peasant societies, especially in the non-Western world.

Prerequisite: AN 102.

#### AN 271 Magic, Witchcraft and Religion (4)

Anthropological theories of magic, witchcraft and religion: human interaction with beings, creatures, and forces that manifest extraordinary powers; folk beliefs of nonliterate people; and transformation of social systems by religious movements. Identical with REL 271.

Prerequisite: AN 102 or sophomore standing.

#### AN 282 The Prehistoric Origins of Civilization (4)

The development and spread of culture in the period before written history, using archaeological evidence from Neolithic Old World and New World sites. Cultural evolution from early farming and settlement to the rise of complex civilization.

Prerequisite: AN 101.

#### AN 300 Culture, Society and Technology (4)

Technology has played a critical role in all human evolution. This course provides a historical overview of the ways in which culture has shaped technology and how technology changes cultures. It emphasizes the impact of technology on modern cultures, especially technology emanating from the Western industrial revolution. *Satisfies the university general education requirement in social sciences.*

**AN 302 Field Research Techniques (4)**

Training in: research information storage and retrieval; field research instrumentation (photography, cinematography, video and audio recording, field computers); use of archives and data banks; plus participant observation, ethnomethodology and semantic analysis.

Prerequisite: AN 102 or SOC 100.

**AN 305 Child Rearing and Human Development in Cross-Cultural Perspective (4)**

Child-rearing practices and their educational role, the rearing of nonhuman primate young, and socialization practices of certain Western subcultures and non-Western societies. Identical with WS 305.

Prerequisite: AN 102.

**AN 307 Culture and Society Through Film (4)**

The systematic study of selected peoples from different cultures through the ethnographic film and appropriate readings, lectures and discussions. Students learn to evaluate cultural data according to various anthropological concepts and methodologies. *Satisfies the university general education requirement in social science.*

Prerequisite: Junior standing or permission of instructor.

**AN 310 Psychological Anthropology (4)**

Theories of psychological anthropology on culture and personality and psychological phenomena viewed in relationship to culture and from a cross-cultural perspective.

Prerequisite: AN 102.

**AN 315 Studying Our Culture: Technique and Analysis (4)**

The different ways that people in different cultures and subcultures have of seeing their experiences. The anthropologist's methods of studying and analyzing these differences. Includes field work practice.

Prerequisite: AN 102 or SOC 100 or PSY 100.

**AN 322 Subsistence and Technology in Nonindustrial Society (4)**

Technologies of different cultures; implications for the individual, society and cultural survival; ecology of tribal, peasant and industrial cultures with emphasis on subsistence technology of non-Western cultures. Identical with ENV 322.

Prerequisite: AN 102.

**AN 333 Medical Anthropology (4)**

Interaction between biological, ethnopsychiatric and sociocultural environments in health, illness, and treatment. Includes historical, organizational, demographic, ecological and other problems in health care delivery.

Prerequisite: AN 102 or SOC 100 or PSY 100 or HBS 200.

**AN 337 Women's Lives in Cross-Cultural Perspective (4)**

Anthropological literature will be used to examine cultural variation in rituals and customs affecting women's lives. Female life-cycle events and the division of labor by sex will be studied in relation to the position of women in different societies. Identical with WS 337.

Prerequisite: AN 102.

**AN 361 Peoples and Cultures of India (4)**

A survey of contemporary society and culture on the Indian subcontinent, with focus on India, Pakistan and Bangladesh; emphasis on social structure, folk religion and the problems of socio-cultural change.

Prerequisite: AN 102 or IS 240.

**AN 362 Peoples and Cultures of China (4)**

An anthropological study of China, stressing the variety of cultural and ecological adaptations characteristic of that complex society.

Prerequisite: AN 102 or IS 210.

**AN 370 Archaeology of Mesoamerica (4)**

The pre-Hispanic culture of Mexico and Guatemala, the Aztecs and Mayas, and their neighboring and derivative cultures. Detailed discussion of the major archaeological sites.

Prerequisite: AN 101 and 102.

**AN 371 Peoples and Cultures of Mexico and Central America (4)**

Anthropological studies of Indian and Mestizo societies in Mexico and Guatemala, including their separate socio-economic patterns and their integration into a dualistic social system.

Prerequisite: AN 102 or IS 250.

**AN 372**            **Indians of South America (4)**

A survey of the native South Americans. Includes warriors of the jungles, peasants and herders of the mountains, nomads of the plains and forests, and subsistence fishermen of the southern coasts.

Prerequisite: AN 102 or IS 250.

**AN 373**            **Ethnography of Communication (4)**

Identical with ALS 373.

**AN 374**            **Cross-Cultural Communication (4)**

Identical with ALS 374/SCN 374.

**AN 375**            **Language and Culture (4)**

Identical with ALS 375.

**AN 380**            **Archaeology of North America (4)**

The evolution of native North American cultures (including Mesoamerica) from 50,000 B.C. to 1500 A.D., with emphasis on the ecological factors in the development of culture areas.

Prerequisite: AN 101.

**AN 381**            **Peoples of North America: Indians and Inuit (Eskimos) (4)**

The culture of certain North American societies and their adaptation to Western contact.

Prerequisite: AN 102.

**AN 382**            **Advanced Physical Anthropology (4)**

The emergence and diversification of the human species in relation to the morphology and ecology of both modern and fossil man, including physical and physiological variation (sex, race and age), climatic adaptation and population genetics.

Prerequisite: AN 101.

**AN 383**            **Methods in Anthropological Archaeology (4)**

Instruction and field research, including site location, excavation and artifact analysis, and conservation. May be repeated once for credit.

Prerequisite: AN 101.

**AN 391**            **Primate Behavior (4)**

Various bio-social factors which aid the nonhuman primates in their adaptation to the environment, implications for human behavior, classroom discussions and field studies.

Prerequisite: AN 101 or 102 or PSY 100 or SOC 100 or HRD 301.

**AN 392**            **Current Problems in Anthropology (2 or 4)**

Seminar in which a topic or problem is studied in depth. Each seminar requires independent readings and writing.

Prerequisite: Permission of instructor.

**AN 399**            **Field Experience in Anthropology (4)**

Field experience in anthropology with faculty supervision. An academic project related to the departmental discipline which incorporates student performance in an occupational setting. May not be repeated for credit.

Prerequisite: 16 credits in anthropology, of which at least 8 must be at the 300/400 level, and permission of instructor.

**AN 400**            **Theories of Society and Culture (4)**

Acquaints students with the major theoretical foundations of modern anthropology. Identical with SOC 400.

Prerequisite: AN 102 or SOC 100.

**AN 401**            **Social Anthropology (4)**

Examines social structure and social organization in anthropological perspective. Entails the study of economic, political, religious and kinship systems in the social life of man.

Prerequisite: AN 102.

**AN 410**            **Human Adaptation (4)**

This course examines current theory on the cultural and biological adaptation of human groups to natural and social environments. Identical with ENV 410.

Prerequisite: AN 322 or ENV 322.

**AN 420 Clinical Anthropology (4)**

This course explores cross-cultural explanations of illness and "deviant" behavior from both patients' and healers' perspectives, using case studies, films and the guest presentations of practitioners. It stresses the anthropological contribution to therapeutic strategies in the treatment of physical and mental illness.

Prerequisite: Three sociology or anthropology courses.

**AN 430 Systems of Wealth and Power in Anthropological Perspective (4)**

Concepts and methods of political and economic anthropology, emphasizing the interrelated state of political and economic phenomena, with particular reference to preindustrial, non-Western societies.

Prerequisite: AN 102.

**AN 440 Anthropology of Law (4)**

The mechanisms of social control and legal institutions in non-Western, preliterate societies. Topics include the varying types of moral order and the problem of legal enforcement in stateless societies.

Prerequisite: AN 102.

**AN 480 Independent Study and Research (2 or 4)**

A tutorial in which the student will pursue a course of reading and research with the instructor. May be repeated only once for credit.

Prerequisite: Permission of instructor.

**AN 497 Apprentice College Teaching (2 or 4)**

Supervised participation in teaching an undergraduate course in anthropology, combined with readings and discussion of teaching objectives and methods appropriate for anthropological presentation. May be taken only once for credit toward a major.

Prerequisite: Senior anthropology major and permission of instructor.

**SOCIOLOGY****SOC 100 Introduction to Sociology (4)**

Introduction to the basic concepts of sociology relating to the study of man as a participant in group life. Particular attention is given to culture, socialization and personality development and class. *Satisfies the university general education requirement in social science.*

**SOC 190 Current Issues in Sociology (4)**

Designed for the general student, this course will examine issues of current interest in sociology. The topic will be announced at the time of the offering.

**SOC 202 Introduction to Methods of Social Research (4)**

The collection, organization, analysis and interpretation of social data; elementary techniques of understanding and using quantitative evidence in sociological research.

Prerequisite: SOC 100.

**SOC 203 Social Statistics (4)**

Interpretation of social data by quantification and statistical reasoning.

Prerequisite: Two years of high school mathematics.

**SOC 205 Current Social Problems (4)**

This course presents sociological approaches to analyzing social problems. Particular attention is given to evaluation of the causes and consequences of social problems, as well as of their proposed solutions.

**SOC 206 Self and Society (4)**

Examines the reciprocal relationship between the individual and the group. Emphasizes the social roots of human nature, the self, social interaction, definitions of reality, socialization and social character. *Satisfies the university general education requirement in social science.*

**SOC 240 Sociology of Crime and Punishment (4)**

An introduction to the study of crime and the system of criminal justice in the United States. Provides an overview of different theories of crime, the production of crime statistics, types of offenses, the role of the police, courts and correctional agencies and public policy. The course also includes a comparison of street crime with white-collar crime.

Prerequisite: SOC 100. *Recommended for all students in the social justice and corrections concentration.*

**SOC 301 Social Stratification (4)**

The concepts of class, caste and race in relation to social conflict and social integration. Students will study these problems in a cross-cultural perspective, emphasizing comparative materials.

Prerequisite: SOC 100.

**SOC 305 Sociology of Religion (4)**

An analysis of the social components of religious experience, meaning and behavior; emphasis on the relationship between organized religions and other social institutions and such processes as conversion, commitment, sectarianism, accommodation and secularization. Identical with REL 305.

**SOC 310 Introduction to Canada (4)**

An interdisciplinary study of the peoples of Canada and their traditional and modern civilizations. Identical with IS 310.

**SOC 314 The Social Context of Social Work (4)**

A study of the social work profession and the social context of welfare policies, the relationships between social structure and the development of social work practice, and public and private welfare organizations.

Prerequisite: SOC 100 or two courses in psychology or human resource development.

**SOC 315 Social Welfare Policies (4)**

Survey of the development of social welfare programs in the U.S. and internationally. Issues related to the problems of poverty, policy analysis and program evaluation related to social welfare in the U.S. and other countries are examined.

Prerequisite: SOC 100 or 314.

**SOC 322 Sociology of Law (4)**

An investigation of law and legal institutions from a comparative perspective, including the uses of law, the development of legal institutions, the role and organization of legal professionals, social influences on law, and the capacity of law to affect social behavior.

Prerequisite: SOC 100.

**SOC 323 Juvenile Delinquency and its Social Control (4)**

Nature and types of juvenile delinquency, the relation of juvenile delinquency to the stress of adolescence and the specific social situation, methods of preventing delinquency or its recurrence.

Prerequisite: SOC 240.

**SOC 324 Work and the Law (4)**

Identical with LE 324.

**SOC 327 Police and Society (4)**

A study of police techniques and problems, of deviant citizen-police relations, and of social control in a field where power is high and visibility is relatively low. Topics include the defenses against corruption and the containment concept of police.

**SOC 328 Sociology of Health and Medicine (4)**

The sociological study of medicine and the uses of sociology in medicine, definitions of health and illness, disease and death, health care occupations, medical malpractice, the organization of health services, and trends in health and medicine.

Prerequisite: SOC 100.

**SOC 331 Racial and Ethnic Relations (4)**

A study of racial, ethnic and religious groups, particularly those of the U.S., emphasizing their historical development, problems of adjustment and assimilation and contemporary problems and trends.

Prerequisite: SOC 100.

**SOC 335 The Family (4)**

A comparative and historical study of the family. Identical with WS 335.

Prerequisite: SOC 100.

**SOC 336 Sex Roles in Modern Society (4)**

The impact of ideological and technological change on the statuses, occupations and relationship of males and females. Identical with WS 336.

Prerequisite: SOC 100.

**SOC 338 Moral Socialization (4)**

The cultural, social and psychological dimensions of "morality"; how moral agreements are reached, and how they are communicated to group members; how individual members incorporate these agreements into their personal values and behaviors.

**SOC 345 Urban Sociology (4)**

The social structure, culture and ecology of early and contemporary urban communities; institutional responses to the problems of modern urban life.

Prerequisite: SOC 100.

**SOC 346 Communities (4)**

This course focuses on the forms and functions of local communities, including neighborhoods and social networks. Both theoretical and applied implications of these structures for community organization and development are explored.

Prerequisite: SOC 100.

**SOC 350 The Transformation of the Workplace (4)**

A study of how high technology, computers, and a shift in the economic base of employment are transforming work in contemporary society, why this is happening, and the social, psychological, political and cultural impacts of change in the workplace.

Prerequisite: SOC 100.

**SOC 353 Seminar in Socio-Technical Systems (4)**

This seminar introduces students to the growing field of inquiry that integrates the social and technical dimensions of work. Issues within the immediate, primary workplace, and the organization and social system that are related to the workplace are examined.

Prerequisite: One social science methods course.

**SOC 354 Quality of Work Life (4)**

Can small groups in large organizations promote the personal growth of employees and achieve corporate goals of productivity? The use and abuse of quality circles, the tension between personal development, corporate culture, and the ideology of worker/management relations.

Prerequisite: SOC 100.

**SOC 357 Industrial Sociology (4)**

The relationship between industrial and business organizations and the community; the study of occupations, labor unions, informal work groups, and the character of American occupational life.

Prerequisite: SOC 100.

**SOC 359 Human Factors in Quality Control (4)**

Focuses on ways to attain quality in societies based on mass production. Examines underlying social principles and specific industrial practices which encourage quality production, particularly in large-scale manufacturing and service industries which are bureaucratically organized.

Prerequisite: One social science course; two years of high school math recommended.

**SOC 371 Forms and Effects of Mass Communication (4)**

Techniques of disseminating ideas and information through the mass media; evaluation of the effect of mass media on values of individuals, and policies of institutions. Identical with SCN 371.

Prerequisite: SOC 100 or sophomore standing.

**SOC 373 Social Control of Mass Media (4)**

The major sociological factors which control the informational content of the mass media; differences between the structures and processes of control in the print and electronic sectors of the media. Identical with SCN 373.

Prerequisite: SOC 371.

**SOC 376 Sociolinguistics (4)**

Identical with ALS 376.

**SOC 381 Theories of Modern Organizations (4)**

Modern society is based upon organizational life. Topics include: theories of human organization, as well as the study of bureaucracies, features of organizations and the effects of organization on American culture.

**SOC 392 Current Problems in Sociology (2 or 4)**

Seminar in which a topic is studied in depth. Each seminar requires independent readings and writing.

Prerequisite: Permission of instructor.

**SOC 399 Field Experience in Sociology (4)**

Field experience in sociology with faculty supervision. An academic project related to the departmental discipline which incorporates student performance in an occupational setting. May not be repeated for credit. Prerequisite: 16 credits in sociology, of which at least 8 must be at the 300/400 level, and permission of instructor.

**SOC 400 Theories of Society and Culture (4)**

Acquaints students with the major theoretical foundations of modern sociology. Identical with AN 400. Prerequisite: SOC 100 or AN 102.

**SOC 401 Survey and Interview Techniques (4)**

Acquaints students with field interview techniques, questionnaire design, scaling and index construction, experimental and quasi-experimental designs, plus program evaluation research techniques. Prerequisite: SOC 100.

**SOC 402 Small Groups (4)**

The study of small group relations and the informal understandings, codes and conventions which they generate. Considers dynamics of individuality, leadership, conformity and esprit de corps in a group setting. Identical with SCN 402. Prerequisite: SOC 100.

**SOC 403 Computer Packages in Social Science (4)**

Principles of packaged programs, with practice in data editing and analysis with SPSS (Statistical Package for the Social Sciences) and BMDP. Comparative merits of different packages. Prerequisite: SOC 203 or equivalent.

**SOC 408 Population Dynamics (4)**

Historical analysis of world population growth, focusing on relationships among population size, population policy, and social and economic development. Prerequisite: SOC 100.

**SOC 425 Corrective and Rehabilitative Institutions (4)**

Problems of interaction within the institution are analyzed, e.g., between inmate, guard, supervisor and rehabilitation specialist; development of inmate subcultures; dynamics of crisis (e.g., riots); and equilibrium. Prerequisite: SOC 240.

**SOC 430 Internship in Social Justice and Corrections (4 or 8)**

Field placement and supervision of students in police, prison and parole organizations and agencies. Prerequisite: Enrollment in social justice and corrections concentration and written permission of instructor.

**SOC 437 Sociology of the Courts (4)**

The roles of judges, court officers, jury and attorneys are described and analyzed in the context of their professional matrix. Prerequisite: SOC 100 and 240.

**SOC 455 Contemporary Work Roles, Careers and Labor Markets (4)**

The social dimensions of occupational specialization in modern society. The impact of social and technological labor market changes in the supply and demand for workers in various occupations. Industrial and professional career patterns are studied in relationship to values, status, prestige, life style, occupational satisfaction and job-related stress. Prerequisite: SOC 100.

**SOC 460 Political Sociology (4)**

Sociological factors which influence distribution of power within a society: political communication, maintenance of political consensus, the revolution process, the structure of political parties, and the emergence of new states. Prerequisite: SOC 100.

**SOC 465 Sociological Perspectives on Aging (4)**

Recent sociological perspectives on aging: topics include status of persons approaching and past retirement age, family and community roles and relations, and occupational and political participation. Prerequisite: SOC 100 and junior standing or above.



**SOC 480 Independent Study and Research (2 or 4)**

Directed individual reading and research.

Prerequisite: Permission of instructor.

**SOC 497 Apprentice College Teaching (2 or 4)**

Supervised participation in teaching an undergraduate course in sociology, combined with readings and discussion of teaching objectives and methods appropriate for sociological presentation. May be taken only once for credit toward a major.

Prerequisite: Senior sociology major and permission of instructor.

# BIOCHEMISTRY PROGRAM

**Coordinator:** Virinder K. Moudgil (*Biological Sciences*)

**Biochemistry Committee:** Denis M. Callewaert (*Chemistry*), John D. Cowlshaw (*Biological Sciences*), Kathleen H. Moore (*Chemistry*), Michael D. Sevilla (*Chemistry*)

This interdepartmental program offers a Bachelor of Science degree with a major in biochemistry. The biochemistry program is based on faculty resources and research facilities in the departments of Biological Sciences and Chemistry. The curriculum is designed to prepare students for professional schools in health sciences, graduate school in biochemistry and biochemical research.

The specialized research facilities for cellular and analytical biochemistry at Oakland University include tissue culture facilities, an ultracentrifugation laboratory, isotope laboratories with beta and gamma counters, gas chromatographs, equipment for high pressure liquid chromatography, equipment for NMR, EPR, laser Raman and atomic absorption spectroscopy, and other computerized biochemical equipment.

Undergraduate students in the biochemistry program have access to faculty research laboratories and are encouraged to participate in various ongoing research programs such as studies in gene expression, hormone action, immunochemistry, biochemistry of viruses and nucleic acids, and radiation damage to macromolecules. The minimum requirement for a B.S. in biochemistry is 124 credits, which includes 32 credits in chemistry, 16 credits in biological sciences and 12 credits in biochemistry.

## Admission requirements

Students may apply for admission to the biochemistry program after completing 16 credits of the core program with a grade point average (GPA) of 2.50 or better. Courses that carry no numerical grade and letter grades are excluded from the calculation of the GPA.

## Requirements for the Bachelor of Science degree in biochemistry

Students wishing to select the biochemistry major should prepare a detailed plan of study in consultation with a member of the Biochemistry Committee. To earn the Bachelor of Science degree with a major in biochemistry, students must complete:

1. A core program of a minimum of 56 credits, including BIO 190, CHM 144, CHM 145, CHM 149, CHM 225, CHM 203, CHM 204, CHM 209 (or CHM 234, CHM 235 and CHM 237), CHM 342, CHM 343, BCM 453, BCM 454, PHY 151, PHY 152, MTH 154 or MTH 155 (STA 226 is a recommended elective)
2. An additional 12 credits in biology from the following courses: BIO 200, BIO 319, BIO 320, BIO 321, BIO 322, BIO 323, BIO 324, BIO 341, BIO 345 or BIO 393
3. At least 6 credits of advanced study in biochemistry from the following courses: BIO 407, BIO 408, BIO 439, BIO 440, CHM 457, CHM 458, CHM 553, CHM 554 or BCM 490
4. Admission to major standing and approval by the Biochemistry Committee of a detailed program of study at least three semesters before graduation.
5. Courses used to fulfill the requirements of a major in biology or chemistry may not be used simultaneously to fulfill the requirements of a major in biochemistry.

## Course Offerings

**BCM 453** Biochemistry I (3)

Identical with CHM 453.

**BCM 454** Biochemistry II (3)

Identical with CHM 454.

**BCM 490** Biochemistry Research (1, 2, 3, 4 or 6)

Laboratory experience in biochemical research requiring at least four hours of work per week per credit. May be repeated for credit. Graded S/U.

Prerequisite: Permission of instructor.

# ENVIRONMENTAL HEALTH PROGRAM

*Director: Paul Tombouljian (Chemistry)*

Designed to integrate applied scientific specialties within the broad field of environmental health, the environmental health curricula prepare students for a variety of professional opportunities in government as well as the private sector, and for graduate study in such fields as toxic substance management, public health, toxicology, industrial hygiene and environmental planning.

Graduates of the program should be able to identify and evaluate a broad range of environmental problems. In addition, they should be able to offer solutions, anticipate hazards and prevent future problems. Studies include such areas as health and safety in the work place, toxic substances, air resources, water resources, and public policy.

## Requirements for the B.S. degree

To earn a Bachelor of Science degree with a major in environmental health, students must complete:

1. An introductory prerequisite core of a minimum of 38 credits, to be completed with a 2.00 average before major standing is awarded, including BIO 200, CHM 144, CHM 145, CHM 149, CHM 225, PHY 151, PHY 152 (or, for students not considering graduate work, PHY 101 and PHY 102) and 8 credits in mathematics above MTH 121 or MTH 141, usually including STA 225. MTH 154 is strongly recommended (MTH 155 is recommended for students considering graduate education).
2. The introductory core must be completed, and major standing in environmental health must be awarded three semesters before graduation.
3. A program of a minimum of 50 credits in advanced courses, including ENV 308 plus courses required by one of the three options. At least 36 credits must be in courses at the 300 level or above, and 30 credits must be in approved courses numbered 350 and above. Except for ENV courses, no more than 24 credits in any one course rubric (such as BIO, CHM, etc.) may be used to fulfill the major. At least 16 of the credits taken at the 300 level or above must be taken at Oakland University.
4. Completion of one of the specializations described below.

## Specialization in occupational health and safety

Based upon an extensive curriculum planning study, this option combines environmental and occupational health perspectives in scientific and technical courses designed to provide preprofessional training for careers relating human health and safety factors to working conditions. Students learn to recognize, evaluate and control actual and potential environmental hazards, especially undesirable occupational health and safety conditions and practices. The option emphasizes environmental and occupational toxicology.

Required course work includes BIO 207 or BIO 321, CHM 203-204, ENV 355, ENV 386, ENV 388, ENV 474 and ENV 484. Recommended electives include ENG 382, ENV 350, ENV 372, ENV 373, ENV 387, ENV 388, ENV 452, ENV 461, ENV 470, ENV 486, BIO 407 or CHM 453, BIO 301, PS 353 and HST 302.

## Specialization in environmental and resource management

This option emphasizes the wise use of resources, especially as they affect human health and well-being. Program electives offer training for a variety of field and laboratory opportunities in industry and government, including planning, resource management, environmental protection and public policy.

Required course work includes the core, plus the following: ENV 355, ENV 461, BIO 301, PHY 107 and PHY 158.

Recommended electives include CHM 203-204, BIO 207 or BIO 321, BIO 303, BIO 311, BIO 312, BIO 307 or BIO 319, BIO 327, BIO 333, BIO 373, BIO 375, BIO 377, BIO 407, BIO 481, ENG 382, ENV 311, ENV 312, ENV 372, ENV 373, ENV 386, ENV 474, ENV 484, PS 302, PS 305, PS 350, PS 353, EGR 407 and HST 384.

### Specialization in toxic substance control

This option is designed to provide training for professional opportunities in environmental toxicology, environmental health chemistry, and toxic substance management. The major focus is on toxicological principles and their applications to the production, distribution and release of toxic substances, especially as they may cause environmental problems. Risk assessment, problem solving and legislative compliance are emphasized.

Required course work includes the core plus BIO 301, CHM 203-204, BIO 325 or CHM 453, ENV 461, ENV 484 and ENV 486.

Recommended electives include BIO 207 or BIO 321, BIO 341, BIO 375, BIO 377, CHM 454, CHM 581, ENG 382, ENV 372, ENV 373, ENV 386, ENV 388, ENV 474, and PS 353.

### Requirements for the liberal arts minor in environmental health

The following 19 credits are required for this minor: ENV 308, ENV 355, ENV 372 or 373, ENV 461, ENV 484, and ENV 486. An approved Concentration/Minor Authorization Form must be filed three semesters prior to graduation.

## Course Offerings

#### ENV 308 Introduction to Environmental Studies (4)

Survey of a broad range of environmental issues from a scientific viewpoint. Basic ecological and thermodynamic principles with applications to air, water and land pollution; human demography and food supplies; alternative futures. Satisfies the university general education requirement in natural science and technology. Prerequisite: Sophomore standing.

#### ENV 311 Global Environmental Pressures (4)

An interdisciplinary approach to selected problems of environmental stress in major ecosystems of the world. Emphasis is on the Third World's natural resources, in relation to their export to the industrialized societies. May be used in lieu of one of the College of Arts and Sciences' distribution categories (see page 53).

#### ENV 312 Energy and the Environment (4)

Basic facts of energy: sources, forms, the roles it plays, and its ultimate fate. Includes study of laws limiting energy utilization, energy flow patterns, effects of energy use on the environment, and analyses of current energy-related problems.

Prerequisite: Sophomore standing; mathematics proficiency at the MTH 011 level.

#### ENV 322 Subsistence and Technology in Nonindustrial Society (4)

Identical with AN 322.

#### ENV 350 Selected Topics (1, 2, 3 or 4)

Technical studies in special areas; topics vary with semester. May be repeated for credit.

Prerequisite: Junior standing and permission of instructor.

#### ENV 355 Environmental Health Practice (3)

Survey of environmental health activities from public health perspective: vector control and prevention, sanitation practice, solid waste management, air pollution control, environmentally related diseases and their prevention.

Prerequisite: Junior standing in environmental health.

#### ENV 358 Occupational Safety (3)

Systematic study of occupational safety concerns, including accident prevention, loss control, safety management, behavioral factors, hazard reduction, risk management, safety engineering, safety education, and safety laws and regulations.

Prerequisite: Junior standing in environmental health.

**ENV 372 Air Chemistry (3)**

Technical evaluation of the nature and composition of the earth's atmosphere, both in its natural state and as it has been affected by man. Some discussion of air pollution control will be included.

Prerequisite: CHM 145.

**ENV 373 Water Resources (3)**

Analysis of natural water systems, introductory hydrology, the chemistry of eutrophication, and wastewater systems. Emphasis is on applications, including water pollution abatement and management strategies.

Prerequisite: CHM 145 and junior standing.

**ENV 386 Principles of Occupational Health (3)**

Recognition, evaluation and control of environmental factors affecting human health, especially in the work place (industrial hygiene); anticipation and prevention of future hazards.

Prerequisite: Junior standing in environmental health; BIO 190, CHM 203; physics is desirable.

**ENV 387 Principles of Occupational Health II (3)**

An intensive treatment of selected subjects of current interest in occupational health.

Prerequisite: ENV 386.

**ENV 388 General Control Methods (3)**

Theory and practice of control of exposure to occupational hazards, government standards, philosophies, ventilation, protective equipment and exposure control will be emphasized.

Prerequisite: ENV 386 or 387.

**ENV 390 Directed Studies (1, 2, 3, 4 or 6)**

Studies in special areas, often individually arranged. May be repeated for credit. Preparation of study plan and instructor's approval are required before registration. Graded S/U.

**ENV 410 Human Adaptation (4)**

Identical with AN 410.

**ENV 452 Industrial Environmental Control (3)**

Problems of air and water pollution, solid waste management, hazardous material handling, and emergencies examined from an industrial viewpoint. Chemical engineering solutions to environmental problems, practical aspects and compliance with regulations.

Prerequisite: Junior standing in environmental health, CHM 145, MTH 154.

**ENV 461 Environmental Law and Policies (3)**

Legislative and legal perspectives on environmental and occupational health issues. Special emphasis on current laws and regulations, as well as their impact on the groups regulated.

Prerequisite: Junior standing.

**ENV 470 Occupational Health Internship (2)**

Supervised practical experiences in a variety of occupational health settings.

Prerequisite: Senior standing in environmental health and permission of instructor.

**ENV 474 Measurements and Sampling Methods (1, 2 or 3)**

Analysis of environmental and occupational exposures and hazards using instrumental methods in the laboratory and field locations.

Prerequisite: CHM 149 and CHM 225; ENV 386 or 388.

**ENV 484 Environmental Toxicology (3)**

Principles of toxicology applied to a variety of biological systems: exposure, toxokinetic, and toxodynamic phases; dose-effect relationships; factors influencing toxicity. Environmental partitioning, pathways, transformations, and fate.

Prerequisite: BIO 190, BIO 200; CHM 204 or 235; biochemistry desirable.

**ENV 486 Toxic Substance Control (3)**

Quantification and management of toxic substances, including production, use, distribution, exposure, and control. Risk assessment and regulatory strategies will be emphasized.

Prerequisite: BIO 190, BIO 200; CHM 203 or 234.

# OTHER ACADEMIC OPTIONS

## Concentration in American Studies

Coordinator: Jane D. Eberwein (English)

Committee: Sheldon L. Appleton (Political Science), Carlo Coppola (International Studies, Modern Languages), James W. Dow (Anthropology), Robert J. Goldstein (Political Science), Roy A. Kotynek (History), Bruce J. Mann (English), David W. Mascitelli (English), Janice Schimmelman (Art History), Richard B. Stamps (Anthropology), W. Patrick Strauss (History), Ronald A. Sudol (Rhetoric)

The American studies concentration provides both a broad understanding of the American experience and an introduction to the practice of focused interdisciplinary study. The concentration is taken in addition to a departmental major. By electing departmental courses with an American focus in two or three areas outside the major and framing the concentration with two interdisciplinary American studies courses, students may expect to gain a coherent sense of the national experience and appreciate the various contributions of different academic disciplines.

Although not a vocationally directed program, the American studies concentration should be of particular interest to students preparing for careers in law, government and journalism, and those planning graduate work in American studies or any of its contributing disciplines.

Concentration requirements include AMS 300, AMS 401, one course in anthropology (preferably AN 315), one American history course at the 300 level, and three electives from the courses listed as electives in the current catalog. No more than two electives may be taken from any one department's offerings, and at least one must represent a field or fields outside the student's major. (Those majoring in anthropology or history should be aware that no more than 8 credits may be counted toward both the major and a concentration.) Students interested in pursuing this concentration should file a plan of study with the coordinator.

### Recommended departmental electives

Art and Art History: AH 350, 355

English: ENG 224, 302, 317, 320, 322, 324, 332, 341, 342

History: HST 114, 115, 218, 221, 292, 302, 303, 304, 306, 307, 310, 312, 313, 314, 315, 316, 317, 318, 319, 321, 323

Linguistics: LIN 303

Music: MUS 347, 348

Political Science: PS 100, 115, 203, 301, 302, 305, 307, 323, 324, 342, 343, 371

Sociology/Anthropology: SOC 100, 205, 301, 315, 331, 357; AN 380, 381

## Course Offerings

### AMS 300 American Culture (4)

An interdisciplinary approach to American culture through examination of several pervading themes (such as manifest destiny, the American dream of success, and tensions between individualism and community). May be used in lieu of one of the College of Arts and Sciences' distribution categories (see page 53).

Prerequisite: Writing proficiency (may be waived by the concentration coordinator in the case of foreign students).

**AMS 401 Senior Project (4)**

Either an independent research project or an internship in American studies. Plans for this project must be developed with the concentration coordinator the semester before the student registers for this course. Prerequisite: AMS 300.

## Concentration in Applied Statistics

**Coordinator:** Robert B. Stewart (*Psychology*)

**Committee:** Keith A. Berven (*Biological Sciences*), William E. Bezdek (*Sociology and Anthropology*), Mary P. Coffey (*Mathematical Sciences*), Gerard R. Joswiak (*Computer Services*), Nancy S. Kursman (*Political Science*), Anandi P. Sahu (*Economics*), Robert M. Schwartz (*Education*), Ronald E. Olson (*Health Sciences*), Mohamed A. Zohdy (*Engineering*)

The University Committee on Applied Statistics sponsors this interdisciplinary concentration in applied statistics, which is available to all university undergraduates. This concentration focuses on the application and interpretation of statistical procedures in the pursuit of empirically based knowledge. In order to be certified by the committee as having fulfilled the concentration requirements, students must complete at least 16 credits in statistics, including:

1. One course at the introductory level (QMM 250, PSY 251, SOC 203, STA 226 or SYS 317)
2. STA 322
3. STA 323 or 324
4. One 400-level course in the student's major. This course must meet the approval of the University Committee on Applied Statistics.

Students who wish to take this concentration must develop a program in consultation with a committee member.

## Concentration in Archaeology

**Coordinator:** Richard B. Stamps (*Anthropology*)

**Committee:** Carl F. Barnes, Jr. (*Art History*), Gottfried Brieger (*Chemistry*), James W. Dow (*Anthropology*), Richard Redding (*Anthropology*)

The concentration in archaeology prepares students for graduate study in archaeology. It is also helpful for students interested in an interdisciplinary approach to human cultural development viewed from historical, aesthetic and scientific perspectives. A minimum of twenty-eight credits are required for this program:

1. AH 100, AN 101 and 222
2. One of the following: AH 312, AH 314, AN 282, AN 370, AN 371 or AN 380
3. 8 credits in field methods (AN 383)

In addition to the required courses, a number of other courses are recommended for those who wish to expand their background. These include: AH 322, AH 326, HST 261, HST 306, HST 367 and PHY 107. Students are reminded that professional conservation work requires knowledge in botany and chemistry.

## Minor in Computer Science

**Coordinator:** Glenn A. Jackson (*Computer Science and Engineering*)

The minor in computer science is offered by the School of Engineering and Computer Science and is available to students within the College of Arts and Sciences. Many combinations are feasible.

With a major in mathematics, physics, chemistry or biology, a student may wish to emphasize numerical and scientific computing aspects of computer science. With a major in English, modern

languages, history, philosophy, psychology, sociology or anthropology, a student may wish to take courses that emphasize non-numerical and symbolic data processing, and language translation. With a major in economics, a student may wish to take courses oriented toward application of computers in management data processing. For specific requirements, see page 239 of this catalog.

## Concentration in Energy Studies

**Coordinator:** *Gottfried Brieger (Chemistry)*

The concentration in energy studies provides students with an interdisciplinary approach to energy issues, examined from the perspective of anthropology, biology, chemistry, economics, engineering, physics and political science. It serves as a foundation for additional specialized study in any of these fields. This concentration requires a minimum of 28 credits, distributed as follows:

1. Core — all of the following: AN 322, ENV 312, PHY 115 and PS 250
2. Advanced option — one of the following: AN 410, ME 454
3. Practicum — all of the following: EGR 106, EGR 108 and EGY 390 (4 or 8 credits)

## Course Offering

**EGY 390**      **Energy Projects (4 or 8)**

Laboratory or field work under the direction of a faculty supervisor approved by the concentration coordinator on a current energy-related issue resulting in a comprehensive project and report.

Prerequisite: Concentration courses EGR 106 and EGR 108 are recommended prior to enrollment.

## Concentration in Environmental Studies

**Coordinator:** *Paul Tomboulion (Chemistry)*

The concentration in environmental studies introduces students to modes of thought and action relative to environmental issues. Students learn to identify and evaluate alternative solutions to environmental problems. Short- and long-range implications of human activities are analyzed, especially as they affect resources and public policy.

Concentrations are available in conjunction with cooperating departments. Requirements for the concentration are a minimum of 28 credits in environmental studies and related courses including ENV 308 or ENV 311, to be planned and approved beforehand. An approved Concentration/Minor Authorization Form must be filed three semesters prior to graduation. Courses in environmental studies are listed under the Environmental Health Program (see page 184).

Related courses in many departments are often suitable for an environmental studies concentration. These include, but are not limited to: BIO 301, BIO 303, BIO 311, BIO 327, BIO 373, BIO 375, BIO 377, ECN 309, ECN 310, EGR 407, HST 384, PHL 318, PHY 107, PHY 115, PS 250, PS 350 and PS 353. Consult the program coordinator for details.

## Concentration in Film Aesthetics and History

**Coordinator:** *Brian F. Murphy (English)*

**Committee:** *Bonnie Abiko (Art and Art History), Peter J. Bertocci (Anthropology), Robert T. Eberwein (English), Donald C. Hildum (Communications)*

The interdisciplinary concentration in film aesthetics and history, sponsored by the departments of Art and Art History, Center for International Programs, English, Rhetoric, Communications and Journalism, and Sociology/Anthropology offers multiple perspectives for examining theoretical and critical issues of film as art and communication. The introductory courses



explore the operation, function and construction of film. The history courses examine narrative and technical developments with emphasis on major directors, genres and trends. The theoretical courses are concerned with the uniqueness of film, its relation to other forms of verbal and plastic arts, and special approaches needed for analysis and enjoyment.

The range of viewing experiences and the variety of approaches to the medium provide an excellent preparation for students seeking employment in advertising, publishing, journalism, visual media or teaching, as well as those who wish to pursue film studies on the graduate level.

A minimum of twenty-eight credits are required, including CIN 150, ENG 250, ENG 392; two courses chosen from among CIN 300, CIN 301 and CIN 302; and two courses chosen from AH 367, AN 307, CIN 450, LIT 251 and SCN 303. In special circumstances, CIN 499 may be substituted for one of the above courses with permission of the concentration coordinator.

## Course Offerings

### CIN 150 Introduction to Film (4)

Introduction to the art of film by examination of the filmmaking process, study of narrative and non-narrative film, and exploration of film's relation to society. *Satisfies the university general education requirement in arts.*

### CIN 300 History of Film: The Silent Era (4)

Survey of directors and films important in shaping film history: Griffith, Eisenstein, Chaplin, Murnau, Pabst, Lang and others.

### CIN 301 History of Film: The Sound Era to 1958 (4)

Examination of significant directors, genres and movements: Welles, Hitchcock, Renoir, DeSica and others; the western, gangster film, musical; neorealism, film noir.

### CIN 302 History of Film: The New Wave and Beyond (4)

Study of film since 1959: New Wave directors such as Truffaut, Godard, Resnais; major artists such as Fellini, Bergman, Kubrick; experimental films and new developments.

### CIN 450 Topics in Film (4)

Examination of specialized subjects in film such as: The War Film, Alfred Hitchcock's Films, The New Wave, The Japanese Cinema. Topics to be selected by instructor.

Prerequisite: Permission of instructor or one course in film.

### CIN 499 Independent Study (4)

Study on an independent basis for students with demonstrated interest in film. A proposed course of study must be submitted to the prospective instructor in the semester before the independent study is to be taken.

Prerequisite: One course in film.

## Concentration in Folklore and Popular Culture

**Coordinator:** Mark E. Workman (*English and Folklore*)

**Committee:** Jane M. Bingham (*Education*), Marc E. Briod (*Education*), Judith K. Brown (*Anthropology*), Roy Kotynek (*History*)

Folklore is traditional, artistic behavior; it is engaged in by even the most intellectually and technologically sophisticated among us, and it encompasses all modes of expression. Popular culture borrows from folklore its formulas of production as well as much of its content. The concentration in folklore and popular culture provides an introduction to the materials and methods of inquiry into these subjects, and encourages students to pursue further the extensive social and cultural ramifications of folklore and popular culture into related areas of study.

The program is of potential relevance to students in all areas of the humanities, social sciences and education. It will be of benefit to them both in their studies at Oakland University and as preparation for careers in the media, human services, teaching or graduate work in any of the fields related to the concentration.

This concentration requires a minimum of 28 credits, including ENG 214 and 302. A minimum of 8 credits must be taken at the 300-400 level, and no more than 8 credits from the student's major will count toward the concentration. A current list of approved electives, which must be selected in consultation with the concentration coordinator, follows: ALS 375, AN 251, AN 271, AN 310, AN 333, CIN 150, ENG 220, ENG 211, ENG 304, ENG 312, ENG 313, ENG 314, HST 222, HST 292, HST 346, IS 386, MUS 347, RDG 332 and SCN 371.

## Concentration in Gerontology

**Coordinator:** *Harold Zepelin (Psychology)*

**Committee:** *David P. Meyer (Education), Frank Schieber (Psychology), Elinor B. Waters (Continuum Center)*

The multidisciplinary concentration in gerontology, which is co-sponsored by the School of Human and Educational Services, provides students an opportunity to gain an understanding of aging as a process in personal, cultural and social contexts. It adds another dimension to career preparation for students who plan to obtain graduate degrees in helping professions such as nursing, clinical psychology and social work. It also offers essential background and introductory experience to students holding bachelor's degrees who wish to seek employment in agencies that provide services for the elderly.

The concentration requires a minimum of 28 credits, 16 in required core courses and 12 in elective courses. The advanced core course, a multidisciplinary seminar on aging (GRY 400), will bring students into contact with diverse disciplines that have an interest in aging. Students in arts and sciences must choose one elective (4 credits) from HRD courses.

Requirements for the concentration in gerontology consist of the following:

1. Core — two of the following: BIO 250, PSY 331 and SOC 465
2. Research methods course: PSY 250 or SOC 202
3. Required advanced course: GRY 400
4. Electives: HRD 369 or HRD 490, HRD 431, HRD 451, HRD 452, PSY 332, PSY 372, SOC 314/514 or SOC 315/515, and GRY 480

## Course Offerings

**GRY 400**      **Multidisciplinary Seminar on Aging (4)**

Presentations of research and reviews of the literature, bringing together contributions from biology, the health care professions, the humanities, political science, psychology and sociology.

Prerequisites: Completion of required core courses.

**GRY 480**      **Research in Gerontology (4)**

Individually designed experience in research on aging, beginning with reviews of the literature and culminating in data collection or formulation of a research proposal.

Prerequisite: Concentration's core requirements and an introductory research course.

## Concentration in Michigan Studies

**Coordinator:** *Richard B. Stamps (Anthropology)*

**Committee:** *John B. Cameron (Art History), Gottfried Brieger (Chemistry), W. Patrick Strauss (History)*

The concentration in Michigan studies is an integrated program of courses that provides both a broad introduction to and a focused interdisciplinary study of Michigan. Each student is required to take MC 100 "Life in Michigan," which serves to integrate the various disciplinary offerings.

The concentration requires completion of a minimum of 26 credits, including MC 100, to be selected from the following course offerings. No more than 8 credits from the student's major may be counted toward the concentration.

## Course Offerings

### MC 100 Life in Michigan (2)

An introduction to Michigan history and politics, fine art and archaeology, geology and environment, flora and fauna, climatology, and industry and economic development.

Students will select the remaining 24 credits from the following courses (4 credits each, except for ENV 373, 3 credits).

AH 355	Michigan Architecture
AH 399	Field Experience in Art History
AN 383	Methods in Anthropological Archaeology
AN 399	Field Experience in Anthropology
BIO 373	Field Biology
ENV 373	Water Resources
HST 218	History of Michigan
HST 302	American Labor History
HST 399	Field Experience in History
PS 305	Politics of the Local Community
PS 307	State Politics
PS 458	Public Affairs Internship

## Concentration in Preprofessional Studies in Medicine, Dentistry and Optometry

Coordinator: Egbert W. Henry (*Biological Sciences*)

Committee: Gottfried Brieger (*Chemistry*), Denis M. Callewaert (*Chemistry*), Robert W. Jarski (*Health Sciences*), Virinder K. Moudgil (*Biochemistry*), John R. Reddan (*Biological Sciences*), Robert L. Stern (*Chemistry*), Nalin J. Unakar (*Biological Sciences*), Barry S. Winkler (*Eye Research Institute*)

The concentration in preprofessional studies in medicine, dentistry and optometry is intended for students who wish to pursue careers in medical, osteopathic or dental professions. Students are expected to complete a concentration consisting of the following:

1. 20 credits of biology, including laboratories
2. 20 credits of chemistry, including laboratories and two semesters of organic chemistry
3. 8 credits of mathematics
4. 10 credits of physics, including laboratories

In chemistry, mathematics and physics courses, students should opt for sequences that are more rigorous in academic content. The concentration provides the minimum requirements for admission to various medical, osteopathic and dental schools in Michigan and elsewhere. The committee strongly recommends the following additional courses for better preparation for the Medical College Aptitude Test (MCAT) and medical school curriculum:

1. Science: genetics (BIO 341), developmental biology (BIO 323, 324), biochemistry (BIO 325 and 326 or CHM 453, 454, 457 and 458) and physiology (BIO 321 or BIO 207).
2. Humanities: vocabulary and etymology (ALS 102) and/or RHT 103, 105 and 110. RHT 105 and 110 are suggested for improving reading comprehension skills in preparation for the MCAT.

Students intending to pursue a career in the optometric profession are advised to take the following courses:

1. 20 credits of biology, including laboratories
2. 20 credits of chemistry, including laboratories and two semesters of organic chemistry
3. 12 credits of mathematics, including calculus (MTH 154 and MTH 155)
4. 10 credits of physics, including laboratories
5. 4 credits of introductory psychology, 8 credits of English and 8 credits of social science

This concentration does not constitute a major. Students must elect a major from those offered by the university. Interested students should consult the advisory committee for counseling and assistance in planning their academic programs.

## Concentration in Religious Studies

Coordinator: *Leonardas V. Gerulaitis (History)*

The religious studies concentration offers a series of courses on religion, both Western and Eastern, traditional and contemporary. These courses do not seek to confirm or attack any particular religious point of view; they are taught in the same scholarly and objective spirit as other university courses and aim at understanding a pervasive human phenomenon. They are grouped into two types: historical studies and systematic studies.

The program currently offers a concentration in religious studies that consists of at least 20 credits in religion, which may be taken jointly with a modified major (24 credits) in philosophy or with a full major in any other department of the College of Arts and Sciences.

Students wishing to make religion the focus of an independent major will receive the support of the Committee of Religious Studies. Interested students should see the concentration coordinator for further information.

In addition to the religion courses, several collateral courses are suggested: ENG 312, HST 325 and PHL 205. Courses with REL 200 numbers require only sophomore standing; courses with REL 300 numbers require one previous course in religious studies at Oakland University, unless identical with departmental courses having different prerequisites.

## Course Offerings

### HISTORICAL STUDIES

**REL 200**            **Topics in the Historical Study of Religion (4)**

The topic varies. Samples include: the New Testament, medieval mysticism, early Buddhism, the Protestant Reformation, Christ and Caesar, eighteenth and nineteenth century attacks on religion. May be repeated for credit.

**REL 202**            **The Jewish Tradition (2 or 4)**

Selected ideas and institutions in the development of Judaism from its pre-exilic roots to the present. Offered in cooperation with the Jewish Chautauqua Society.

**REL 203**            **The Christian Tradition (4)**

Study of the most important Christian ideas and institutions from Jesus to the present.

**REL 211**            **The Bible as Literature (4)**

Identical with ENG 211.

**REL 304**            **The Islamic Tradition (4)**

Selected ideas and institutions in the history of Islam.

**REL 307**            **American Religious History (4)**

Identical with HST 307.

**REL 350**            **Philosophies and Religions of Asia (4)**

Identical with PHL 350.

### SYSTEMATIC STUDIES

**REL 227**            **Psychology of Religion (4)**

Basic data of religious experience in relation to motivation, cognitive structure, and personality; problems of religious symbolism, verbal and nonverbal; dynamics of religious movements; growth, propagation, and preservation of orthodoxy; varieties of reform.

**REL 229**            **Religion and Literature**

Study of a few masterpieces of world religious literature, such as Greek tragedy, Hindu epic, Dante and Milton, with an attempt to generalize about the use of religious themes in literature and about literature as an expression of religious belief.

**REL 271**            **Magic, Witchcraft and Religion (4)**  
Identical with AN 271.

**REL 291**            **Religion and Contemporary Moral Problems (4)**  
Investigation of the theological and ethical reasons for the emergence of a new attitude toward moral questions. Protestant, Catholic, Jewish and secular viewpoints on some of these: love, sex, civil disobedience, criminal punishment, violence, war, suicide and death.

**REL 305**            **Sociology of Religion (4)**  
Identical with SOC 305.

**REL 325**            **Philosophy of Religion (4)**  
Identical with PHL 325.

**REL 390**            **Directed Readings in the Study of Religion (4)**  
Individual study of a topic not covered by regular courses, with guidance of a faculty tutor. May be repeated for credit.  
Prerequisite: Permission of concentration coordinator.

## Concentration in Social Justice and Corrections

**Coordinator:** *Jay Meehan (Sociology)*

The concentration in social justice and corrections requires at least 28 credits and is to be taken in conjunction with a full major in any department of the college. It provides career-oriented education for students interested in law, in the social forces producing delinquency and crime, in the evaluation of social planning for crime prevention and control, and in the operation of police organizations and correctional institutions.

A student must be formally admitted to the program and meet the following requirements:

1. 12 credits chosen from PHL 319, PS 241, PS 342, SOC 240\*, SOC 327, SOC 437
2. 12 credits from PHL 321, PS 343, PSY 220, SOC 322, SOC 323, SOC 425
3. 4 or 8 credits of SOC 430

\*Students are strongly advised to take this course at the beginning of their concentration.

The internship is designed to give students practical experience in the criminal justice or legal system. The student's particular interests guide the internship selection process. An internship usually involves work in an agency for 20 hours per week and meeting with the internship adviser on a regular basis. Students who qualify may receive paid internships. A term paper on some aspect of the internship experience is required in order to receive course credit. The internship is a valuable learning experience and should be taken toward the end of the concentration.

## Concentration in Social Services

**Coordinator:** *Jacqueline R. Scherer (Sociology)*

The concentration in social services requires a minimum of 28 credits and is available to students throughout the university, regardless of major. It is primarily designed for students who intend to pursue graduate studies in social services or who are interested in the analysis of social programs and social welfare policies. The social and psychological dimensions of service delivery are explored as they relate to professional development and the integration of theoretical and applied approaches to problem solving.

The following requirements apply to the concentration in social services:

1. SOC 314 and 315
2. Two of the following: PSY 220, 311, 331 or 332
3. Field experience: PSY 399, SOC 399 or equivalent course
4. Statistics: SOC 203 or equivalent course
5. One elective from the following: HI 361, HRD 331, PSY 336, SOC 328, SOC 331, SOC 335, or SOC 465/565

Students are requested to enroll formally in the program by completing an application at the Department of Sociology and Anthropology office.

## Concentration in Urban Studies

**Coordinator:** *Harry Gold (Sociology)*

**Committee:** *De Witt S. Dykes (History), Oded Izraeli (Economics)*

The urban studies concentration is designed to provide a comprehensive interdisciplinary understanding of modern urban civilization and to develop an appreciation of some of the problems and policy issues confronting contemporary American urban communities. It is also designed to introduce some of the technical skills that are a prerequisite to the successful pursuit of career opportunities in a variety of urban-oriented public and private service or administrative organizations.

The concentration provides a carefully selected group of required core courses drawn from several departments, allows a relatively broad choice of electives and provides an interdisciplinary seminar designed to help integrate the knowledge and skills acquired in the program.

Students wishing to pursue the concentration in urban studies must submit an advising plan to the concentration adviser and make application to the concentration coordinator to be admitted to the program. One course in statistics and/or methodology offered by a social science department or a statistics course offered by the Department of Mathematical Sciences is a prerequisite to the program. To earn the urban studies concentration, students must complete a minimum of 28 credits, distributed as follows:

1. Core — three of the following four courses: ECN 309, HST 223, PS 305, SOC 345
2. Electives — four of the following courses (none of the courses may overlap with courses in the student's major and no more than two courses may be taken in a single department): AH 363, HRD 331, HRD 364, HST 302, PS 307, PS 350, PS 353, PSY 326, SOC 315, SOC 331
3. Internship — although an urban internship or field experience is not required as part of the concentration, it is strongly suggested that students complete such a course in their major department or another program in the university.

## Concentration in Women's Studies

**Coordinator:** *Virginia Blankenship (Psychology)*

**Committee:** *Lizabeth A. Barclay (School of Business Administration), Barbara Hamilton (Rhetoric), Karen Maschke (Political Science), Rebecca Warner (Sociology), Susan Wood (Art and Art History), Hoda Abdel-Aty-Zohdy (Engineering)*

The women's studies concentration explores the contributions of women through their work and lives, to the arts, the sciences and society. The concentration opens areas of study and research related to women that arise from the various academic disciplines and from women's experience, uniting and clarifying core concepts and ideas.

Students working toward a women's studies concentration discover information and generate questions that lead to an understanding of the present position of women in society and to the formulation of theories that may explain, predict and improve that position. This interdisciplinary concentration is a humanistic complement to any conventional academic major.

A minimum of twenty-eight credits are required for the concentration in women's studies, distributed as follows:

1. WS 200
2. A minimum of three women's studies courses with numbers of 300 and above, excluding WS 400. The content and instructor for WS 301, "Special Topics," and WS 401, "Advanced Topics in Women's Studies," change from semester to semester; therefore, students may receive credit for more than one WS 301 and 401 class provided they are cross-listed

with different courses. The student can receive credit toward the concentration for a course taken under the departmental rubric if it is cross-listed with women's studies during that semester; a student may not receive double credit for the same course taken under the WS rubric and the departmental rubric.

3. Any combination of the following: WS 400, women's studies courses with numbers below 300, and approved women's studies electives; a list of women's studies electives for the current semester is available in the *Schedule of Classes* or from the concentration coordinator.

## Course Offerings

### WS 101      Introductory Topics in Women's Studies (4)

Course content varies. May include women and history.

### WS 200      Introduction to Women's Studies (4)

Core course provides an overview of women's studies theories and methods. Strictly interdisciplinary and comparative in approach, offering a general education in women's studies literature, history, economics and culture.

### WS 201      Topics in Women's Studies (4)

Course content varies. Representative topics are history of women since 1750 and history of the American family.

### WS 224      History of the American Family (4)

Identical with HST 224.

### WS 300      Women in Transition (4)

Focuses on life experiences unique to women. Major issues include identity and independence, marriage, childbirth, adulthood and aging.

### WS 301      Special Topics in Women's Studies (4)

Course content varies. Representative topics are women in art, women and literature, psychology of women, anthropology: women's lives, women and public policy.

### WS 305      Child Rearing and Human Development in Cross-Cultural Perspective (4)

Identical with AN 305.

### WS 311      Women and Politics (4)

Identical with PS 311.

### WS 325      Psychology of Women (4)

Identical with PSY 325.

### WS 335      The Family (4)

Identical with SOC 335.

### WS 336      Sex Roles in Modern Society (4)

Identical with SOC 336.

### WS 337      Women's Lives in Cross-Cultural Perspective (4)

Identical with AN 337.

### WS 339      History of Women: Modern Europe (4)

Identical with HST 339.

### WS 351      Women in Art (4)

Identical with AH 351.

### WS 400      Directed Project in Women's Studies (2, 4)

Project may focus upon scholarly research or may involve field work or community activism around issues of importance in women's studies.

Prerequisite: Approval of faculty adviser and women's studies coordinator.

### WS 401      Advanced Topics in Women's Studies (4)

Course content varies. Representative topics include research methods in women's studies.

## Prelaw Studies

Students planning to attend law school after graduation should major in a field in which they have both interest and aptitude; the actual field is less important for admission than the overall success of the student in college training as measured by the cumulative grade point average and scores on the Law School Admission Test (LSAT).

Rather than mastery of any particular subject matter, law schools require of incoming students certain basic skills, particularly the ability to think logically and to express oneself orally and in writing in a coherent and precise manner. No one academic discipline possesses a monopoly on development of these abilities. The best advice to students planning legal careers is to develop strong writing skills and to plan undergraduate course study with an eye toward long-term plans within the legal profession.

Although there is no formal prelaw curriculum at Oakland University because no set of specific courses is necessary for admission to, or success in, American law schools, the attention of students interested in law is drawn to courses in five categories. None of these courses is in any sense required, or even strongly recommended, for all prelaw students, yet the experience of many lawyers and law students suggests that they will be helpful to some.

- I. The first category consists of courses that develop fundamental abilities of reasoning and communication. Introductory courses in all of the liberal arts disciplines (humanities and natural and social sciences) serve this purpose. Particularly relevant are courses that develop thinking and writing capabilities. These include: ENG 380, PHL 102 and PHL 103.
- II. A second group, devoted to oral communication, includes: SCN 201, SCN 220, SCN 301, THA 267 and THA 350.
- III. A third group features law in relationship to other disciplines. The university offers many courses placing law and legal institutions in such a context. These include: AN 440, ECN 378, HST 303, PHL 319, PS 241, PS 342, PS 343, SOC 322, SOC 324 and SOC 437.
- IV. A fourth group of courses has to do with business operations, an aspect of the practice of law that is often overlooked. The increase in numbers and competition within the bar have placed unprecedented emphasis on business skills. These courses include: ACC 200, MIS 300 and MKT 302.
- V. A fifth group, substantive law courses, may be of special interest to students who do not have a definite intention of applying to law school but who wish to be better informed about the law, to experience the special style of legal instruction or to gather enough information to make a final decision about a legal career. These courses include: ENV 461, JRN 403 and MGT 424.

Students considering law school are warned against overemphasizing law-related courses in their undergraduate training. Law schools virtually never give credit, either for placement or for graduation, for such courses and are inclined to believe such students are too narrow in their education. Undergraduate education is a distinct and vital part of one's professional training and should never be regarded simply as a way station before beginning one's "real" work. It must be emphasized that none of the courses listed here is required of, or restricted to, prelaw students.

Students interested in the Legal Assistant Program instead of preparation for law school should see the discussion of this program in the Political Science section of the catalog. The College of Arts and Sciences also offers a concentration in social justice and corrections (see above).

## Off-campus Studies Programs

The College of Arts and Sciences administers an off-campus independent study program that allows a student to propose his or her own course of study for the semester off campus. The following standards and procedures apply:

1. Any undergraduate student in good standing is eligible to participate in the program after completion of two semesters in residence.
2. A written proposal describing a course of activity will be prepared by the student applicant before beginning the program.



3. The above written proposal and the off-campus work it describes must receive support and involvement of at least three faculty members and approval of the dean.
4. All arrangements for off-campus work must be completed and filed with the office of the dean during the semester preceding the semester of off-campus study.
5. Part of the preparatory work must include the designation of course equivalents totaling at least 8 credits for the independent study to be accomplished. This is to be negotiated with supporting faculty members.
6. Whenever credit is sought toward completion of a major, the department, through its chairperson, must agree to the value of the independent work.
7. The dean of the college will require a release from parents absolving the university of responsibility for the well-being of students under 18 years of age while they are participating in an off-campus independent study.
8. The initial approval of a program for a student will be for one semester with the provision that the student may request an extension of the program for additional semesters.
9. The student must be registered at Oakland University and pay the required fees during the independent study period.

Students interested in overseas study programs sponsored by other universities and organizations, both domestic and foreign, should contact the Study Abroad Office, 430 Wilson Hall. Information on work-study opportunities sponsored by institutions other than Oakland University can be obtained from the Department of Placement and Career Services, 275 Vandenberg Hall West, and from the Center for International Programs, 430 Wilson Hall.

## Teaching Minor in Science

**Coordinator:** Nancy Collins (*School of Human and Educational Services*)

The liberal arts teaching minor in science requires at least 12 credits in each of two sciences (24 total credits) chosen from biological sciences, chemistry and physics. The courses must include a two-semester introductory course and its laboratory in each science and be at the levels of BIO 190, CHM 144, and PHY 101 or above (excluding BIO 300, CHM 201, 241, 497). They may not include courses in the student's major discipline.

## Liberal Arts Minor in Science

**Coordinator:** John Cowlshaw (*College of Arts and Sciences*)

The liberal arts minor in science requires at least 24 credits selected from courses in biological sciences, chemistry and physics. Two options are available.

### Two-science minor

1. Complete at least two of the following course sequences: BIO 190, 195 and 200; CHM 144, 145 and 149 (or CHM 164, 165 and 149); or PHY 101, 102 and 158 (or PHY 151, 152 and 158).
2. Complete at least 8 additional credits from either one science or split between the two sciences. Biology and chemistry courses numbered lower than BIO 190 and CHM 144, respectively, do not apply to the science minor (nor do CHM 201, 241, 497 and BIO 300).

### Three-science minor

Complete the following: BIO 190, 195 and 200; CHM 144, 145 and 149 (or CHM 164, 165 and 149); and PHY 101, 102 and 158 (or PHY 151, 152 and 158).

Students who elect a single discipline minor in either biology, chemistry or physics are not eligible for the science minor, nor are students who are majoring in biochemistry, biology, chemistry, computer science, engineering, environmental health, industrial health and safety, medical physics, medical technology, nursing, physical therapy or physics.

# HONORS COLLEGE

**Director:** *Brian F. Murphy (English)*

**Council:** *Donald C. Hildum (Rhetoric, Communications and Journalism), Vincent B. Khapoya (Political Science), Kathleen H. Moore (Chemistry), Norman Susskind (Modern Languages and Literatures), one sophomore, one junior and one senior Honors College student*

The Honors College has been established by the faculty of the College of Arts and Sciences for highly motivated students seeking an unusually challenging undergraduate education. It offers a specially designed general education and additional requirements, in conjunction with a departmental major from the College of Arts and Sciences or one of the professional schools.

Students currently admitted to or enrolled at Oakland University may apply directly to the Honors College for admission; others must apply for admission to Oakland University as well. Application forms are available at the Honors College office.

Courses with the HC prefix are open only to students who have been accepted to the Honors College.

## Requirements and Procedures

### Departmental majors

Each student must complete a departmental major in the College of Arts and Sciences or a prescribed course of study in the School of Business Administration, the School of Engineering and Computer Science, the School of Health Sciences, the School of Human and Educational Services or the School of Nursing.

A student who is not pursuing a standard major (for example, a student with an independent major) may be accepted to the Honors College if the Honors College Council determines that the student's program is of sufficient breadth, depth and coherence.

### General education requirements of the Honors College

1. The student must successfully complete RHT 101 or its equivalent.
2. The student must successfully complete at least four Honors College core courses, chosen from HC 201, 202, 203, 204, 205, 206, 207 or 208.
3. The student must successfully complete at least one 4-credit course in each of the four general education areas not covered by the HC core courses taken. A student may meet this requirement by successfully completing relevant university general education courses, departmental courses that count towards a major, additional HC core courses or a combination of these.
4. The student must successfully complete a senior colloquium, HC 401.
5. The student must attain second-year foreign language proficiency.

Note: Honors College requirements replace university general education and college distribution requirements. Students should not attempt to fulfill both sets of requirements.

### Advanced standing

The student shall apply for advanced standing in the Honors College, normally by the end of the fourth semester. Following receipt of the application, the Honors College Council will interview the applicant. The interview will be of a general nature, but will deal, in part, with material studied in the Honors College core courses the student has completed.

After the interview, the council may admit the student to advanced standing, grant the student conditional advanced standing or ask the student to withdraw from the Honors College. A student who is granted conditional advanced standing will be given reasons for this status.

Generally, a student will not be considered for admission to advanced standing, or for removal of conditional status, later than the fourth week of the semester following that in which the student completes 80 credits.

### **Independent project**

Each Honors College student must successfully complete a major creative or scholarly work under the supervision of a faculty member. All independent projects must be approved by the Honors College Council prior to proceeding with work. Independent project proposals should be submitted to the council before students complete their junior year. The project must be approved within the first four weeks of the semester following that in which the student completes 96 credits.

The student may receive departmental or Honors College independent study credit for all or part of this work. The student may, but is not required to, register for HC 490.

The project must be independently designed and completed.

Completed independent project reports are due no later than the week following the middle week of the semester in which the student intends to graduate.

### **Grade point average and graduation honors**

A grade point average of at least 3.30 is required for graduation.

Honors College students may receive departmental and university honors upon graduation.

## **Course Offerings**

### **HC 201 through 208 Honors College Core Courses (4 each)**

Introduction to ways of thinking characteristic of a modern university. HC 201 deals with the arts, HC 202 with literature, HC 203 with language, HC 204 with western civilization, HC 205 with international studies, HC 206 with social science, HC 207 with mathematics, logic or computer science and HC 208 with natural science or technology. Offered every other year.

### **HC 300 Special Topics (2, 4)**

Special problems and topics selected by the instructor.

Prerequisite: Open to Honors College students only.

### **HC 401 Honors College Senior Colloquium (4)**

Discussion of a broad topic of traditional concern or an issue of particular current significance. Offered annually.

### **HC 490 Independent Study (2, 4)**

Supervised instruction in the Honors College independent project. May be repeated for credit. Offered each semester.

# NEW CHARTER COLLEGE

**Chairperson:** *Leonardas V. Gerulaitis (History)*

Drawing on faculty from departments and schools throughout the university, the New Charter College offers an interdisciplinary individual approach to learning.

The New Charter College does not offer a major or a degree, but degree candidates in any of the university's departments or schools may augment their studies through course work offered by the college. Most of the courses listed can be taken as independent studies. See the chairperson to make the necessary arrangements.

## Course Offerings

**NCC 101      Explorations in Interdisciplinary Studies (2, 4)**

An introductory course enabling students to sample various interdisciplinary approaches and to develop broader perspectives on interdisciplinary matter.

**NCC 201      Topics in Interdisciplinary Studies (2, 4)**

An intermediate course enabling students to sample various interdisciplinary approaches and to develop broader perspectives on interdisciplinary subject matter.

**NCC 210      Study Abroad (2, 4)**

An interdisciplinary topic relating to the culture of a foreign country or region, enriched by traveling and living in that area. Readings, discussion and structured itineraries are designed to enhance general understanding of that culture in broader academic perspectives.

**NCC 300      Independent Study (2, 4)**

Advanced interdisciplinary reading on a topic of interest to the student, who assumes initiative for planning this reading project in conjunction with New Charter College faculty sponsor and approval of the New Charter College Executive Committee. Graded S/U. Offered every semester.

Prerequisite: Approved NCC contract.

**NCC 301      Seminar in Interdisciplinary Studies (2, 4)**

An advanced course enabling students to sample various interdisciplinary approaches and to develop broader perspectives on interdisciplinary subject matter. Offered every year.

Prerequisite: Previous NCC course work or permission of instructor.

**NCC 310      Creative Arts Contract (2, 4)**

Opportunity to develop artistic skills within context of aesthetic history and criticism. Student must submit learning contract, signed by New Charter College faculty sponsor and approved by the New Charter College Executive Committee, by way of applying for permission to take this class. Graded S/U.

Prerequisite: Approved NCC contract.

**NCC 321      Remedial Wisdom (4)**

Confronts the student with the totality of problems facing an educated person today and explores various attempts to solve them.

Prerequisite: Senior standing or permission of instructor.

**NCC 400      Independent Research (2, 4)**

Advanced interdisciplinary research on a topic of interest to the student. Student assumes initiative for planning research in conjunction with New Charter College faculty sponsor and approval of the New Charter College Executive Committee. Substantive, well-documented paper is required.

Prerequisite: Approved NCC contract.

# CENTER FOR THE ARTS

**Director:** *Carl F. Barnes, Jr.*

**Assistant to the director:** *T. Andrew Aston*

**Facilities manager:** *John D. Woudstra*

**Publicity manager:** *Judy L. Pearson*

**Accountant:** *Betty L. Wheeler*

**Costume shop supervisor:** *Mary Ellen Shindel*

**Scene shop supervisor:** *William A. Carter*

The Center for the Arts is an administrative unit of the College of Arts and Sciences. It develops, coordinates and promotes the university's public undergraduate performances and presentations in art history, dance, mime, music and theatre.

Each academic year, the center presents a subscription series of theatrical, musical and dance events featuring guest artists and groups, and faculty and students from the Department of Music, Theatre and Dance.

The center also presents special arts and arts-related events, including workshops throughout the year in various arts disciplines, special presentations at Meadow Brook Hall and art tours to foreign countries.

In cooperation with Oakland Schools and the Academy for the Gifted and Talented of Michigan, the center offers an annual Concerts-for-Youth series which attracts some 6,000 children to campus each year. The center also offers an annual Summer Arts-for-Youth Camp program and classes for artistically gifted young people.

The center works with the university's professional arts enterprises, the Meadow Brooks, to promote cooperation between Oakland University's professional and academic arts undertakings.

# SCHOOL OF BUSINESS ADMINISTRATION

**Dean:** *Ronald M. Horwitz*

**Office of the Dean:** *John E. Tower, associate dean; Kathleen G. Kazarian, coordinator for academic advising; Carole J. Terry, undergraduate academic adviser; Thomas R. Berry, computer facilities administrator; Julie A. Dziekan, administrator, Master of Business Administration program*

**Department chairs:** *Daniel N. Braunstein, Management and Marketing; Gadis J. Dillon, Accounting and Finance; David P. Doane, Decision and Information Sciences; Ronald L. Tracy, Economics*

**Professors:** *Eleftherios N. Botsas, Daniel N. Braunstein, Joseph E. Champagne, Gadis J. Dillon, David P. Doane, Karl D. Gregory, Ronald M. Horwitz, Robbin R. Hough, Oded Izraeli, Sid Mittra, Ravi Parameswaran, Miron Stano*

**Associate professors:** *Lizabeth A. Barclay, Edward J. Farragher, Augustin K. Fosu, Richard A. Hofler, Albert L. Lederer, Kevin J. Murphy, R. Mohan Pisharodi, Howard S. Schwartz, John E. Tower, Ronald L. Tracy, Mary P. Van Sell*

**Assistant professors:** *Peter J. Boettke, Bijoy Bordoloi, Sadik Cokolez, Sherman T. Folland, Amir M. Hormozi, Sheila M. Jacobs, Robert T. Kleiman, Thomas W. Lauer, J. Austin Murphy, Kevin Nathan, James E. Payne, Eileen Peacock, Sandra S. Pelfrey, Anandi P. Sahu, Barbara A. Theisen, Floyd G. Willoughby, Kenneth M. York*

**Special instructor:** *David D. Sidaway*

**Visiting associate professor:** *John W. Henke*

**Visiting assistant professor:** *Mohammad S. Bazaz*

**Visiting instructors:** *Aleksandra Glowacka, Patricia J. Kish*

**Adjunct professors:** *Rikuma Ito, Paul O. Kingstrom, Paul F. Lorenz, Diane B. Stricker*

**Lecturers:** *Frank P. Cardimen, Jr., David W. Essig, Robert J. Forbes, George Kuljurgis, David Medved, David Minkus, Douglas R. Munro, Socrates Tsountas*

## Board of Visitors

The Board of Visitors provides a direct link between the business community and the School of Business Administration. The board is composed of outstanding corporate and professional leaders from the Detroit metropolitan area. Board members assist the faculty on several projects and provide consultation on goals and objectives, curricula designs and research programs.

The board members are:

*Thatcher W. Root, Vice President, Thomson McKinnon Securities, Incorporated; chairman, Board of Visitors*

*James A. Aliber, Chairman of the Board and Chief Executive Officer, First Federal of Michigan*

*Barry K. Allen, President, Ameritech Publishing, Incorporated*

*Joseph E. Antonini, Chairman of the Board, President and Chief Executive Officer, K mart Corporation*

*Joseph A. Campana, Vice President, Chrysler/Plymouth Division, Chrysler Motors*

*James K. Croll, Vice President, External Affairs, AT&T*

*William R. Halling, Managing Partner, Detroit Office, Peat, Marwick, Main & Company*

*William R. James, President, James Communications, Incorporated*

*J. Michael Losh, General Manager, Pontiac Motor Division, General Motors Corporation*

Eugene A. Miller, *President and Chief Executive Officer, Comerica, Incorporated*  
Kenneth E. Myers, *President, William Beaumont Hospital Corporation*  
Harold A. Poling, *Vice Chairman and Chief Operating Officer, Ford Motor Company*  
Ralph E. Reins, *President and Chief Executive Officer, ITT Automotive*  
Arthur P. Ronan, *President, Automotive Operations, Rockwell International Corporation*  
Alan E. Schwartz, *Senior Partner, Honigman, Miller, Schwartz & Cohn*  
James R. Wilbert, *Partner, Coopers & Lybrand*

## General Information

The School of Business Administration offers undergraduate programs for students interested in obtaining the skills and information needed to manage profit-making businesses, not-for-profit enterprises (e.g., health care institutions, educational institutions, cooperative societies) and governmental units. The programs include:

Bachelor of Arts, with a major in economics (offered in conjunction with the College of Arts and Sciences; see the Department of Economics section for a description of this program);

Bachelor of Science, with majors in accounting, economics, finance, general management, human resources management, management information systems and marketing; and minors in accounting, economics, finance, international management, management, production and operations management, and quantitative methods.

The School of Business Administration offers the Master of Business Administration (MBA) degree for superior students in any major, including business and management. The MBA is a professional program in business designed to prepare students for careers involving problem identification, problem solving, decision making and leadership in any type of organization. It is preferred that students with an undergraduate degree in business or one of the functional areas of management have two years of work experience before entering the MBA program.

Oakland University undergraduates working on majors other than those in the management areas may earn both an undergraduate degree and an MBA by completing an accelerated program. To be eligible, students should have a grade point average in the top 15 percent of students in their major. Students may apply to the program after they have completed 80 undergraduate credits. For more information, see the *Oakland University Graduate Catalog*.

The School of Business Administration is accredited, on both the undergraduate and graduate levels, by the Accreditation Council of the American Assembly of Collegiate Schools of Business (AACSB).

## Degree Requirements

The curriculum described shall be followed by students entering the School of Business Administration beginning with the fall 1989 semester. Students enrolled prior to fall 1989 may choose to satisfy either the degree requirements listed in this catalog or those in the catalog of the academic year in which they were initially admitted to pre-business in the School of Business Administration (or any catalog during the interim) provided that catalog is not more than six years old at the time of graduation. Students who transfer to the School of Business Administration after admission to the university or who are readmitted to the university are required to follow the requirements of the catalog in effect at the time they transfer or are readmitted.

To ensure they have met all requirements, students should seek a final program audit from one of the school's academic advisers the semester before the semester in which they plan to graduate. The responsibility for meeting graduation requirements rests with the student.

The business administration program enables students to combine intensive study of a functional area of business with a broad background in management. This combination will allow students to understand and manage changing situations in profit-oriented enterprises or not-for-profit organizations, both public and private. In this program, a general education is combined with rigorous analytical training, enabling students to handle the increasingly complex and changing problems faced by managers.

The business administration program offers students the opportunity to major in general management or in one of the functional areas of business: accounting, finance, human resources management, marketing or management information systems. The program leads to a Bachelor of Science (B.S.) degree. (In addition to the majors listed above, the School of Business Administration offers a Bachelor of Science degree with a major in economics. See below.)

The business administration degree program consists of four parts: general education, the precore, the core and the major. Students in this program must satisfy the specific requirements of each of these parts and must earn a minimum of 128 credits.

Each student must:

1. Complete at least 128 credits.
2. Complete at least 32 credits at Oakland University, of which at least 16 credits must be in courses offered by the School of Business Administration. Of these 16 credits, at least 8 credits must be in the student's major.
3. Complete at least 32 credits at the 300 level or above.
4. Take the last 8 credits needed to complete baccalaureate requirements at Oakland University.
5. Earn a cumulative grade point average of at least 2.00 in courses taken at Oakland University and in courses taken in the School of Business Administration.
6. Obtain certification of writing proficiency (see *Undergraduate degree requirements*).
7. Complete the university general education requirement (see *Undergraduate degree requirements*).
8. Be admitted to major standing.
9. Complete the requirements for one of the majors in the School of Business Administration.

## Requirements for Business Administration Majors

### General education requirement

Students in the School of Business Administration must satisfy the university general education requirement (see *Undergraduate degree requirements*). These requirements may be summarized as one course from the approved lists in each of the following categories: arts; literature; language; western civilization; international studies; social sciences (School of Business Administration students cannot use ECN courses to satisfy this requirement); natural science and technology; and mathematics and logic (this category is automatically satisfied by the school's precore mathematics requirement).

### Precore requirements

As preparation for the various majors of the business administration program, students must successfully complete a program that consists of courses in writing, mathematics, computer use, economics, accounting and statistics.

The required precore courses are:

RHT 100-101	Composition I-II (or complete the writing proficiency requirement in another manner)	0-8
MTH 011-012	Elementary-Intermediate Algebra (if required, based on the math placement test)	0
MTH 121	Linear Programming, Elementary Functions	4
MTH 122	Calculus for the Social Sciences (or MTH 154)	4
CSE 125	Introduction to Computer Use	4
ECN 200	Principles of Macroeconomics	
and ECN 201	Principles of Microeconomics	
or ECN 210	Principles of Economics (a 6-credit course which covers the material of both ECN 200 and ECN 201)	6-8



ACC 200	Introductory Financial Accounting	4
ACC 210	Managerial and Cost Accounting I	4
QMM 250	Statistical Methods	6
		32-42

The freshman and sophomore years of study for students pursuing the business administration program will be devoted to the successful completion of the general education and precore course requirements. Special emphasis should be given during the freshman year to the completion of the university writing proficiency requirement and steady progress in the mathematics sequence. Once sophomore status (28 credits) has been achieved, students will begin work on the economics, accounting and statistics requirements.

### Admission to major standing in business administration

To be eligible to take 300- and 400-level courses, students must be admitted to major standing in the School of Business Administration. Exceptions to this policy are ACC 310, ENG 382, MKT 302, ORG 330 and all ECN courses.

Admission to major standing is selective. The minimum requirements for consideration are:

1. Student's admissibility to and retention in the university.
2. Completion of the writing proficiency requirement.
3. A minimum grade point average of 2.80 in all courses taken at Oakland University. In addition, a cumulative grade point average of 2.80 from all colleges attended including Oakland University.
4. A minimum grade of 2.0 in each of the following precore courses or their equivalents: MTH 121, MTH 122, CSE 125, ECN 200 and ECN 201 (or ECN 210), ACC 200, ACC 210 and QMM 250.
5. Submission of an "Application for Major Standing" for the desired major during the first month of the semester in which the student expects to complete the precore requirements.

### Core program

Each of the business major programs requires the completion of a common core of courses introducing students to the functional areas of business. The core courses required in all business administration major programs are:

• ENG 382	Business and Technical Writing (or ENG 380)	4
• ECN 301	Intermediate Microeconomics	3-4*
• ORG 330	Introduction to Organizational Behavior	3-4*
• POM 343	Operations Management	4
• FIN 322	Managerial Finance I	4
• MGT 350	Legal Environment of Business	3
• MIS 300	Management Information Systems	3
• MKT 302	Marketing	4
• ORG 331	Organizational Behavior Applied to Management	3-4*
• MGT 435	Management Strategies and Policies	4
		35-38

All courses in the core program require major standing except ENG 382, all ECN courses, ORG 330 and MKT 302. MGT 435 is a course that integrates the material in the core program and may be taken only after students have completed the rest of the core program.

\*Three-credit course, effective fall 1990.

### Major programs

Students complete their program by taking 16-24 additional credits specified in their major area. The junior and senior years will be devoted to the successful completion of the requirements

of the core and major. Majors from which business administration students may choose are detailed below. Double majors are permitted in all areas except general management. No more than 4 credits of independent study (490 courses) may be used to meet the major elective requirement.

### Requirements for the major in accounting

**Major adviser:** *David D. Sidaway*

The major in accounting prepares students for an accounting or auditing career in the public or private sector of profit-oriented or not-for-profit enterprises.

To fulfill requirements for the accounting major, students must be admitted to major standing in accounting, complete the core program and earn a minimum of 30 credits specified below with a grade of 2.0 or better in each course.

Required precourse courses:		Credits
ACC 200	Introductory Financial Accounting	4
ACC 210	Managerial and Cost Accounting I	4
Required major courses:		
ACC 310	Intermediate Financial Accounting I	3
ACC 311	Intermediate Financial Accounting II	3
ACC 312	Advanced Financial Accounting	4
ACC 410	Managerial and Cost Accounting II	4
Electives — Choose 8 credits:		
ACC 411	Auditing	
ACC 412	Government and Not-for-profit Accounting	
ACC 413	Regulatory Agencies and the Accounting Profession	
ACC 414	Accounting Theory	
ACC 415	Tax Accounting	
ACC 416	Contemporary Accounting Issues	
ACC 418	Computer-based Accounting Systems	
ACC 420	Advanced Auditing Topics	
ACC 421	Advanced Tax Topics	
FIN 419	International Financial Management	8
		30

Because of their specific requirements, students who plan to take a professional accounting examination (CPA, CMA or CIA) should discuss their course selection with an accounting faculty member before enrolling in 400-level accounting courses.

Note: Fifth Year Option. Although it is not required, the School of Business Administration suggests that students planning to take the Certified Public Accountant (CPA) examination consider taking an additional 32 credits of study in accounting, as recommended by the American Institute of Certified Public Accountants. During this fifth year, students should take the following 32 credits: 20 credits of 400-level accounting courses (in addition to the courses required for the four-year accounting major), FIN 422, MGT 424 and an additional quantitative methods course.

### Requirements for the major in finance

**Major adviser:** *Edward J. Farragher*

The major in finance leads to an understanding of the theoretical foundations of finance and develops the specific skills, modes of analysis and institutional background useful to work in the accounting and finance areas of profit-making businesses or not-for-profit enterprises.

To fulfill requirements for the finance major, students must be admitted to major standing in finance, complete the core program and earn a minimum of 24 credits, as specified below, with a grade of 2.0 or better in each course.

Required core courses:		Credits
FIN 322	Managerial Finance I	4
Required major courses:		
ACC 301	Financial Reporting and Analysis*	4
ECN 321	Money, Credit and the Economy	4
FIN 421	Investment Analysis	4
*In lieu of ACC 301, students may substitute both ACC 310 and 311.		
Electives — Choose two courses from the following (some may require additional prerequisites):**		
FIN 418	Financial Institution Management and Lending	
FIN 419	International Financial Management	
FIN 420	Real Estate Investment, Financing and Taxation	
FIN 422	Managerial Finance II	
FIN 480	Seminar — Special Topics	8
		24

\*\*ACC 410, ACC 415, or ACC 418 may be substituted for one finance elective.

### Requirements for the major in general management

Major adviser: *Floyd G. Willoughby*

The general management major allows students to take advanced work in several functional areas of business. Students may not earn a double major in general management and another major of the School of Business Administration.

To fulfill requirements for the general management major, students must be admitted to major standing in general management, complete the core program and earn a minimum of 16 additional credits in electives with a grade of 2.0 or better in each course. The electives may be chosen from any area within the School of Business Administration (courses beginning with ACC, ECN, FIN, MGT, MIS, MKT, ORG, POM or QMM) and must be chosen from courses numbered 300 or higher; at least 8 credits must be at the 400-level. No more than 4 credits of independent study (490 courses) may be used to meet the major elective requirement.

### Requirements for the major in human resources management

Major adviser: *Daniel N. Braunstein*

The major in human resources management develops the skills needed to administer the personnel functions of organizations. It is designed primarily for students who intend to pursue careers in administration, personnel management, labor relations or wherever the management of people at work is a central concern.

Emphasis is placed on developing an intensive understanding of the concepts and techniques needed to acquire, develop and utilize an organization's human resources. The program includes broad coverage of such topics as personnel psychology, personnel administration and labor/management relations, in addition to providing basic knowledge of organizational behavior.

To fulfill requirements for the human resources management major, students must be admitted to major standing in human resources management, complete the core program and earn at least 26 credits as specified below, with a grade of 2.0 or better in each course.

Required core courses:		Credits
ORG 330	Introduction to Organizational Behavior	3-4*
ORG 331	Organizational Behavior Applied to Management	3-4*
Required major courses:		
ORG 430	Organizational Research Methods	4
MGT 433	Labor-Management Relations	4
ORG 434	Management of Human Resources	4
Electives — Choose two courses:		
ORG 431	Leadership and Group Performance	

ORG 432	Motivation and Work Behavior	
ORG 480	Topics in Organizational Management	
MGT 480	Seminar: Current Business Topics	
ECN 468	Labor Economics	8

\*Three-credit course, effective fall 1990.

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### Requirements for the major in management information systems

Major adviser: *David P. Doane*

The major in management information systems specifies a set of courses that will give students more facility with computer languages, with the use of computers in handling information processing in organizations, with systems analysis and with the use of computers in management decision making and support of organizational functions.

To fulfill the requirements for the major in management information systems, students must be admitted to major standing in management information systems, complete the core program and complete at least 29 credits, as specified below, with a grade of 2.0 or better in each course.

**Required precore and core courses:** **Credits**

CSE 125	Introduction to Computer Use	4
MIS 300	Management Information Systems	3

**Required major courses:**

CSE 130	Introduction to Computer Programming (Pascal)	4
or CSE 132	Introduction to Computer Science (Pascal)	
CSE 220	Computer-based Information Systems I (COBOL)	4
MIS 304*	Database Management	4
or CSE 345	Database Design and Implementation	
MIS 316	Systems Analysis	4

**Electives — Choose two courses, at least one of which is a 400-level MIS course:**

MIS 400**	Analysis of Complex Systems	
MIS 405**	Business Data/Telecommunications	
MIS 407**	Computer Systems for Problem Solving	
MIS 421**	Advanced Business Applications	
MIS 436**	Decision Support Systems	
MIS 444**	Simulation in Management	
MIS 480**	Advanced Topics in MIS	
ACC 418	Computer-based Accounting Systems	
QMM 452	Forecasting	
CSE 221	Computer-based Information Systems II (COBOL)	

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\*Formerly offered as MIS 404.

\*\*All 400-level MIS courses will become three-credit courses, effective fall 1990.

### Requirements for the major in marketing

Major adviser: *John W. Henke*

The major in marketing develops the specific skills, modes of analysis and background to work in the marketing area of a profit-making business or not-for-profit enterprise.

To fulfill the requirements for the major in marketing, students must be admitted to major standing in marketing, complete the core program and complete a minimum of 24 credits, as specified below, with a grade of 2.0 or better in each course.

**Required core course:** **Credits**

MKT 302	Marketing	4
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**Required major courses:**

MKT 353	Marketing Management	4
MKT 404	Consumer Behavior	4
MKT 405	Marketing Research	4

**Electives — Choose two courses:**

MKT 406	Promotional Strategy
MKT 420	Distribution Channels Management
MKT 430	Sales Management/Sales Promotion
MKT 450	International Marketing
MKT 480	Seminar in Marketing

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**Bachelor of Science With a Major in Economics****Major adviser:** *Ronald L. Tracy*

The curriculum for the major in economics combines the concepts and tools of economic analysis, a broad general education and courses in other areas of interest to the student. Students learn how economic analysis can be applied to major problems facing individuals, businesses, the nation and the world today.

Besides preparing students for a career in economics, an education in economics is excellent preparation for entry into law school, a graduate school of public administration or an MBA program. Economics is a flexible choice for students seeking a rigorous, well-respected and relevant major without specializing in a narrowly defined area. To be employed as professional economists or economics instructors, students normally will need to attend graduate school and obtain at least a master's degree in economics.

For economics majors, the Bachelor of Science degree offers a more quantitative and business-oriented approach to economics than does the Bachelor of Arts degree, offered through the College of Arts and Sciences (see the Department of Economics section in the College portion of the catalog).

**Requirements for the Bachelor of Science degree with a major in economics**

To earn the Bachelor of Science degree with a major in economics, students must complete a minimum of 128 credits as follows:

<b>English composition:</b>		<b>Credits</b>
RHT 100-101	Composition I-II (or complete the writing proficiency requirement in another manner)	0-8
ENG 382	Business and Technical Writing (or ENG 380)	4
<b>General education requirement:</b>		28
<i>See Undergraduate degree requirements and exceptions discussed under Requirements for Business Administration Majors.</i>		
<b>Cognate courses:</b>		
MTH 011-012	Elementary-Intermediate Algebra (if necessary)	0
MTH 121	Linear Programming, Elementary Functions	4
MTH 122	Calculus for the Social Sciences (or MTH 154)	4
CSE 125	Introduction to Computer Use (or CSE 130 or CSE 132)	4
ACC 200	Introductory Financial Accounting	4
QMM 250	Statistical Methods	6
FIN 322	Managerial Finance I	4
<b>Quantitative methods course — choose one:</b>		
ECN 405	Econometrics	4
QMM 452	Forecasting	
<b>Required core courses:</b>		
ECN 200 and ECN 201	Principles of Macroeconomics Principles of Microeconomics	

or ECN 210	Principles of Economics (a 6-credit course that covers ECN 200 and ECN 201)	6-8
ECN 301	Intermediate Microeconomics	3-4*
ECN 302	Intermediate Macroeconomics	4
<b>Electives:</b> 16 additional credits in ECN courses numbered 300 or higher, 8 credits of which must be in courses at the 400-level (excluding ECN 414). No more than 4 credits in ECN 490 may be counted as economics electives.		16
<b>General electives:</b>		<u>26-37</u>
*Three-credit course, effective fall 1990.		128

### Admission to major standing in economics

Admission to major standing in economics is required before a student may graduate. The minimum requirements for major standing are:

1. Student's admissibility to and retention in the university.
2. Completion of the writing proficiency requirement.
3. A minimum grade point average of 2.80 in all courses taken at Oakland University. In addition, a cumulative grade point average of 2.80 from all colleges attended including Oakland University.
4. Completion of the following courses, or their equivalents, with a grade of 2.0 or better in each course: MTH 121, MTH 122, CSE 125 (or CSE 130 or CSE 132), ECN 200 and ECN 201 (or ECN 210), and QMM 250.
5. Submission of an "Application for Major Standing."

Although ECN 301 and ECN 302 are not required for admission to major standing in economics, students must earn a grade of 2.0 or better in them in order to graduate.

### Minors

The School of Business Administration offers seven minors for students who want to combine their majors with an introduction to the skills, analytical techniques and institutional material of economics or an area of business.

To earn a minor, students must complete the prescribed courses with a grade of 2.0 or better in each course. School of Business Administration students have priority over majors from outside the school when registering for SBA classes. Because of this, many courses have limited space available to nonbusiness majors. Students majoring in programs other than business administration may take SBA courses only if they meet the prerequisites (except major standing) and if there is space in the class. Exceptions to this rule are economics courses (excluding ECN 301 and ECN 321), as they are open to all majors.

All students who are not majors in the School of Business Administration and economics majors in either the School of Business Administration or the College of Arts and Sciences, whether they have applied for a minor or not, are limited to no more than 28 credits in business courses. The maximum of 28 credits includes courses taken at Oakland University and all previous colleges. Economics (ECN) courses, QMM 250 and QMM 452 are excluded from this requirement. Therefore, students from majors outside the business administration program may not earn more than 28 credits in transfer plus Oakland credits in ACC, FIN, MGT, MIS, MKT, ORG, POM or QMM courses (excluding those noted above).

Students may earn only one minor from the School of Business Administration. Business administration majors may earn a minor only in economics, international management, production and operations management, or quantitative methods. Transfer students planning to earn a minor must earn at least 12 credits toward the minor at Oakland University; at least 8 of these 12 credits must be in courses at the 300-level or higher.

### **Minor in accounting**

**Coordinator:** *David D. Sidaway*

The minor in accounting consists of a minimum of the following 20 credits and any prerequisites for these courses: ACC 200, ACC 210 and 12 additional credits in accounting (ACC) courses. Economics majors, both BS and BA candidates, are eligible for this minor, but students majoring in other programs offered by the School of Business Administration are not.

### **Minor in economics**

**Coordinator:** *Ronald L. Tracy*

The minor in economics consists of a minimum of 18 semester credits in economics courses. A student must take ECN 150 or ECN 210 or both ECN 200 and ECN 201 and any prerequisites for these courses. In addition, a student must earn at least 12 additional credits (16 credits if ECN 150 was taken) in economics (ECN) courses in order to fulfill the 18 credit requirement (excluding ECN 414). This minor is open to all students except economics majors.

### **Minor in finance**

**Coordinator:** *Edward J. Farragher*

The minor in finance consists of a minimum of the following 22 credits and any prerequisites for these courses: ACC 200, QMM 250, FIN 322 and 8 additional credits in finance (FIN) courses. Economics majors, both BS and BA candidates, are eligible for this minor, but students majoring in other programs offered by the School of Business Administration are not.

### **Minor in international management**

**Coordinator:** *Eleftherios N. Botsas*

The minor in international management consists of a minimum of 18 credits, described as follows, and any prerequisites for these courses: ECN 210 or both ECN 200 and ECN 201, ECN 373, MGT 423 and one course chosen from ECN 326, ECN 342, ECN 350, FIN 419 and MKT 450. Proficiency in a foreign language is not required but is highly recommended. This minor is open to all majors.

### **Minor in management**

**Coordinator:** *Howard S. Schwartz*

The minor in management consists of a minimum of 19-23 credits, described as follows, and any prerequisites for these courses: ECN 210 or both ECN 200 (or ECN 150) and ECN 201, ACC 200, ORG 330 and 6-8 additional credits in 300- and 400-level electives (ACC, FIN, MGT, MIS, MKT, ORG, POM or QMM courses) offered by the School of Business Administration. Economics (ECN) 300- and 400-level courses are not acceptable electives for this minor. Economics majors, both BS and BA candidates, are eligible for this minor, but students majoring in other programs offered by the School of Business Administration are not.

### **Minor in production and operations management**

**Coordinator:** *Sadik Cokelmez*

The minor in production and operations management consists of a minimum of 20 credits, described as follows, and any prerequisites for these courses: CSE 125 or CSE 130, QMM 250 or STA 226, POM 343, and any two courses chosen from POM 441, POM 445, POM 448, QMM 452. This minor is open to all majors.

### **Minor in quantitative methods**

**Coordinator:** *David P. Doane*

The minor in quantitative methods consists of a minimum of 19 credits, described as follows, and any prerequisites for these courses: CSE 130 or CSE 132, QMM 250 or STA 226, and any three courses chosen from QMM 452, QMM 440, POM 448, MIS 444, ECN 405, STA 323, STA 324. This minor is open to all majors.

## **Policies and Procedures**

### **Transfer policy**

Evaluation of transfer courses is a two-part process: general education and composition courses are evaluated by the Academic Records Office; business courses are evaluated by the School of Business Administration. Credit for specific SBA courses is authorized for courses of similar content and level taken at other accredited colleges and universities. Courses similar in title or content to those offered by the SBA at the 300-400 level are not authorized to receive specific course credit if taken at the 100-200 level at another institution. Such courses will transfer as general elective credit only.

### **Internal transfer**

Oakland University students seeking admission to the School of Business Administration from other programs will be considered for admission after they have completed MTH 121 (or an equivalent) with a grade of 2.0 or better. An overall GPA of 2.80 (from all schools attended as well as Oakland) is also required.

### **Limited course accessibility for nonbusiness majors**

School of Business Administration students have priority over majors from outside the school when registering for SBA classes. Because of this, many courses have limited space available to nonbusiness majors. Students majoring in programs other than business administration may take SBA courses only if they meet the prerequisites (except major standing) and if there is space in the class. Exceptions to this rule are economics courses (excluding ECN 301 and ECN 321), as they are open to all majors.

### **Unsatisfactory performance**

Numerical grades less than 2.0 and U grades are considered substandard. A course in which a grade below 2.0 has been earned may not be subsequently passed by competency examination or independent study. A student in the School of Business Administration who must repeat a course in which a 2.0 is required must repeat that course at Oakland University or, with prior approval, at any regionally accredited four-year institution.

### **Prerequisites**

In planning their schedules, students should ensure that they satisfy prerequisite and corequisite conditions for courses. Students who have registered for courses for which they do not meet the conditions will have their registration canceled and will be liable for any financial penalties incurred.

## **Additional Information**

### **Cooperative education**

Students in the School of Business Administration who want to combine relevant work experience with their college educations are encouraged to participate in the university's cooperative education program. Co-op students alternate at least two four-month periods of paid, full-time work experience with four-month periods of full-time classwork. Students are placed in jobs similar to those held by recent Oakland University graduates in business, not-for-profit or governmental organizations. On occasion, unpaid internships that provide work experience also are available. Students interested in the co-op program should contact the Cooperative Education Coordinator in the Department of Placement and Career Services, 275 Vandenberg Hall (370-3252).

### **Honors, awards and scholarships**

In addition to being eligible for honors available to all Oakland University undergraduates, students in the School of Business Administration are eligible for the following:



School honors are awarded by the School of Business Administration to students with a minimum grade point average of 3.33 in courses offered in the school.

**American Marketing Award:** Each year, the Detroit chapter of the American Marketing Association awards certificates of achievement for scholarship and service to two marketing majors.

**Beta Gamma Sigma:** Beta Gamma Sigma is the national honor society for business schools accredited by the American Assembly of Collegiate Schools of Business (AACSB). Membership in Beta Gamma Sigma is one of the highest scholastic honors that a student in business administration can achieve. It is based on outstanding scholastic achievement as measured by overall grade point average. Invitation for membership to Beta Gamma Sigma is extended to graduating seniors in the top 10 percent of their class and juniors in the top 5 percent of their class.

**Ernst & Whinney Award:** Each year, the junior accounting student who has demonstrated the greatest academic and leadership potential is selected by the accounting faculty to receive a cash award from the international accounting firm of Ernst & Whinney. The student is honored at a meeting of accounting students, hosted by Ernst & Whinney.

**Financial Executives Institute Award:** This award is presented annually to the undergraduate accounting or finance student who has demonstrated the highest standard of academic excellence. The student is honored at a meeting of the Detroit chapter of the Financial Executives Institute. Selection is made by the accounting and finance faculty of the School of Business Administration.

**Omicron Delta Epsilon:** Omicron Delta Epsilon is a national honor society for promising economics students. Selection for membership is made by the economics faculty.

**Wall Street Journal Student Achievement Award:** This award is presented annually to the graduating senior who has demonstrated the greatest academic and leadership achievement in the School of Business Administration. Selection is made by the faculty.

#### School of Business Administration awards/scholarships

**Paul F. Lorenz Writing Award:** The purpose of this award is to encourage excellence in the preparation of business reports in School of Business Administration classes through the upgrading of business report writing skills. An annual award of \$1,000 will be made to the winner.

**Paul F. Lorenz/Texas Instruments Excellence Awards:** These awards are based on undergraduate academic excellence. A tuition scholarship for the senior year will be awarded to the junior student who has the highest overall GPA in the School of Business Administration. In addition, awards of \$1,000 and \$500 will be made to two graduating seniors with the highest overall GPA.

**Golden State Minority Foundation Scholarship:** Applicants with junior or senior status must have a 3.00 GPA, show financial need and minority identification, as well as leadership capabilities and community involvement.

**Alumni Scholarship:** Two \$750 awards are given annually to full-time students with junior or senior standing. Applicants must have an overall GPA of at least 3.00 (with 3.40 in their first 59 credits) and a 3.30 minimum GPA in School of Business Administration courses.

**Oakland County Chamber of Commerce Scholarship:** Two annual awards given to full-time seniors with a minimum GPA of 3.00. Applicants must be residents of Oakland County and/or must be a member of a family affiliated with the Chamber of Commerce.

## Course Offerings

Following are descriptions of the courses offered by the School of Business Administration. Required precore and core courses for students majoring in these programs are generally offered each fall and winter semester and during either the spring or summer session.

The 300- and 400-level courses are designed for students with major standing in the School of Business Administration. These courses have major standing as a prerequisite, except for ACC 310, MKT 302, ORG 330 and all economics (ECN) courses. The 300-level courses should be taken during the junior year (59-90 credits). Nonbusiness majors may elect 300- or 400-level

courses if they meet the prerequisites (except for major standing) and if there is space in the class. School of Business Administration students have priority over majors from outside the school when registering for these courses.

Students in majors other than those in the business administration program (i.e., accounting, finance, general management, human resources management, management information systems and marketing) may not earn more than 28 credits in ACC, FIN, MGT, MIS, MKT, ORG, POM and QMM courses. This maximum of 28 business credits includes credits earned at Oakland University and all other colleges but excludes economics (ECN) courses, QMM 250 and QMM 452.

## ACCOUNTING

### ACC 200      **Introductory Financial Accounting (4)**

Introduction to accounting information as an aid to decision-making for external users of financial statements. Students learn how to measure and record accounting data, prepare financial statements and analyze published financial accounting information.

Prerequisite: Sophomore standing. CSE 125 recommended.

### ACC 210      **Managerial and Cost Accounting I (4)**

Analysis of accounting methods providing data for optimal managerial decisions, implementation and control. Topics include cost allocation; cost, volume and price relationships; product cost accounting and control systems; operations and capital budgeting, and related behavioral, reporting and information processing aspects.

Prerequisite: ACC 200. CSE 125 recommended.

### ACC 301      **Financial Reporting and Analysis (4)**

A study of financial accounting and reporting from the perspective of the user of accounting information. The course will emphasize the interpretation and analysis of specific accounting treatments rather than accounting methodology. *Accounting majors may not substitute this course for any required or elective accounting course.*

Prerequisite: ACC 200 and major standing.

### ACC 310      **Intermediate Financial Accounting I (3)**

A study of financial accounting topics, including accounting valuation and reporting practices. Three major areas examined include financial accounting theory, current and noncurrent assets, and current and non-current liabilities.

Prerequisite: ACC 200, ACC 210 and junior standing.

### ACC 311      **Intermediate Financial Accounting II (3)**

A continuation of ACC 310. Major financial accounting areas examined include stockholders' equity, dilutive securities, investments, income measurement issues and the preparation and analysis of financial statements.

Prerequisite: ACC 310 and major standing.

### ACC 312      **Advanced Financial Accounting (4)**

Topics include accounting and reporting for foreign operations, partnerships, consolidated entities, interim financial statements, segments of business enterprises, foreign operations, trusts and estates.

Prerequisite: ACC 311 and major standing.

### ACC 410      **Managerial and Cost Accounting II (4)**

An analysis of available procedures and techniques to sharpen accounting analyses for managerial planning and control. Extends subjects introduced in ACC 210 to nonmanufacturing firms, decentralized firms, transfer pricing and segment performance measurement.

Prerequisite: ACC 210, major standing and junior standing.

### ACC 411      **Auditing (4)**

Introduction to the objectives, techniques and standards of internal and external audits of the accounts of an enterprise. Generally accepted auditing standards will be critically examined.

Prerequisite: QMM 250, ACC 312 and major standing.

### ACC 412      **Government and Not-for-Profit Accounting (2)**

The characteristics of not-for-profit entities are analyzed and used to define the basic concepts of accounting for funds. Accounting and reporting principles applicable to governmental units, hospitals, schools, eleemosynary and other nonprofit entities are discussed.

Prerequisite: ACC 311 and major standing.

**ACC 413 Regulatory Agencies and the Accounting Profession (2)**

The nature, origin and workings of the SEC, ICC and other agencies are examined. The legal framework, registration and reporting requirements, professional liability and the continuing issue of establishing generally accepted accounting principles are studied.

Prerequisite: ACC 311 and major standing.

**ACC 414 Accounting Theory (4)**

Selected topics of current interest in accounting theory. Opinions of the Accounting Principles Board, the Financial Accounting Standards Board and similar standard-setting committees of the accounting profession will be examined.

Prerequisite: ACC 312 and major standing.

**ACC 415 Tax Accounting (4)**

The concepts of taxation. The essential logic underlying the federal tax laws will be explored. The class will teach students to analyze individual and corporate income tax laws, rather than how to prepare tax returns.

Prerequisite: ACC 311 and major standing.

**ACC 416 Contemporary Accounting Issues (4)**

An examination of the changes in accounting associated with infusions of theories of other disciplines: behavioral science, organizational theory, economic theory and sociology. Also considered are changes in the role of the accountant. The course may be repeated.

Prerequisite: ACC 312 and major standing.

**ACC 418 Computer-based Accounting Systems (4)**

A study of the use of accounting information as part of a total management information system. Topics include financial controls, transaction data processing, internal security and auditing. Covers computer hardware, software and data systems analysis.

Prerequisite: ACC 200, MIS 300 and major standing.

**ACC 420 Advanced Auditing Topics (2)**

Examination of advanced topics in auditing. Emphasizes philosophy, standards, concepts and problem areas.

Prerequisite: ACC 411 and major standing.

**ACC 421 Advanced Tax Topics (2)**

Examination of advanced topics in tax accounting.

Prerequisite: ACC 415 and major standing.

**ACC 490 Independent Study (2, 4)**

Qualified and highly motivated students may engage in individual research, directed readings or group study under the supervision of a faculty member. Offered every term.

Prerequisite: An overall grade point average of 3.00 or better, major standing and an approved contract prior to registration.

**ECONOMICS****ECN 150 Basic Economics (4)**

Survey of economics and its application to problems faced by societies, firms and individuals. Includes both analytical and institutional aspects of economics. Intended for students not planning to major in economics or business. Satisfies the university general education requirement in social science. (Generally offered fall and winter semester.)

Prerequisite: High school algebra.

**ECN 200 Principles of Macroeconomics (4)**

Examines the methodology of economics, scarcity, opportunity cost, supply and demand, market processes, determination of national income, fiscal policy, money and banking, monetary policy, inflation and unemployment, trade and international adjustments, development and alternative economic systems. Not open to students who have completed ECN 150. Satisfies the university general education requirement in social science. (Generally offered every term.)

Prerequisite: High school algebra and sophomore standing.

**ECN 201 Principles of Microeconomics (4)**

Examines elasticity, markets, theory of consumer demand, market failures, organization of the firm, production and cost in the long and short runs, competition, externalities, legal and regulatory environment of business. (Generally offered every term.)

Prerequisite: ECN 200 or ECN 150, and sophomore standing.

**ECN 210 Principles of Economics (6)**

Principles of macroeconomics and microeconomics, covering the same topics as ECN 200 and ECN 201 combined, but at an accelerated pace. Intended for highly motivated students with good writing and math ability. Not open to students who have completed a previous college economics course. *Satisfies the university general education requirement in social science.* (Generally offered fall and winter semester.)

Prerequisite: High school algebra, sophomore standing and a GPA of 3.00 or better.

**ECN 301 Intermediate Microeconomics (4)\***

Examines consumer behavior, cost functions, constrained optimization, decisions under uncertainty, price and output determination in competitive markets, the basis for regulatory law and implications of microeconomic decisions for the efficiency of the market economy. Case studies will be analyzed. (Generally offered every term.)

Prerequisite: ECN 201 or ECN 210, and MTH 122, or permission of instructor.

\*Three-credit course, effective fall 1990.

**ECN 302 Intermediate Macroeconomics (4)**

Construction, analysis and interpretation of models of aggregate economic behavior, including the policy implications of alternative models, international interrelationships, assessment of contemporary controversies in national policy and introduction to large econometric models. (Generally offered every winter semester.)

Prerequisite: ECN 201 or ECN 210, and MTH 122, or permission of instructor.

**ECN 309 Introduction to Urban and Regional Economics (4)**

An introduction to urban and regional economics. Topics include reasons behind the development of cities, historical trends in the urbanization of the United States and other countries, state and local revenues and expenditures, cost-benefit analysis including the NPV procedure and the concept of social cost; externalities and public good and their application to the question of environment; housing market and the poverty problem; regional economics and the economy of the State of Michigan. (Generally offered fall semester of even years.)

Prerequisite: ECN 150 or ECN 201 or ECN 210.

**ECN 310 Economics of the Environment (4)**

Application of the tools of economic analysis to problems of energy, ecology and the environment. Topics include externalities and public goods, optimum use of fixed national resources, limits to economic growth and ecological aspects of principal pollution problems. (Generally offered winter semester of even years.)

Prerequisite: ECN 150 or ECN 201 or ECN 210.

**ECN 321 Money, Credit and the Economy (4)**

The course focuses on three areas: an introduction to banking and financial institutions, study of the U.S. money and capital markets, and the study of money's impact on the nation's economy. (Generally offered fall and winter semesters and spring session.)

Prerequisite: ECN 150 or ECN 201 or ECN 210.

**ECN 326 Economic Development (4)**

Application of the tools of economic analysis to the problems of economic development and growth. (Generally offered winter semester of odd years.)

Prerequisite: ECN 150 or ECN 201 or ECN 210.

**ECN 328 American Economic Development (4)**

Models and case studies of selected events in the growth and development of the American economy, from colonial times to the present. Emphasizes the evolution of historical thought under the impact of economic analysis. (Generally offered fall semester of even years.)

Prerequisite: ECN 150 or ECN 201 or ECN 210.

**ECN 333 History of Economic Thought (4)**

Surveys the history and development of economic theory. Examines the development of classical theory, the Marxian challenge, the neo-classical refinement (marginal revolution) and the Keynesian revolution. Emphasis will be placed on the development of economics as intellectual history. (Generally offered fall semester of odd years.)

Prerequisite: ECN 150 or ECN 200.

**ECN 338 Economics of Human Resources (4)**

Survey of the nature of labor markets, education and investment in human capital, unemployment, geographic and occupational mobility of labor, and effects of race, sex and age in labor markets. (Generally offered fall semester of odd years.)

Prerequisite: ECN 150 or ECN 201 or ECN 210.

**ECN 342 Economic Analysis of Selected Nations (4)**

Economic analysis of a specific nation or group of nations emphasizing historical, political and international determinants of trade, production, employment, migration, growth, planning, inflation, monetary policy and fiscal policy. The country or countries of interest will be announced the semester prior to its offering. Possible focuses could be Brazil and Latin America, the Soviet Union and Eastern Europe, Japan and the Pacific Rim, Middle East, Africa and Western Europe (European Economic Community). (Generally offered winter semester of even years.)

Prerequisite: ECN 150 or ECN 201 or ECN 210.

**ECN 350 Comparative Economic Systems (4)**

Comparative analysis of alternative forms of economic organization. The relationships between the economic system and resource allocation, pricing, income distribution and growth. Capitalism, market socialism and central planning are emphasized. (Generally offered winter semester of odd years.)

Prerequisite: ECN 201 or ECN 210 or permission of instructor.

**ECN 373 International Economics (4)**

An introduction to international trade and finance. Topics include the international economic and political systems, classical trade approaches, balance of payments, capital mobility, international money markets and banking, speculation, protectionism, income distribution, transfer of technology, regional blocs, economic warfare, trade and development, and the multinational firms. Not open to students who have taken ECN 473. (Generally offered every fall semester.)

Prerequisite: ECN 201 or ECN 210 or permission of instructor.

**ECN 378 Economic Analysis of Law (4)**

Economic analysis of basic institutions of legal systems. Emphasis is on laws that are not directly intended to regulate the economy, including property, contract, tort, criminal and procedural law. Labor and antitrust law will be discussed only tangentially. (Generally offered winter semester of even years.)

Prerequisite: ECN 201 or ECN 210 or permission of instructor.

**ECN 385 Industrial Organization (4)**

The structure of American industry and the factors affecting it, with emphasis on economies of scale; barriers to entry; structure-behavior relationships, including pricing, product differentiation and technical change; evaluation of performance, antitrust and regulation. (Generally offered winter semester of odd years.)

Prerequisite: ECN 201 or ECN 210 or permission of instructor.

**ECN 405 Econometrics (4)**

Estimation and testing of economic models using regression techniques. Includes experience with computer "packages," analytical report writing and case studies. Topics include dealing with violations of regression assumptions, binary variables, autoregressive and distributed lag models and the structure of "large" simultaneous equations models. (Generally offered every fall semester.)

Prerequisite: QMM 250 and ECN 301, or permission of instructor.

**ECN 409 Urban Economics and Location Theory (4)**

The application of consumer theory to residential choice; the extension of microeconomic theory including the location of the economic activity; the examination of migration patterns within and across metropolitan areas and states; discussion of major urban problems such as: quality of life, transportation and the question of optimum city size. The course also will include a review of the economy of the State of Michigan. (Generally offered fall semester of odd years.)

Prerequisite: QMM 250 and ECN 301, or permission of instructor.

**ECN 411      Advanced Methods in Economics (4)**

Survey of advanced methods used in economics. This course provides a comprehensive overview of techniques that are used by professional economists. (Generally offered winter semester of odd years.)

Prerequisite: ECN 301.

**ECN 414      Engineering Economics (2)**

Financial accounting models, relevant costs, capital budgeting, present value, rate of return, payback, taxes, depreciation. Not open to business or economics majors. (Will not be offered in the 1989/90 academic year.)

**ECN 418      Seminar in Economic Policy (4)**

Analysis of economic policy. Topics vary but may include resource allocation, macroeconomic stability, economic growth, energy, public choice, global economic interdependence and the environment. (Generally offered winter semester of even years.)

Prerequisite: ECN 301 and QMM 250, or permission of instructor.

**ECN 456      Public Finance (4)**

The role and impact of the public sector in a market economy. Includes expenditure determination, the basis of taxation in terms of equity, efficiency and flexibility, timing of cash flows, revenue source analysis, financing public debt and discussion of current problems. (Generally offered fall semester of even years.)

Prerequisite: QMM 250 and ECN 301, or permission of instructor.

**ECN 467      Economics of Health Care (4)**

Application of the tools of economic analysis to the health care industry and government health care policy. Examines the impact of the special characteristics of health care and the medical services industry on the pattern of health care produced, its distribution and resource allocation within the industry. (Generally offered fall semester of odd years.)

Prerequisite: QMM 250 and ECN 301, or permission of instructor.

**ECN 468      Labor Economics (4)**

Economic analysis of the functioning of labor markets, with emphasis on investment in human capital, the role of education, unemployment, labor market differentiation by race, sex and age, the geographic and occupational mobility of labor, and the inflation/unemployment trade-off. (Generally offered fall semester of even years.)

Prerequisite: QMM 250 and ECN 301, or permission of instructor.

**ECN 473      Theory of International Trade and Finance (4)**

An intensive approach to international specialization and the open economy. Topics include modern developments in trade models, trade and welfare, impact of trade policies, open economy macroeconomics, balance-of-payments analysis, stability, the determination of exchange rates under different regimes. (Generally offered winter semester of even years.)

Prerequisite: QMM 250 and ECN 301, or permission of instructor.

**ECN 480      Special Topics in Economics (4)**

Intensive study of a selected topic in economics. Topics vary. See *Schedule of Classes* for current offering. May be repeated for credit as long as the topic covered is different. (Generally offered winter semester of odd years.)

Prerequisite: ECN 301.

**ECN 490      Independent Study (2, 4)**

Qualified and highly motivated students may engage in individual research, directed readings, or group study under the supervision of a faculty member. Offered every term.

Prerequisite: An overall grade point average of 3.00 or better, major standing and an approved contract prior to registration.

**FINANCE****FIN 322      Managerial Finance I (4)**

The basic elements of managerial finance. Topics include: capital budgeting techniques, financial structure and analysis, the cost of capital and working capital management.

Prerequisite: ECN 201, ACC 200, QMM 250, major standing and junior standing.

**FIN 418 Financial Institution Management and Lending (4)**

An in-depth study of the management of financial institutions, with emphasis on the lending function. The course focuses on a firm-specific view of financial institution services and operations.

Prerequisite: FIN 322, FIN 421, ACC 301, and major standing.

**FIN 419 International Financial Management (4)**

The application of the tools of financial analysis to cases and the problems of firms that have operations in several countries.

Prerequisite: FIN 322, ACC 301 and major standing.

**FIN 420 Real Estate Investment, Financing and Taxation (4)**

A look at acquisition financing and sale of income-producing real estate. Topics to be covered include feasibility, appraisal, investment, financing and taxation.

Prerequisite: FIN 322, ACC 301 and major standing.

**FIN 421 Investment Analysis (4)**

Study of the aspects of security analysis and portfolio theory. Four areas are covered: investment management and the money and capital markets; the analytical procedures for appraising securities; portfolio analysis; and the assessment of capital market efficiency.

Prerequisite: FIN 322, ACC 301, and major standing.

**FIN 422 Managerial Finance II (4)**

The application of the tools of financial analysis to specific cases in the financial management of corporate businesses and nonprofit enterprises.

Prerequisite: FIN 322, ACC 301, and major standing.

**FIN 480 Seminar — Special Topics (4)**

Intensive study of a selected finance topic. The topic will vary from term to term. May be repeated for credit.

Prerequisite: FIN 322, FIN 421, ACC 301, and major standing.

**FIN 490 Independent Study (2, 4)**

Qualified and highly motivated students may engage in individual research, directed readings or group study, under the supervision of a faculty member. Offered every term.

Prerequisite: An overall grade point average of 3.00 or better, major standing and an approved contract prior to registration.

**MANAGEMENT****MGT 350 Legal Environment of Business (3)**

The legal framework of business decisions. Introduction to the legal system and a survey of government regulation of business. Legal, ethical and political issues in employment, consumer protection, antitrust and business associations.

Prerequisite: ECN 201 or ECN 210, major standing and junior standing.

**MGT 423 Managing the Multinational Firm (4)**

Analysis of the scope, structure and environment — legal, social, political and economic — of the multinational firm, with emphasis on management strategies of planning, marketing, location and finance across cultural and national boundaries.

Prerequisite: ECN 301 or ECN 373 and major standing.

**MGT 424 Business Law (4)**

The study of the legal framework in which business decisions are made and the types of economic conflict and political activity that have created this framework. Topics include contracts, antitrust legislation, conflict resolution and regulatory agencies.

Prerequisite: ECN 201 or ECN 210, major standing and junior standing.

**MGT 433 Labor/Management Relations (4)**

Analysis of management/employee relations in the private and public sector. Topics include factors influencing the supply and demand for labor, evolution and governance of unions, collective bargaining and public policy.

Prerequisite: ECN 201 and major standing.

**MGT 435 Management Strategies and Policies (4)**

Managerial problem perception and the application of economics, statistics, organizational behavior, accounting, finance, marketing and quantitative methods to the systematic analysis of case studies.

Prerequisite: Major standing, completion of core program and senior status.

**MGT 468 Health Care Management (4)**

Application of the management tools of economics, statistics, organizational behavior, marketing, finance and quantitative methods to the systematic analysis of the management of health care institutions.

Prerequisite: Completion of management core program, ECN 467 and major standing.

**MGT 480 Seminar: Current Business Topics (4)**

The analysis of topics of current interest in management. Outside faculty and managers will participate in the seminar as an integral part of the course. May be repeated for credit.

Prerequisite: ORG 331, major standing and junior standing.

**MGT 490 Independent Study (2, 4)**

Qualified and highly motivated students may engage in individual research, directed readings or group study under the supervision of a faculty member. Offered every term.

Prerequisite: An overall grade point average of 3.00 or better, major standing and an approved contract prior to registration.

**MANAGEMENT INFORMATION SYSTEMS****MIS 300 Management Information Systems (3)**

Examination of information systems from the perspective of the manager as a user. Survey of the behavioral, organizational and systems theory foundations; the systems development process, and the integration of data processing, decision support systems, office automation and telecommunications across functional areas. Includes lab exercises.

Prerequisite: CSE 125, major standing and junior standing.

**MIS 304 Database Management (4)**

Technology, organization, use, and administration of database management systems (DBMS). Includes exercises using microcomputer and mainframe DBMS packages. Formerly offered as MIS 404.

Prerequisite: CSE 130, MIS 300 and major standing.

**MIS 316 Systems Analysis (4)**

Theory and practice of designing information systems to meet user needs, including problem investigation and the analysis, design and implementation of systems. Topics include the systems development cycle, system modeling techniques, interface to database management systems, monitoring and control, review and maintenance, and project management. Includes case studies.

Prerequisite: MIS 300, CSE 130, and major standing, or permission of instructor.

**MIS 400 Analysis of Complex Systems (4)\***

Modeling, instrumentation and control of complex systems. Emphasizes design, implementation and testing of information and control systems in unstructured and realistic contexts. Includes specification, evaluation and selection of hardware and software systems, ranging from applications in microcomputers to mainframes.

Prerequisite: ECN 301, MIS 316 and major standing.

**MIS 405 Business Data/Telecommunications (4)\***

Technology, design, management, and use of data, voice, image, and video communication networks. Topics include teleprocessing, micro-mainframe links, local area networks, wide area networks, telephone systems, electronic mail, transborder data flows, and communication protocols. Includes exercises using various network configurations.

Prerequisite: MIS 300 and major standing.

**MIS 407 Computer Systems for Problem Solving (4)\***

An advanced communications and problem solving course in which students learn to specify and design systems for computers. Consists of field studies by teams of students leading to computerized solutions of real world problems.

Prerequisite: MIS 316, eight credits in higher-level programming languages and major standing.



**MIS 421      Advanced Business Applications (4)\***

Sophisticated business information systems will be analyzed, designed and programmed using advanced 3GL capabilities such as COBOL's report writer, relative, direct, and indexed files, and comparisons with very high level languages such as IFPS, Focus and Ingres. Applications in accounting, finance, marketing, human resources, and production will be emphasized.

Prerequisite: CSE 130 or CSE 132, CSE 220, and major standing.

**MIS 436      Decision Support Systems (4)\***

Examines the design and implementation of decision support systems. Considers the roles of expert systems and artificial intelligence in decision making. Includes a critical review of theory and case studies taken from recent MIS literature.

Prerequisite: MIS 300 and major standing.

**MIS 444      Simulation in Management (4)\***

Computer simulation models using GPSS or an equivalent simulation language, plus simulation exercises using standard programming languages. Implications of models and sensitivity analysis for forecasting, planning and decision making in the management environment are explored.

Prerequisite: CSE 130, MIS 300, knowledge of BASIC or FORTRAN, and major standing.

**MIS 480      Advanced Topics in MIS (4)\***

An advanced course involving study of current research issues and recent developments in MIS. Topics vary. See *Schedule of Classes* for current offerings. May be repeated for credit.

Prerequisite: MIS 300, MIS 316 and major standing.

**MIS 490      Independent Study (2, 4)\***

Qualified and highly motivated students may engage in individual research, directed readings or group study under the supervision of a faculty member. Offered every term.

Prerequisite: An overall grade point average of 3.00 or better, major standing and an approved contract prior to registration.

\*All 400-level MIS courses will become three-credit courses, effective fall 1990.

**MARKETING****MKT 302      Marketing (4)**

Analysis of the principles of marketing, marketing concepts and trends, and their relationship to other business principles. Special emphasis is placed on the study of the marketing mix.

Prerequisite: ECN 210 or ECN 201, and junior standing.

**MKT 353      Marketing Management (4)**

A study of the overall marketing strategies pertaining to problems experienced in today's economy. Uses the case study method to analyze these problems.

Prerequisite: MKT 302 and major standing.

**MKT 404      Consumer Behavior (4)**

Study of factors influencing consumer behavior, structuring and managerial use of consumer decision-making models. Examination of social, psychological and economic variables of buying behavior, including learning, motivation, attitude, personality, small group dynamics, demographic and economic factors and culture.

Prerequisite: MKT 302 and major standing.

**MKT 405      Marketing Research (4)**

Focuses on the generation and management of information in marketing decisions. Covers the evaluation of additional marketing information, how it is acquired and used, the manager's role in market research and the researcher's role in supplying marketing information.

Prerequisite: MKT 302, QMM 250 and major standing.

**MKT 406      Promotional Strategy (4)**

A study of the promotional tools of advertising, public relations, sales and sales promotion. Emphasis on identifying the factors that become the basis for promotional decisions.

Prerequisite: MKT 353 and major standing.

**MKT 420      Distribution Channels Management (4)**

Examination of the management of marketing channel relationships. Focuses on the characteristics and social, economic and political relationships among wholesalers, agents, retailers and the other agencies that comprise distribution channels.

Prerequisite: MKT 302 and major standing.

**MKT 430      Sales Management/Sales Promotion (4)**

Examination of the function of sales management. Emphasis on the role of analysis, decision making, strategy formation and the impact of the "suction" or pull strategy provided by sales promotion.

Prerequisite: MKT 302 and major standing.

**MKT 450      International Marketing (4)**

The application of marketing principles to problems associated with marketing products and services to different nations. Cases in international marketing will be analyzed.

Prerequisite: MKT 302 and major standing.

**MKT 480      Seminar in Marketing (4)**

Study of a selected topic or current marketing interest relevant to marketing management. Topics may include industrial marketing, retail management or any area not covered by a specific course. May be repeated for credit.

Prerequisite: MKT 302 and major standing.

**MKT 490      Independent Study (2,4)**

Qualified and highly motivated students may engage in individual research, directed readings or group study under the supervision of a faculty member. Offered every term.

Prerequisite: An overall grade point average of 3.00 or better, major standing and an approved contract prior to registration.

**ORGANIZATIONAL BEHAVIOR****ORG 330      Introduction to Organizational Behavior (4)\***

The theoretical and empirical issues surrounding organizational management as it relates to individual and organizational processes, including perception, learning, motivation, communication, decision making, leadership, power and authority.

Prerequisite: Junior standing; QMM 250 recommended.

\*Three-credit course effective fall 1990.

**ORG 331      Organizational Behavior Applied to Management (4)\***

Examination of the theoretical and applied issues relevant to managing organizations, with an emphasis on the organizational topics of structure, planning, management information, control and decision making. Heavy emphasis is placed on managerial problem solving. A project analyzing and making recommendations for a real organization is required.

Prerequisite: ORG 330 and major standing.

\*Three-credit course, effective fall 1990.

**ORG 430      Organizational Research Methods (4)**

Use of various behavioral research strategies as input for managerial problem solving. Review of data collection and feedback procedures, including formal research designs and action research. A computer-based exercise will be required.

Prerequisite: ORG 331, QMM 250 and major standing.

**ORG 431      Leadership and Group Performance (4)**

Comprehensive examination of selected theories of leadership. Emphasis on relevant empirical evidence and application of the theories to case studies that involve leadership behavior and group functioning.

Prerequisite: ORG 331 and major standing.

**ORG 432      Motivation and Work Behavior (4)**

Analysis of individual and organizational factors affecting employee motivation, performance and satisfaction in the work environment. Topics include the role of leadership, job design, environmental variation, compensation policies, goal-setting techniques and group influences, as each affects employee attitudes and behavior.

Prerequisite: ORG 331 and major standing.

**ORG 434 Management of Human Resources (4)**

Exploration and analysis of the role of the personnel function in modern organizations. Topics include job analysis, manpower planning, recruitment, selection and placement, performance analysis and appraisal, compensation policies and practices, employee information systems and personnel research techniques. A computer-based exercise will be required.

Prerequisite: ORG 331, QMM 250 and major standing.

**ORG 480 Topics in Organizational Management (4)**

Intensive study of a selected topic relevant to organizational behavior and/or human resource management. Topics will vary from term to term and may include career development, compensation, men and women at work, industrial health and safety, management across cultures and power in organizations. May be repeated for credit.

Prerequisite: ORG 331 and major standing.

**ORG 490 Independent Study (2, 4)**

Qualified and highly motivated students may engage in individual research, directed readings or group study under the supervision of a faculty member. Offered every term.

Prerequisite: An overall grade point average of 3.00 or better, major standing and an approved contract prior to registration.

**PRODUCTION AND OPERATIONS MANAGEMENT****POM 343 Operations Management (4)**

Study of operations of manufacturing and service organizations. Introduction to operational design and control issues such as forecasting, capacity planning, facility location and layout, production control, material requirements planning, scheduling, and quality assurance. Includes international, legal, and ethical aspects, as well as computer exercises. Previously listed as QMM 343.

Prerequisite: QMM 250 or STA 226, junior standing and major standing.

**POM 441 Manufacturing Planning and Control (4)**

Definitions, techniques, and practices in manufacturing applications, including traditional manufacturing techniques as well as current issues such as cellular and flexible manufacturing systems. Emphasizes differences between American and foreign manufacturing techniques. Previously listed as QMM 441.

Prerequisite: POM 343 and major standing.

**POM 445 Cases in Operations Management (4)**

Analysis of diverse cases from the perspective of the operations function in service and manufacturing organizations. Cases are descriptive of actual operating situations. Covers situations which lend themselves to analytical and computer techniques as well as problems involving subjective judgment and creativity in translating theory into practice. Previously listed as QMM 445.

Prerequisite: POM 343 and major standing.

**POM 448 Project Management Techniques (4)**

An examination of the various math-based techniques for managing projects. The topics include Program Evaluation Review Technique (PERT) and Critical Path Method (CPM). Includes computer exercises. Previously listed as QMM 448.

Prerequisite: POM 343 and major standing.

**POM 490 Independent Study (2,4)**

Qualified and highly motivated students may engage in individual research, directed readings or group study under the supervision of a faculty member. Offered every term.

Prerequisite: An overall grade point average of 3.00 or better, major standing, and an approved contract prior to registration.

**QUANTITATIVE METHODS****QMM 250 Statistical Methods (6)**

Statistical techniques useful in management and economic analysis. Emphasis on statistical description, hypothesis testing, statistical quality control, time series analysis, ANOVA, estimation and regression techniques. Includes extensive computer exercises.

Prerequisite: MTH 122 or MTH 154, and CSE 125 or CSE 130.

**QMM 440 Management Science (4)**

Overview of quantitative methods used in managerial decision making. Includes decision analysis, linear, integer, and dynamic programming, networks, PERT/CPM, simulation, waiting-line models, and Markov chains. Emphasizes the use of computer software in formulation and analysis of management science models. Prerequisite: QMM 250, ECN 301 and major standing.

**QMM 452 Forecasting (4)**

Survey of analytical and quantitative methods for financial and operational planning. Includes exposure to commercial forecasting services and behavioral issues affecting the use of forecasting information within the organization. Extensive use of computer "packages" to prepare written and oral forecasts based on real data. Prerequisite: QMM 250 or STA 226 and major standing, or permission of instructor.

**QMM 490 Independent Study (2, 4)**

Qualified and highly motivated students may engage in individual research, directed readings or group study under the supervision of a faculty member. Offered every term.

Prerequisite: An overall grade point average of 3.00 or better, major standing and an approved contract prior to registration.

# SCHOOL OF ENGINEERING AND COMPUTER SCIENCE

**Dean:** Howard R. Witt

**Office of the Dean:** Nan K. Loh, *associate dean for research and development*;  
Bhushan L. Bhatt, *associate dean for administration*; Lisa M. Birkby, *assistant to the dean*;  
Patrick Bennett, *academic adviser/program coordinator*; Frederick J. Lutz, *engineering cooperative  
education coordinator*

## Board of Visitors

The Board of Visitors for the School of Engineering and Computer Science is composed of leaders in industry. They assist the school in developing educational and research programs to meet the rapidly expanding requirements in the technical world. The board is available as a body or individually for consultation on such matters as curriculum, research, facilities, equipment requirements, special subjects, and long-range planning. Board members are:

- Guy D. Barnicoat, Ph.D., *Chairperson, Board of Visitors, Vice President and General Manager, Lectron Products, Inc.*  
William G. Agnew, Ph.D., *Director, Programs and Research Labs, General Motors Research Labs*  
Hadi A. Akeel, Ph.D., *Vice President and Chief Engineer, GMF Robotics*  
Allen A. Alper, Ph.D., *Vice President and General Manager, Chemical and Metallurgical Division, GTE Products Corporation*  
Ronald R. Boltz, *Vice President, Car Program Management, Chrysler Corporation*  
Gerald DeClaire, *Vice President, Research and Engineering, Rockwell International*  
Herbert H. Dobbs, Ph.D., *Consultant, Rochester, Michigan*  
Lamont Eltinge, Ph.D., *Director of Research, Eaton Corporation*  
Daniel W. Hazebrook, *Vice President, GKN Automotive Components, Inc.*  
Thomas O. Mueller, Ph.D., *Consultant, Bloomfield Hills, Michigan*  
Ernest N. Petrick, Ph.D., *Engineering Consultant, General Dynamics Land Systems*  
Donald W. Rees, *Chief, Survivability Division, U.S. Army, TACOM*

## General Information

### Accreditation

All academic programs of Oakland University are accredited by the North Central Association of Colleges and Schools. In addition, the undergraduate programs in computer, electrical, mechanical and systems engineering have been accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET) and the computer science program is accredited by the Computer Science Accreditation Commission of the Computing Sciences Accreditation Board (CSAB).

### Undergraduate programs

The School of Engineering and Computer Science offers instruction leading to the degrees of Bachelor of Science in Engineering, with majors in computer, electrical, mechanical and systems engineering, and Bachelor of Science, with a major in computer science. In addition, programs leading to the Bachelor of Science degree in engineering chemistry and engineering physics are offered jointly with the College of Arts and Sciences.

Through its engineering programs, the School of Engineering and Computer Science prepares students for careers in an industrial-based society. Recognizing that today's engineers must be able to solve complex, highly focused problems, as well as those transcending narrow fields of specialization, the School of Engineering and Computer Science blends an interdisciplinary core with specialized study in the elected major for each program.

Oakland University engineering graduates are prepared to enter the traditional fields of government, product design, development, manufacturing, sales, service and systems analysis — as well as specialized areas, such as robotics, transportation, pollution control, energy systems, computer engineering, communications, medical electronics and automotive engineering. They are also prepared to pursue graduate study for careers in research and teaching. A growing number of students find their undergraduate engineering education is excellent preparation for careers in business, law and medicine.

The baccalaureate program in computer science provides a solid foundation for a career in that field. Since both the engineering and computer science programs are offered within the school, computer science majors are exposed to the hardware as well as the software aspects of the profession. Thus, students in the computer science program prepare themselves for careers in the traditional fields of systems programming, data processing and systems analysis, as well as in such interdisciplinary fields as artificial intelligence, robotics, computer architecture, computer graphics, pattern recognition and scientific computation.

By selecting appropriate concentrations and minors, students can combine their studies in engineering and/or computer science with advanced preparation in a number of related fields.

The School of Engineering and Computer Science also offers a minor in computer science for nonmajors.

### **Graduate programs**

The School of Engineering and Computer Science offers programs leading to the Master of Science degree in electrical and computer engineering, mechanical engineering, systems engineering, computer science and engineering, and the Doctor of Philosophy degree in systems engineering which involves a blending of various disciplines.

For more information, see the *Oakland University Graduate Catalog*.

### **Center for Robotics and Advanced Automation**

The School of Engineering and Computer Science has a Center for Robotics and Advanced Automation. Founded in 1981, it has since become a center of research excellence. The main goals of the center are to contribute to the demand for high technology and industrial productivity in the United States and to create a partnership among industries, government and academic communities to solve problems of common interest, particularly in intelligent robotics, intelligent machine vision and automated manufacturing.

## **Admission**

### **High school preparation**

Entering freshmen planning to major in engineering or computer science should have taken at least four years of high school mathematics, including trigonometry. A solid background in English composition is essential for all majors. Additional preparation should include course work in chemistry and physics. Drafting and machine shop practice courses are useful, but not necessary. Normally, a 3.00 (B average) is required for admission to programs in the School of Engineering and Computer Science.

### **Transfer policy**

The programs offered by the School of Engineering and Computer Science are designed to meet accreditation criteria, as well as to reflect the Oakland University philosophy of educa-

tion. The programs are more than an assemblage of courses; they are designed to blend theory and experiment, and to integrate fundamental mathematical and scientific background into advanced analysis and design work.

To ensure the integrity of its programs, the School of Engineering and Computer Science has adopted the following transfer policy. Records of students transferring to Oakland University from other academic institutions are evaluated and transfer credit is granted as appropriate. Once matriculated at Oakland, students are expected to complete all remaining course work for the degree at Oakland University. Students who plan to take courses at other universities must have prior written consent of the chair of their major. Students who have completed 62 semester hours of credit from any accredited institution, including Oakland University, may not transfer additional credits or course equivalents from community or junior colleges.

Students planning to transfer into one of the engineering programs should present the following: four semester courses in analytic geometry and calculus, including linear algebra and differential equations; two semester courses in introductory college physics using calculus; and one or two semester courses in chemistry. Other credits in mathematics, science or engineering will be evaluated with reference to engineering graduation requirements. Technician course credits generally do not apply to these requirements.

Community college students who plan to transfer into an engineering program are advised to follow the transfer program prescribed by the Michigan Engineering College/Community College Liaison Committee. Brochures describing the program are available from community colleges or the School of Engineering and Computer Science. Generally, community college students with associate degrees have satisfied the general education requirements of Oakland University's School of Engineering and Computer Science.

Students planning to transfer into the computer science program should complete one year of course work in calculus, one course in linear algebra and two semester courses in introductory college physics using calculus. A course in programming in a high-level language, such as PASCAL or PL/I, and a course in assembly programming are desirable. Whenever possible, further course work in computer science should be planned with an Oakland University adviser to ensure compatibility with university requirements.

### **Internal transfer**

Oakland University students seeking admission to the School of Engineering and Computer Science from other programs will be considered after they have completed the following courses: MTH 154, MTH 155, PHY 151 and PHY 152. Normally, an overall grade point average of 3.00 in all of the courses taken at Oakland University and good performance in the above listed four courses in calculus and physics are required for internal transfer.

## **Academic Advising and Plans of Study**

During the initial couple of semesters, the programs of study for all entering freshmen are focused toward acquiring math, science, writing and programming skills. The pattern of the academic program during this period is more or less uniform for most students. Also, during this period, engineering students will be taking EGR 101, "Introduction to Engineering." This course is taught by faculty from all the departments of the school. They provide a perspective of their specialty areas, thereby increasing professional awareness of the students. Students are encouraged to meet with the faculty and seek further clarification or professional advice.

As soon as students acquire major standing (see below), they are assigned to a faculty adviser. It is mandatory for the students to consult their faculty advisers to plan a meaningful program of professional study in the major immediately after major standing has been granted and at least once every fall and winter semester until their graduation. Failure to do so will result in cancellation of the students' registration for the succeeding semester.

In order to further facilitate the student-faculty interaction, one week of each term will be set aside as "Advising Week." During the fall term this is normally the week before early registration. During the winter term this is normally the week beginning on the first Monday of April.

In consultation with the faculty advisers, engineering students should make sure that they acquire at least 16 credits of design while satisfying their overall program requirements. Design credits can be acquired through the study of various subjects. For each program, relevant design courses and credits are listed in the school's "Undergraduate Student Handbook" available from the Advising Office in 159A Dodge Hall.

The school's academic advising office oversees specific program requirements. Students who have questions about transfer credit, academic standing, major standing, petitions or the details of degree requirements should consult the academic adviser in 159A Dodge Hall. Students of the School of Engineering and Computer Science must complete a Plan of Study form, which is a timetable of courses to be taken for undergraduate credit. They should complete the form as early as possible, but no later than the end of the semester in which they complete 48 credits. Transfer students should submit the form when they enter Oakland University, regardless of the number of credits they have already earned.

Students are responsible for updating their plans regularly, preferably each semester. Although advisers are obligated to help students plan their programs, the responsibility for fulfilling degree requirements remains with students.

## Degree Requirements

### General requirements for the baccalaureate degrees

The following general requirements must be met by students seeking a bachelor's degree in computer engineering, electrical engineering, mechanical engineering, systems engineering, engineering chemistry, engineering physics or computer science.

Students must:

1. Complete at least 128 credits for all programs. At least 32 credits must be in courses at the 300-level or above.
2. Complete at least 32 credits at Oakland University. (Refer to the transfer policy of the School of Engineering and Computer Science for further clarification.) The credits taken at Oakland must include the following for students majoring in:
  - a. computer, electrical, mechanical or systems engineering, at least 24 credits in engineering core or professional subjects required for the major, of which 16 must be design credits;
  - b. engineering chemistry and engineering physics, at least 16 credits in required engineering courses, and 16 credits in chemistry or physics courses required for the major;
  - c. computer science, at least 20 credits in computer science courses required for the major.
3. Take the last 8 credits needed to complete baccalaureate requirements at Oakland University.
4. Demonstrate writing proficiency by meeting the university standard in English composition (see *Undergraduate degree requirements*).
5. Fulfill the university general education requirement (see below and *Undergraduate degree requirements*.)
6. Be admitted to major standing in the major of the student's choice.
7. Complete the requirements specified for the elected major.
8. Earn a cumulative grade point average of at least 2.00 in courses taken at Oakland University.
9. Complete an Application for Degree card at the Office of the Registrar and pay the graduation service fee.



### General education

All Oakland University students must take a series of courses distributed across eight field groups for broad exposure to a liberal arts education. Engineering and computer science students automatically satisfy two of these groups (natural science and technology; mathematics and logic) by virtue of required courses. In addition to satisfying the remaining six groups, engineering and computer science students must arrange to acquire depth in a particular area of general education study. The requirements may be satisfied by selecting one of the course sequences listed below and choosing the remaining courses to span the field groups not represented.

Theatre and dramatic expression: THA 268 or 269 and ENG 306 (arts and literature)

American history and literature: HST 114 and ENG 224 (western civilization and literature)

Classical philosophy and mythology: PHL 204 and ENG 312 (western civilization and literature)

Russian civilization and its Communist transformation: IS 260 and PS 377 (international studies and western civilization)

Chinese civilization and its Communist transformation: IS 210 and PS 377 (international studies and western civilization)

Macro-economics in the context of American history: HST 115 and ECN 200 (or 210), (western civilization and social science)

Comparative politics: PS 131 and PS 377 (western civilization and social science)

Culture, science and technology: AN 102 or AN 300 and HST 210 (social science and western civilization)

Self and society in American history: HST 114 or 115 and SOC 206 (western civilization and social science)

Asian literature and civilization: LIT 100 and IS 210 (or 220 or 240), (literature and international studies)

Language and civilization: SPN 114, RUS 114, CHE 114, JPN 114 or HIU 114 and the corresponding IS course (250, 260, 210, 220 or 240), (language and international studies)

### Suggested sequence for the freshman year

Following is an example of a suggested sequence of courses for freshmen entering the School of Engineering and Computer Science with the necessary preparation in mathematics.

**Engineering majors** — First semester: EGR 101, MTH 154, CHM 144 or CHM 164, CSE 132, Rhetoric or general education course. Second semester: CSE 171, MTH 155, PHY 151, general education course.

**Computer science majors** — First semester: CSE 132, MTH 154, Rhetoric or general education course. Second semester: CSE 262, MTH 155, PHY 151, general education course. Computer science majors are encouraged to take the 1-credit course EGR 101 as a free elective.

Scheduling for subsequent years depends on students' selected majors or minors, but should be tailored to promptly meet requirements for admission to major standing. For sample schedules, refer to the department listings in this catalog or to the student handbook of the School of Engineering and Computer Science.

Students who are not prepared to enter these mathematics and science courses without additional preparation in the subject areas must modify their schedules accordingly. Such students may require additional time to complete degree requirements, unless they correct the deficiencies by enrolling during the spring and summer sessions following the freshman year.

### Admission to major standing

To enroll in 300- or 400-level courses and to become candidates for the baccalaureate degree, students of the School of Engineering and Computer Science must gain major standing in their selected majors. An application for major standing should be submitted during the semester in which students complete all requirements for admission.

Students lacking major standing may enroll in 300- or 400-level engineering or computer science courses only by presenting at registration an approval form signed by either the academic adviser or the chair of the major. The purpose of this process is to ensure that students can correct and are working to correct outstanding deficiencies preventing admission to major standing. Forms may be obtained in the academic advising office, 159A Dodge Hall.

Admission to major standing in each of the programs of the School of Engineering and Computer Science requires writing proficiency and satisfactory completion of course work in mathematics, science and the major, as designated below.

#### **Computer science and computer engineering**

Mathematics: MTH 154-155, MTH 256, APM 263. Science: PHY 151, PHY 152. Major: EGR 101 (for computer engineering majors only) CSE 132, CSE 171, CSE 262, CSE 280.

#### **Electrical engineering and systems engineering**

Mathematics: MTH 154-155, MTH 256, APM 257. Science: CHM 144 or CHM 164, PHY 151, PHY 152. Major: EGR 101, CSE 132, CSE 171 and ME 221.

#### **Mechanical engineering**

Mathematics: MTH 154-155 and either MTH 254 or both MTH 256 and APM 257. Science: CHM 144 or CHM 164, PHY 151, PHY 152. Major: EGR 101, CSE 132, CSE 171, ME 221.

#### **Engineering physics**

Mathematics: MTH 154-155, MTH 254. Science: CHM 144-145 or CHM 164-165, PHY 151, PHY 152, PHY 158. Major: CSE 132, CSE 171, EE 222.

#### **Engineering chemistry**

Mathematics: MTH 154-155, MTH 254. Science: CHM 144-145 or CHM 164-165, CHM 149, APM 257. Major: EGR 101, CSE 132, CSE 171, ME 221.

To satisfactorily complete the requirements for major standing a student must a) have an average of at least 2.00 in each of the mathematics, science and major course groupings; b) have no more than two grades below 2.0 in the required courses; c) not have repeated any course more than twice; and d) not have repeated more than three different courses. Courses in which a W (withdrawal) grade is recorded will not be counted.

Transfer students may satisfy the requirements for major standing by using transfer credits.

### **Course load**

Students should strike a balance between their course load and other commitments. In general, students carrying a full load of 16 credits per semester should not be employed for more than 20 hours per week. Students who are employed 40 hours per week generally should not carry a course load of more than 4 credits per semester.

The university's maximum course load policy is detailed in the Academic Policies and Procedures section (see *Course and credit system*).

### **Graduation check**

To ensure they have met all requirements, students must participate in a final program audit during the semester preceding the one in which they expect to graduate. Application may be made in the advising office, 159A Dodge Hall.

### **Cooperative Education**

#### **General information**

Students in the School of Engineering and Computer Science who want to combine relevant work experience with their college education are encouraged to participate in the university's cooperative education program. Co-op employment provides practical training that is related to a student's field of study and forms an integral part of the educational program. It enables students to relate their academic studies with practical applications, and it gives them early contact with practitioners in their fields.

Beginning in the junior year, co-op students alternate four-month semesters of full-time study with equal periods of paid, full-time employment in business, industry or government. The program coordinator and the employer work together to ensure that the practical training becomes progressively more challenging and carries increasingly greater responsibility as students advance through the curriculum.

### Requirements of the cooperative education program

Students interested in the cooperative education program in engineering or computer science should apply through the Office of the Cooperative Education Coordinator, 275 Vandenberg Hall (370-3252).

To be admitted, a student must:

1. Be granted major standing in engineering or computer science (see above), or file an approved plan for achieving major standing, signed by the chair of the major. In addition, engineering students must have completed the mathematics sequence appropriate to their major.
2. Normally, have a cumulative grade point average of at least 2.80.
3. Have the approval of the School of Engineering and Computer Science, the cooperative education coordinator for the school and the employer.

Transfer students must have completed at least one semester of full-time study at Oakland University before acceptance into the program.

To remain in good standing in the cooperative education program, students must:

1. Complete alternate semesters of full-time study and full-time work.
2. Complete at least 12 credits of work appropriate to their elected major during each semester of study, maintaining a cumulative grade point average of at least 2.80.
3. Complete EGR 391 during the semester following each co-op assignment.
4. Submit a satisfactory training report (as part of the requirements for EGR 391) within four weeks of the beginning of the semester following each co-op assignment.
5. Receive a satisfactory employer evaluation for each assignment.

The grade assigned in EGR 391 will give added weight to the employer's evaluation, the student's written training report, a progress interview with the coordinator and the student's participation in regularly scheduled classes.

Students who do not meet the conditions for good standing will be subject to dismissal from the co-op program.

The co-op program is administered by the Department of Placement and Career Services.

## Double major

To earn two majors in engineering or in engineering and computer science, students must complete all requirements of both programs. Further, in addition to the credit hours needed for one major, the student must complete a minimum of 12 credit hours in pertinent technical courses applicable to the second major.

Students seeking two degrees should consult the university's requirements (see *Additional undergraduate degrees and majors*).

## Electives

### Approved science electives

Approved science electives for majors in computer science and in computer, electrical, mechanical and systems engineering are: biology courses numbered 190 and higher; CHM 145, CHM 165 (CHM 144 for computer science majors) and chemistry courses numbered 225 and higher, except CHM 497; physics courses numbered 317 and higher, except PHY 341; and ENV 308 and ENV 373. Special topics and independent study courses require prior approval.

Whereas any one of the above courses may be taken to satisfy the science elective, some subjects have a greater relevance and usefulness than others to a specific major. Such subjects have been identified for each major, under departmental listings, later on in this catalog. It is highly recommended that students take one of the recommended science elective courses listed under the departmental requirements.

**Free electives ineligible for credit toward the degree**

Students entering the School of Engineering and Computer Science are expected to have adequate preparation for the required introductory courses in mathematics, physics and chemistry. Courses in these areas that are more elementary than MTH 154, PHY 151 and CHM 144 may not be presented for credit toward a degree in engineering and computer science. Specifically, the following courses and their equivalents are not recognized for credit toward the degree: MTH 011, MTH 012, MTH 100, MTH 121-122, MTH 141, PHY 101, PHY 102, CHM 104, CHM 110 and CHM 140.

New courses in mathematics, physics or chemistry that may be introduced in the future will be added to the list if the content warrants. A current list of disallowed courses is maintained in the office of the academic adviser, 159A Dodge Hall, and is available for inspection.

**Concentrations and minors**

Students who wish to add an established minor or concentration or otherwise participate in an interdepartmental program must apply for admission and assistance in planning a program. Application may be made to the coordinator of the appropriate program committee or department involved.

Described below are the requirements for minors and concentrations that have been approved for engineering and computer science majors. Students planning medical, dental or optometry careers are advised to take the concentration in preprofessional studies in medicine, dentistry and optometry (see *Concentrations* in the Arts and Sciences portion of the catalog).

**Accounting**

**Coordinator:** *David D. Sidaway*

For computer science majors, a minimum of 20 credits. To obtain a minor in accounting, a student must complete the following courses with a grade of at least 2.0 in each course: ACC 200, ACC 210 and 12 additional credits in accounting (ACC) courses for which the student has the prerequisites.

**Applied mathematics**

**Coordinator:** *Jerrold W. Grossman*

For engineering and computer science majors, a minimum of 22 credits. To obtain a minor in applied mathematics, a student must complete the following courses with a grade of 2.0 or better in each: MTH 254, MTH 256, APM 331, STA 226 or another approved statistics course, and two courses chosen from APM 257, APM 263 and courses labeled MTH, APM, STA or MOR with a number of 300 or higher (with the exception of MTH 414 and MTH 497). Students should consult an adviser in the Department of Mathematical Sciences when planning their programs.

**Applied statistics**

**Coordinator:** *Harvey Arnold*

For engineering and computer science majors, a minimum of 16 credits. To obtain a concentration in applied statistics, a student must complete at least 16 credits in statistics with an average grade of at least 2.0. Courses must include STA 226 or another approved introductory course, STA 322, STA 323 and STA 324. Students should consult an adviser in the Department of Mathematical Sciences when planning their programs.

**Biology**

**Coordinator:** *Nalin J. Unakar*

For computer science majors, a minimum of 20 credits. To obtain a liberal arts minor in biology, a student must take a minimum of 20 credits in biology, including BIO 190, BIO 195 and BIO 200. At least 8 credits must be in courses numbered 301 or higher. A minimum of 8 credits must be taken at Oakland University.

**Chemistry****Coordinator:** *Paul Tombouliau*

For computer science majors, a minimum of 26 credits. To obtain a liberal arts minor in chemistry, a student must take CHM 144-145, CHM 149, CHM 225, CHM 203-204 or CHM 234-235 and CHM 342. This minor is also available for engineering majors, requiring a minimum of 24 credits. Engineering majors must complete the following courses with an average grade of 2.0 or better: CHM 144-145, CHM 149, CHM 203 or CHM 225, CHM 342, CHM 470 and CHM 471. A minimum of 8 credits must be taken at Oakland University.

**Economics****Coordinator:** *Ronald L. Tracy*

For engineering and computer science majors, a minimum of 18-20 credits. To obtain a minor in economics (offered by the School of Business Administration), a student must complete the following courses with a grade of at least 2.0 in each course: ECN 150 or ECN 210 or ECN 200-201, and 12-16 additional credits in economics (ECN) courses for which the student has the prerequisites. Students who have taken ECN 150 need 16 additional credits to earn a minor.

**Environmental studies****Coordinator:** *Paul Tombouliau*

For engineering majors, a minimum of 24 credits. To obtain a concentration in environmental studies, a student must complete the following courses: a) CHM 203, ENV 308 and EGR 407; b) 8 credits of electives chosen from ENV 372, ENV 373, and BIO 301; and c) 4 credits of EGR 490 or EGR 494 on an approved environmental engineering topic.

**Finance****Coordinator:** *J. Austin Murphy*

For computer science majors, a minimum of 22 credits. To obtain a minor in finance, a student must complete the following courses and any prerequisites required: ACC 200, QMM 250, FIN 322 and 8 additional credits in finance (FIN) courses. A grade of at least 2.0 in each course is required.

**Linguistics****Coordinator:** *William Schwab*

For computer science majors, a minimum of 20 credits. To obtain a liberal arts minor in linguistics, a student must complete the following courses with an average grade of at least 2.0: ALS 176 or LIN 207, LIN 301, and at least 12 linguistics (LIN) credits at the 300 or 400 levels, 4 of which must be at the 400 level.

**Management****Coordinator:** *Howard S. Schwartz*

For engineering and computer science majors, a minimum of 22-24 credits. To obtain a minor in management, a student must complete the following courses with a grade of at least 2.0 in each course: ECN 210 or both ECN 200 (or ECN 150) and ECN 201, ACC 200, ORG 330, and 8 additional credits chosen from 300- or 400-level courses in ACC, FIN, MGT, MIS, MKT, ORG, POM or QMM for which the student has met the prerequisites.

**Physics****Coordinator:** *Norman Tepley*

For computer science majors, a minimum of 20 credits. To obtain a liberal arts minor in physics, a student must complete the following courses with an average grade of at least 2.0: PHY 151-152, PHY 158, and at least 8 credits in physics courses numbered 300 or higher.

### Quantitative methods

Coordinator: David P. Doane

For computer science majors, a minimum of 16-18 credits. To obtain a minor in quantitative methods, a student must complete the following courses with a grade of at least 2.0 in each course: QMM 250 or STA 226; three courses chosen from POM 343, POM 448, QMM 440, QMM 452, ECN 405, STA 323 and STA 324.

### Prerequisites

In planning their schedules, students should ensure that they satisfy prerequisite and corequisite conditions for courses. Students will have their registrations cancelled if they register for courses for which they do not meet the conditions. Students will be liable for any financial penalties incurred by such cancellation.

### Independent study and project courses

Independent study and project courses numbered 490 and 494 are available to provide enrichment opportunities to qualified students. They are not intended as substitutes for regular course offerings; rather, they allow students to investigate areas of interest outside the scope of regular courses, examine subjects more deeply than can be accommodated in regular courses, or gain educational experiences beyond that of regular course work.

To register for an independent study or project course, students must first submit a plan of work to the faculty member who will supervise the course. The plan must be approved by the faculty member and the chair of the major before students may register for the course.

Application forms are available in the advising office, 159A Dodge Hall.

### Petitions

Waivers of specific academic requirements may be initiated by submitting a petition of exception (see *Petition of exception*).

Students seeking a review of their academic standing within the school or students who wish to make a formal complaint should submit a written petition to the chair of their major or to the associate dean for administration. Petitions will be processed according to established university procedures.

### Academic conduct

Students are expected to abide by the principles of truth and honesty, which are essential to fair grading. Academic misconduct in any form is not permitted.

Students who are found guilty of academic misconduct in any course offered by the school, as determined by the university academic conduct committee, may be subject to penalties ranging from a reduced grade for the assignment, to a grade of 0.0 for the entire course, to academic probation, to suspension or dismissal from the university.

All assignments must be the independent work of each student, unless the professor of the course gives explicit permission relaxing this requirement.

For a detailed description of the university academic conduct policy, see the *Schedule of Classes*, the "Oakland University Student Handbook" or the Academic Policies and Procedures section of this catalog.

### Academic standing

The performance of students in the School of Engineering and Computer Science will be reviewed at the end of each semester to determine academic progress.

Good academic standing in the school requires a cumulative grade point average of at least 2.00 in: a) courses required for the major; b) cognate courses in mathematics and science; and c) all courses taken at Oakland University. Students whose cumulative grade point averages fall below 2.00 in one or more of the three categories will be placed on provisional status.

While on provisional status, students must have their programs of study approved by the chair of their major. Students who fail to remove provisional conditions after one semester are generally ineligible to continue their programs. However, provisional status may be continued if students are judged to be making substantial progress toward correcting the deficiency. (For part-time students, 12 consecutive credits of course work will be considered equivalent to one semester.)

Students on provisional status may not serve on committees of the School of Engineering and Computer Science.

Students who become ineligible to continue enrollment in the School of Engineering and Computer Science may transfer to another school or college within the university.

The above rules were established by the undergraduate curriculum committee of the School of Engineering and Computer Science. Students wishing to appeal a ruling on their academic status must address a written petition to the committee on academic standing. Petitions may be submitted to the associate dean for administration or the academic adviser.

### **Unsatisfactory performance**

Unsatisfactory (U) grades and grades less than 2.0 are considered substandard. A student within the School of Engineering and Computer Science who repeats a course in which a grade below 2.0 has been earned must repeat that course at Oakland University. Courses in which a grade below 2.0 has been earned may not be subsequently passed by competency examination or independent study.

# DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

**Chairperson:** *Glenn A. Jackson*

**Professors:** *David E. Boddy, Richard E. Haskell, Glenn A. Jackson, Janusz W. Laski, Thomas G. Windeknecht*

**Associate professors:** *Subramaniam Ganesan, Ronald J. Srodawa, Sarma R. Vishnubhotla, Christian C. Wagner*

**Assistant professors:** *Frank A. Cioch, Fatma Mili*

**Visiting assistant professor:** *Qiuming Zhu*

**Special instructor:** *Jerry E. Marsh*

**Adjunct professor:** *Michael Marcotty*

**Adjunct associate professor:** *Osman D. Altan*

## Major in Computer Engineering

Major technological advances are being made in the computer field at a rapid pace, and it is essential that computer engineering students are not only aware of these advances but prepared to work in this changing environment. Students should gain a strong background in the fundamentals of computer engineering and develop a willingness to accept and thrive on change.

The computer engineering program at Oakland University is designed to provide students with the basic knowledge and skills needed to function effectively in computer-related activities in the years ahead. A balance between theoretical and practical experience and an emphasis on the software and hardware aspects of computers are key elements to the university's computer engineering major.

To earn the Bachelor of Science in Engineering with a major in computer engineering, students must complete a minimum of 128 credits. They must demonstrate proficiency in writing (see *Undergraduate degree requirements*) and meet the following requirements:

	Credits
<b>General education (excluding mathematics and science)</b>	24
<b>Mathematics and science</b>	
MTH 154-155    Calculus	8
MTH 256        Introduction to Linear Algebra	3
APM 257        Introduction to Differential Equations	3
APM 263        Discrete Mathematics	4
CHM 144        General Chemistry	4
PHY 151-152    Introductory Physics	8
Approved science elective*	4
	<hr/> 34
<b>Computer science and engineering core</b>	
CSE 132        Introduction to Computer Science	4
CSE 171        Introduction to Digital Logic and Microprocessors	4
CSE 262        Data Structures	4
CSE 280        Computer Organization and Assembly Language Programming	4
	<hr/> 16



**Engineering core**

EGR 101	Introduction to Engineering	1
EGR 401	Professional Engineering	1
EE 222	Introduction to Electrical Circuits	4
EE 384	Electronic Materials and Devices	4
ME 221	Statics and Dynamics	4
ME 241	Thermodynamics	4
SYS 317	Engineering Probability and Statistics	3
SYS 325	Lumped Parameter Linear Systems	3
		<hr/> 24

**Professional subjects**

<b>Required</b>		
EE 326	Electronic Circuit Design	4
CSE 388	Computer Hardware Design	4
CSE 464	Computer Organization and Architecture	4
<b>Senior design course</b>		4
CSE 470	Microprocessor-based System Design	
or		
EGR 490	Senior Project**	
		<hr/> 16

**Electives — 8 credits chosen from:**

CSE 343	Foundations of Computer Science (4)	
Any 400-level CSE course (4-8)		
EE 426	Advanced Electronics (4)	
EE 437	Introduction to Communication Electronics (4)	
SYS 422	Intelligent Robotics (4)	
SYS 431	Automatic Control Systems (4)	
SYS 463	Foundations of Computer-Aided Design (4)	
SYS 469	Simulation in Engineering (4)	
ECN 414	Engineering Economics (2)	
EGR 490***	Senior Project (2-4)	
EGR 494***	Independent Study (2-4)	
		<hr/> 8

**Free electives** (may be used to satisfy writing proficiency)

For limitations on free electives see page 232.	6
	<hr/> Total 128

\*Approved science electives are given on page 231. Those most highly recommended for computer engineering students are CHM 145 and 165, and any PHY course numbered 325 or higher (except PHY 341).

\*\*Needs approval for its design content by the chairperson of the Department of Computer Science and Engineering

\*\*\*Needs prior permission of the chairperson of the Department of Computer Science and Engineering.

**Design requirements**

All computer engineering graduates must complete a total of at least 16 credit hours of design while satisfying their overall program requirements. In meeting this requirement, they must seek their faculty adviser's approval. Also, consult the SECS "Undergraduate Student Handbook" for a listing of the number of design credit hours contained in each course.

**Economics requirement**

In addition to the requirements stated above, computer engineering students must fulfill the economics requirement. This may be met by completion of ECN 414 as a professional elective or by completion of ECN 150, ECN 200 or ECN 210 as a part of the general education requirement.

**Performance requirements**

In addition to the previously stated requirements, satisfactory completion of the program requires an average grade of at least 2.0 within each group: namely, mathematics and science, core subjects and professional subjects. Within professional subjects, at most two grades below 2.0 are permitted; at most two different courses may be repeated, and a total of three repeat attempts is permitted.

### Sample computer engineering schedule

Students entering the School of Engineering and Computer Science with the required background may follow a schedule such as the one indicated below. However, students will need additional time to complete the program if they do not have the required background upon entrance to the program.

Freshman year — fall semester: EGR 101, MTH 154, CHM 144, CSE 132, rhetoric or general education, 17 credits; winter semester: MTH 155, PHY 151, CSE 171, general education, 1-credit free elective, 17 credits.

Sophomore year — fall semester: MTH 256, PHY 152, CSE 262, general education, 1-credit free elective, 16 credits; winter semester: APM 263, EE 222, CSE 280, general education, 16 credits.

Junior year — fall semester: APM 257, ME 221, SYS 317, EE 326, general education, 18 credits; winter semester: ME 241, CSE 388, SYS 325, general education, 15 credits.

Senior year — fall semester: EE 384, two professional electives, science elective, EGR 401, 17 credits; winter semester: CSE 464, professional elective, 4-credit free elective, 12 credits.

### Major in Computer Science

The program in computer science leading to a Bachelor of Science degree prepares students for professional practice in systems programming, software design and computer applications, or for graduate study in computer science. The program provides a solid foundation based on the organization, processing and display of information. Through choice of minor, students may broaden their areas of expertise to include such diverse subjects as applied mathematics, business applications, management science or other areas that utilize computers in everyday operations.

To earn the Bachelor of Science degree with a major in computer science, students must complete a minimum of 128 credits, demonstrate writing proficiency (see *Undergraduate degree requirements*) and meet the following requirements:

	Credits
<b>General education (excluding mathematics and science)</b>	24
<b>Mathematics and science</b>	
MTH 154-155    Calculus	8
MTH 256        Introduction to Linear Algebra	3
APM 263        Discrete Mathematics	4
STA 226        Applied Statistics (or approved substitute)	4
PHY 151-152    Introductory Physics	8
PHY 158        General Physics Laboratory	2
Approved science elective*	4
	33
<b>Computer science and engineering core</b>	
CSE 132        Introduction to Computer Science	4
CSE 171        Introduction to Digital Logic and Microprocessors	4
CSE 262        Data Structures	4
CSE 280        Computer Organization and Assembly Language Programming	4
	16
<b>Professional subjects</b>	
<b>Required</b>	
Two programming language laboratories (see Course offerings) with one from Group A and one from Group B	2
CSE 335        Programming Languages	4
CSE 343        Foundations of Computer Science	4
CSE 402        Social Implications of Computing	1
CSE 450        Operating Systems	4
	15

**Electives — 12 credits chosen from:**

At least one of the following software design oriented courses: CSE 413, CSE 415, CSE 416, CSE 438, CSE 439, CSE 440, CSE 445, CSE 447, CSE 455, CSE 465 (4-12)

Any 300- or 400-level CSE course (4-8)

SYS 463 Foundations of Computer-Aided Design (4)

SYS 469 Simulation in Engineering (4)

EGR 490\*\* Senior Project (2-4)

EGR 494\*\* Independent Study (2-4)

**Approved minor**

**Free electives** (may be used to satisfy writing proficiency)

For limitations on free electives see page 232.

12

20

8

Total 128

\*Approved science electives are given on page 231. Those most highly recommended for computer science students are CHM 144 and 164, and any PHY course numbered 325 or higher.

\*\*Needs prior approval of the chairperson of the Department of Computer Science and Engineering.

**Performance requirements**

In addition to previously stated requirements, satisfactory completion of the program requires an average grade of at least 2.0 within each group: namely, mathematics and science, core subjects, professional subjects and approved minor. Within professional subjects, at most two grades below 2.0 are permitted, at most two different courses may be repeated and a total of three repeat attempts is permitted.

**Approved minors**

Computer science students must complete an approved minor with an average grade point of at least 2.00. Approved minors are: accounting, applied mathematics, applied statistics, biology, chemistry, economics, finance, linguistics, management, physics and quantitative methods (see *Concentrations and minors*, above).

Other minors or alternate programs may be approved by petition. Students must apply to the coordinator of the program for assistance in planning their minors and to obtain certification. Courses used to satisfy minor requirements may also be used to meet other program requirements.

**Sample computer science schedule**

Students entering the School of Engineering and Computer Science with the required background may follow a schedule such as the one indicated below. However, students will need additional time to complete the program if they do not have the required background upon entrance to the program.

Freshman year — fall semester: MTH 154, CSE 132, general education, English composition or general education, 1-credit free elective, 17 credits; winter semester: MTH 155, PHY 151, CSE 262, general education, 16 credits.

Sophomore year — fall semester: MTH 256, PHY 152, PHY 158, CSE 171, programming lab, 14 credits; winter semester: APM 263, CSE 280, course in minor, general education, programming lab, 17 credits.

Junior year — fall semester: STA 226, CSE 335, course in minor, general education, 16 credits; winter semester: CSE 343, course in minor, general education, free elective, 16 credits.

Senior year — fall semester: CSE 402, CSE 450, professional elective, course in minor, science elective, 17 credits; winter semester: two professional electives, course in minor, free elective, 15 credits.

**Minor in computer science for nonengineering majors**

The School of Engineering and Computer Science offers a minor in computer science to students with majors other than engineering or computer science.

Students must earn 20 credits in computer science (CSE) courses, including: a minimum of 8 credits taken from CSE 335, CSE 340, CSE 343, CSE 345 or any 400-level CSE course approved by an adviser; a maximum of 8 credits from CSE 125, and either CSE 130 or CSE 132; a maximum of 8 credits from CSE 220, CSE 248, CSE 280 and CSE 262; and a maximum of 4 credits in "Programming Language Labs." A grade point average of at least 2.00 is required in courses counted toward a minor.

Students seeking a minor must obtain permission from the Department of Computer Science and Engineering in order to register for CSE courses at the 300 and 400 levels.

# DEPARTMENT OF ELECTRICAL AND SYSTEMS ENGINEERING

**Chairperson:** *Naim A. Kheir*

**John F. Dodge Professor:** *Nan K. Loh*

**Professors:** *David H. Evans, Naim A. Kheir, Keith R. Kleckner, Tung H. Weng, Howard R. Witt*

**Associate professors:** *Hoda S. Abdel-Aty-Zohdy, Robert P. Judd, Andrzej Rusek, Mohamed A. Zohdy*

**Assistant professors:** *Ka C. Cheok, Manohar Das, You L. Gu, Ken-Chung Liu, Robert P. Van Til*

**Adjunct professor:** *Donald R. Falkenberg*

**Adjunct associate professor:** *Ronald R. Beck*

## Major in Electrical Engineering

Electrical engineering is a broad field encompassing a number of disciplines. Oakland University's undergraduate program in electrical engineering is designed to provide students with the basic knowledge and skills needed to function as electrical engineers in the coming decades. Students obtain solid grounding in the fundamentals of analog and digital circuits, electronics, electromagnetics and electronic devices. In addition, a strong laboratory component of the program offers numerous design opportunities and allows students to relate theoretical ideas to practical problems.

Electrical engineering faculty members are engaged in research related to new developments in the field. Their activities contribute to a well-developed, up-to-date curriculum.

To earn the Bachelor of Science degree with a major in electrical engineering, students must complete a minimum of 128 credits, demonstrate writing proficiency (see *Undergraduate degree requirements*) and meet the following requirements:

	Credits
<b>General Education</b> (excluding mathematics and science)	24
<b>Mathematics and science</b>	
MTH 154-155    Calculus	8
MTH 254        Multivariable Calculus	4
MTH 256        Introduction to Linear Algebra	3
APM 257        Introduction to Differential Equations	3
CHM 144        General Chemistry	4
PHY 151-152    Introductory Physics	8
Approved science elective*	4
	<hr/> 34
<b>Engineering core</b>	
EGR 101        Introduction to Engineering	1
EGR 401        Professional Engineering	1
CSE 132        Introduction to Computer Science	4
CSE 171        Introduction to Digital Logic and Microprocessors	4
EE 222         Introduction to Electrical Circuits	4
EE 384         Electronic Materials and Devices	4

ME 221	Statics and Dynamics	4
ME 241	Thermodynamics	4
SYS 317	Engineering Probability and Statistics	3
SYS 325	Lumped Parameter Linear Systems	3
		32
<b>Professional subjects</b>		
<b>Required</b>		
EE 326	Electronic Circuit Design	4
EE 345	Electric and Magnetic Fields	4
EE 351	Electromechanical Energy Conversion	4
EE 378	Design of Digital Systems	4
EE 437	Introduction to Communication Electronics	4
SYS 431	Automatic Control Systems	4
		24
<b>Electives — 8 credits chosen from:</b>		
At least one of the following design courses: EE 426, EE 472, SYS 433, SYS 458 (4-8)		
Any 400 level course with an EE, CSE or SYS designation (4)		
EGR 490**	Senior Project (2-4)	
EGR 494**	Independent Study (2-4)	
ME 454	Solar and Alternate Energy Systems (4)	
PHY 472	Quantum Mechanics I (4)	
ECN 414	Engineering Economics (2)	
		8
<b>Free electives</b> (may be used to satisfy writing proficiency)		6
For limitations on free electives, see page 232.		
	Total	128

\*Approved science electives are given on page 231. Those most highly recommended for electrical engineering students are PHY 331, 361 and 371.

\*\*Needs prior approval of the chairperson of the Department of Electrical and Systems Engineering.

#### Depth areas

Electrical engineering students desiring depth in a particular area should consider the following professional elective packages: Electronics — EE 426, EE 487; Control systems — SYS 422, SYS 433; Computers — EE 470, EE 472; Power systems — SYS 458, ME 454.

#### Design requirements

All electrical engineering graduates must complete a total of at least 16 credit hours of design while satisfying their overall program requirements. In meeting this requirement, they must seek their faculty adviser's approval. Also, consult the SECS "Undergraduate Student Handbook" for a listing of the number of design credit hours contained in each course.

#### Economics requirement

In addition to the requirements stated above, electrical engineering students must fulfill the economics requirement. This may be met by completion of ECN 414 as a professional elective or by completion of ECN 150, 200 or 210 as a part of the general education requirement.

#### Performance requirements

In addition to previously stated requirements, satisfactory completion of the program requires an average grade of at least 2.0 within each required group: namely, mathematics and science, core subjects, and professional subjects. Within professional subjects, at most two grades below 2.0 are permitted, at most two different courses may be repeated and a total of three repeat attempts is permitted.

## Major in Systems Engineering

Systems engineering is a broad discipline with roots in a diverse spectrum of engineering fields. The coordination of engineering tasks and the assembly of a complex array of subsystems, such as in the Apollo and Space Shuttle programs, are typical of the systems approach to problem solving and design.

Oakland University's systems engineering program contains two options: dynamic systems and control, and manufacturing.

The dynamic systems and control program prepares students for the field of control engineering. The curriculum combines courses from electrical and mechanical engineering, along with a systems engineering control sequence. It is designed to teach the fundamentals of mechanical systems, control system design techniques, and the practical matter of implementing the controllers in modern electronic hardware.

The manufacturing program emphasizes the important role of the computer in systems design. This curriculum is anchored by a strong computer science component which, along with professional courses, prepares students for careers in simulation, computer-assisted design and systems optimization.

To earn the Bachelor of Science in engineering with a major in systems engineering, students must complete a minimum of 128 credits, demonstrate writing proficiency (see *Undergraduate degree requirements*) and meet the following requirements:

	Credits
<b>General education (excluding mathematics and science)</b>	24
<b>Mathematics and science</b>	
MTH 154-155 Calculus	8
MTH 256 Introduction to Linear Algebra	3
APM 257 Introduction to Differential Equations	3
APM 263* Discrete Mathematics (4) or	
MTH 254* Multivariable Calculus (4)	4
CHM 144 General Chemistry	4
PHY 151-152 Introduction to Physics	8
Approved science elective**	4
	<hr/> 34
<b>Engineering core</b>	
EGR 101 Introduction to Engineering	1
EGR 372 Properties of Materials	4
EGR 401 Professional Engineering	1
CSE 132 Introduction to Computer Science	4
CSE 171 Introduction to Digital Logic and Microprocessors	4
EE 222 Introduction to Electrical Circuits	4
ME 221 Statics and Dynamics	4
ME 241 Thermodynamics	4
SYS 317 Engineering Probability and Statistics	3
SYS 325 Lumped Parameter Linear Systems	3
	<hr/> 32
<b>Professional subjects for dynamic systems and control option (32 credits)</b>	
<b>Required</b>	
EE 326 Electronic Circuit Design	4
EE 351 Electromechanical Energy Conversion	4
EE 378 Design of Digital Systems	4
ME 321 Dynamics and Vibrations	4
SYS 431 Automatic Control Systems	4
SYS 433 Modern Control System Design	4
	<hr/> 24
<b>Electives — 8 credits chosen from:</b>	
At least one of the following design courses: SYS 422, SYS 458, EE 426, EE 472 (4-8)	
Any 400-level course with EE, CSE, SYS or ME designation (4)	
EGR 490*† Senior Engineering Project (2-4)	
EGR 494*† Independent Study (2-4)	
ECN 414 Engineering Economics (2)	
	<hr/> 8
<b>Professional subjects for manufacturing option (32 credits)</b>	
<b>Required</b>	
CSE 262 Data Structures	4
CSE 418 Applied Numerical Methods: Matrix Methods	4

SYS 410	Systems Optimization and Design	4
SYS 463	Foundations of Computer-Aided Design	4
SYS 469	Simulation in Engineering	4
SYS 483	Production Systems	4
		24
<b>Electives — 8 credits chosen from:</b>		
Any 400-level course with the SYS, CSE, EE or ME designation (4-8)		
EGR 490*†	Senior Project (2-4)	
EGR 494*†	Independent Study (2-4)	
ECN 414	Engineering Economics (2)	
		8
<b>Free Electives</b> (may be used to satisfy writing proficiency)		6
For limitations on free electives see page 232.		
		Total 128

\*MTH 254 is required for dynamic systems and control option; and APM 263 is required for manufacturing option.

\*\*Approved science electives are given on page 231. Those most highly recommended are PHY 331 and 371.

\*†Needs prior permission of the chairperson of the Department of Electrical and Systems Engineering.

#### Economics requirement

In addition to the requirements stated above, systems engineering students must fulfill the economics requirement. This may be met by completing ECN 414 as a professional elective or by completing ECN 150, ECN 200 or 210 as part of the general education requirement.

#### Design requirements

All systems engineering graduates must complete a total of at least 16 credit hours of design while satisfying their overall program requirements. In meeting this requirement, they must seek their faculty adviser's approval. Also, consult the SECS "Undergraduate Student Handbook" for a listing of the number of design credit hours contained in each course.

#### Performance requirements

In addition to previously stated requirements, satisfactory completion of the program requires an average grade of at least 2.0 within each group: namely mathematics and science, core subjects and professional subjects. Within professional subjects, at most two grades below 2.0 are permitted; at most two different courses may be repeated and a total of three repeat attempts is permitted.

### Sample electrical engineering and systems engineering schedules

Students entering the School of Engineering and Computer Science with the required background may follow a schedule such as the one indicated below. However, students will need additional time to complete the program if they do not have the required background upon entrance to the program.

Freshman year — fall semester: EGR 101, MTH 154, CHM 144, CSE 132, Rhetoric or general education, 17 credits; winter semester: MTH 155, PHY 151, CSE 171, general education, 1-credit free elective, 17 credits.

Sophomore year — fall semester: MTH 254, PHY 152, ME 221 or ME 241, general education, 16 credits; winter semester: APM 257, EE 222, ME 221 or ME 241, general education, 1-credit free elective, 16 credits.

Junior year — fall semester: MTH 256, SYS 317, EGR 372 (for SYS), EE 326 (for EE), SYS 325, general education, 17 credits; winter semester: two professional subjects, one science elective, one free elective, 16 credits.

Senior year — fall semester: EE 384 and two professional subjects (for EE), three professional subjects (for SYS), EGR 401, general education, 17 credits; winter semester: three professional subjects, 12 credits.

# DEPARTMENT OF MECHANICAL ENGINEERING

**Chairperson:** *Joseph D. Hovanesian*

**Professors:** *Bhushan L. Bhatt, Robert H. Edgerton, Joseph D. Hovanesian, Yau Y. Hung, Gilbert L. Wedekind*

**Assistant professors:** *Ren-Jyh Gu, Jamil A. Khan, Ching L. Ko, Michael Latcha, Brian P. Sangeorzan*

**Adjunct professors:** *Martin A. Erickson, Grant R. Gerhart*

## Major in Mechanical Engineering

The field of mechanical engineering offers a broad spectrum of career opportunities in such areas as design, analysis, test development, research and the manufacturing of numerous products.

Oakland University's undergraduate program in mechanical engineering provides a foundation in the mechanics of solids, thermodynamics, fluid mechanics, transfer and rate mechanisms, materials, design of mechanical systems and electrical and computer theory. A strong laboratory experience is interwoven through the curriculum, providing numerous design experiences. Opportunities are provided to allow students to relate theoretical ideas to practical problems.

The option of selecting several of the senior-level courses allows for greater flexibility in the choice of option areas of specialization within mechanical engineering.

To earn the degree of Bachelor of Science in Engineering with a major in mechanical engineering, students must complete a minimum of 128 credits, demonstrate writing proficiency (see *Undergraduate degree requirements*) and meet the following requirements:

	<b>Credits</b>
<b>General Education (excluding mathematics and science)</b>	<b>24</b>
<b>Mathematics and science</b>	
MTH 154-155    Calculus	8
MTH 254        Multivariable Calculus	4
MTH 256        Introduction to Linear Algebra	3
APM 257        Introduction to Differential Equations	3
CHM 144        General Chemistry	4
PHY 151-152    Introductory Physics	8
Approved science elective*	4
	<hr/> 34
<b>Engineering core</b>	
EGR 101        Introduction to Engineering	1
EGR 372        Properties of Materials	4
EGR 401        Professional Engineering	1
CSE 132        Introduction to Computer Science	4
CSE 171        Introduction to Digital Logic and Microprocessors	4
EE 222         Introduction to Electrical Circuits	4
ME 221         Statics and Dynamics	4
ME 241         Thermodynamics	4
SYS 317        Engineering Probability and Statistics	3
SYS 325        Lumped Parameter Linear Systems	3
	<hr/> 32



**Professional subjects****Required**

ME 321	Dynamics and Vibrations	3
ME 331	Introduction to Fluid and Thermal Energy Transport	4
ME 361	Mechanics of Materials	4
		<hr/> 11

**Professional design requirements**

Choose one course from Group A and one from Group B:

**Group A**

ME 486	Machine Design (4)
ME 487	Mechanical Engineering CAD/CAM Systems (4)

**Group B**

ME 454	Solar and Alternate Energy Systems (4)
ME 482	Fluid and Thermal Energy Systems (4)

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 8

Choose one of the following groups:

**Group C** Senior Mechanical Engineering Design Project, ME 492 (3); and one professional subject or elective which contains at least 1 credit of design (see "Design Requirements").

**Group D** Professional subjects or electives which contain a total of at least 4 design credits (see "Design Requirements").

**Professional options**

1. General mechanical engineering option (15 credits)

**Professional electives** (chosen from the following if not taken to satisfy Group A and B design requirements)

ME 438	Fluid Transport (4)
ME 448	Thermal Energy Transport (4)
ME 449	Numerical Techniques in Heat Transfer and Fluid Flow (4)
ME 454	Solar and Alternate Energy Systems (4)
ME 456	Energy Systems Analysis (4)
ME 461	Analysis and Design of Mechanical Structures (4)
ME 472	Material Properties and Processes (4)
ME 482	Fluid and Thermal Energy Systems (4)
ME 486	Machine Design (4)
ME 487	Mechanical Engineering CAD/CAM Systems (4)
ME 492	Senior Mechanical Engineering Design Project (3)
EGR 490**	Senior Project (2-4)
ECN 414	Engineering Economics (2)
Not more than 4 credits from:	
EGR 407	Environmental Engineering (4)
EGR 494**	Independent Study (2-4)
SYS 431	Automatic Control Systems (4)
SYS 469	Simulation in Engineering (4)
SYS 483	Production Systems (4)
CSE 417	Applied Numerical Methods: Approximations (4)
CSE 418	Applied Numerical Methods: Matrix Methods (4)

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2. Fluid and thermal systems option (15 credits)

**Required subjects**

ME 438	Fluid Transport (4)
ME 448	Thermal Energy Transport (4)
ME 482	Fluid and Thermal Energy Systems (4)

**Professional electives** (chosen from the following if not taken to satisfy Group A and B design requirements)

ME 449	Numerical Techniques in Heat Transfer and Fluid Flow (4)
ME 454	Solar and Alternate Energy Systems (4)
ME 456	Energy Systems Analysis (4)

ME 492	Senior Mechanical Engineering Design Project (3)
EGR 490**	Senior Project (2-4)
ECN 414	Engineering Economics (2)
No more than 4 credits from:	
EGR 494**	Independent Study (2-4)
SYS 431	Automatic Control Systems (4)
CSE 417	Applied Numerical Methods: Approximations (4)
CSE 418	Applied Numerical Methods: Matrix Methods (4)

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## 3. Computer-aided design option (15 credits)

**Required subjects**

ME 461	Analysis and Design of Mechanical Structures (4)
ME 487	Mechanical Engineering CAD/CAM Systems (4)

**Professional electives** (chosen from the following if not taken to satisfy Group A and B design requirements)

ME 449	Numerical Techniques in Heat Transfer and Fluid Flow (4)
ME 472	Material Properties and Processes (4)
ME 486	Machine Design (4)
ME 492	Senior Mechanical Engineering Design Project (3)
EGR 490**	Senior Project (2-4)
EGR 494**	Independent Study (2-4)
ECN 414	Engineering Economics (2)

No more than 4 credits from:

SYS 431	Automatic Control Systems (4)
SYS 463	Foundations of Computer-Aided Design (4)
CSE 417	Applied Numerical Methods: Approximations (4)
CSE 418	Applied Numerical Methods: Matrix Methods (4)

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## 4. Production and manufacturing processes option (15 credits)

**Required subjects**

ME 472	Material Properties and Processes (4)
ME 486	Machine Design (4)

**Professional electives** (chosen from the following if not taken to satisfy Group A and B design requirements)

ME 461	Analysis and Design of Mechanical Structures (4)
ME 482	Fluid and Thermal Energy Systems (4)
ME 487	Mechanical Engineering CAD/CAM Systems (4)
ME 492	Senior Mechanical Engineering Design Project (3)
ME 665	Experimental Stress Analysis (4)

(requires instructor approval)

EGR 490**	Senior Project (2-4)
EGR 494**	Independent Study (2-4)
SYS 422	Intelligent Robotics (4)
SYS 483	Production Systems (4)
ECN 414	Engineering Economics (2)

No more than 4 credits from:

SYS 431	Automatic Control (4)
CSE 470	Microprocessors and Microcomputers (4)

15

**Free electives** (may be used to satisfy writing proficiency and programming recommendations)

4

For limitations on free electives see page 232.

Total

128

\*Approved science electives are given on page 231. Those most highly recommended for mechanical engineering students are PHY 331, 351, 371, CHM 145, BIO 200 and BIO 205.

\*\*Needs prior permission of the chairperson of the Department of Mechanical Engineering.

**Design requirements**

Design credits must be associated with courses in the professional option, chosen with approval of faculty adviser. All mechanical engineering graduates must complete a total of at least 16 credit hours of design while satisfying their overall program requirements. Consult the SECS "Undergraduate Student Handbook" for a listing of the number of design credit hours contained in each course.

**Economics requirement**

In addition to the requirements stated above, mechanical engineering students must fulfill the economics requirement. This may be met by completion of ECN 414 as a professional elective or by completion of ECN 150, ECN 200 or ECN 210 as part of the general education requirement.

**Programming recommendations**

In addition to the required computer courses, it is recommended that students have some experience in Fortran language, such as CSE 232, and word processing, spread sheets and simple graphics such as CSE 201.

**Performance requirements**

In addition to previously stated requirements, satisfactory completion of the program requires an average grade of at least 2.0 within each group: namely, mathematics and science, core subjects, and professional subjects. Within professional subjects, at most two grades below 2.0 are permitted; at most two different courses may be repeated and a total of three repeat attempts is permitted.

**Sample mechanical engineering schedule**

Students entering the School of Engineering and Computer Science with the required background may follow a schedule such as the one indicated below. However, students will need additional time to complete the program if they do not have the required background upon entrance to the program.

Freshman year — fall semester: EGR 101, MTH 154, CHM 144, CSE 132, Rhetoric or general education, 17 credits; winter semester: MTH 155, PHY 151, CSE 171, general education, 16 credits.

Sophomore year — fall semester: MTH 254, PHY 152, ME 221 or ME 241, general education, 16 credits; winter semester: APM 257, EE 222, ME 221 or ME 241, general education, 15 credits.

Junior year — fall semester: MTH 256, ME 321, ME 331, SYS 325, general education, 17 credits; winter semester: EGR 372, ME 361, free or professional elective, science elective, 16 credits.

Senior year — fall semester: SYS 317, EGR 401, two or three (with project) professional subjects, general education, 16 or 19 credits; winter semester: three or four (with project) professional subjects, 12 or 15 credits.

# ENGINEERING SCIENCES PROGRAMS

## Major in Engineering Chemistry

Coordinators: *Ching L. Ko (engineering), Mark Severson (chemistry)*

The program in engineering chemistry, offered jointly by the School of Engineering and Computer Science and the College of Arts and Sciences, leads to the Bachelor of Science degree. It provides for intensive study in chemistry, along with basic preparation in engineering.

To earn the degree of Bachelor of Science with a major in engineering chemistry, students must complete a minimum of 128 credits, demonstrate writing proficiency (see *Undergraduate degree requirements*) and meet the following requirements:

	Credits
<b>General education (excluding mathematics and science)</b>	24
<b>Mathematics and physics</b>	
MTH 154-155 Calculus	8
MTH 254 Multivariable Calculus	4
APM 257 Introduction to Differential Equations	3
PHY 151-152 Introduction to Physics	8
	23
<b>Chemistry</b>	
CHM 144-145 General Chemistry	8
CHM 149 Chemistry Laboratory	2
CHM 234-235 Organic Chemistry	8
CHM 237 Separations and Spectroscopy Laboratory	2
CHM 342-343 Physical Chemistry	8
CHM 348 Physical Chemistry Laboratory	2
CHM 471 Macromolecular Chemistry	3
Plus 6 credits from:	
CHM 462-463 Inorganic Chemistry (4)	
CHM 470 Industrial Chemistry (3)	
CHM 472 Macromolecular Chemistry II (3)	
CHM 477 Molecular Laboratory (2)	6
	39
<b>Engineering</b>	
EGR 101 Introduction to Engineering	1
EGR 401 Professional Engineering	1
CSE 132 Introduction to Computer Science	4
CSE 171 Introduction to Digital Logic and Microprocessors	4
EE 222 Introduction to Electrical Circuits	4
ME 221 Statics and Dynamics	4
ME 241 Thermodynamics	4
ME 331 Introduction to Fluid and Thermal Energy Transport	4
SYS 325 Lumped Parameter Linear Systems	3
	29
Plus 8 credits from:	
ME 438 Fluid Transport (4)	
ME 448 Thermal Energy Transport (4)	
ME 449 Numerical Techniques in Heat Transfer and Fluid Flow (4)	
ME 456 Energy Systems Analysis (4)	

ME 482	Fluid and Thermal Energy Systems (4)	
SYS 431	Automatic Control Systems (4)	
		8
Free electives (may be used to satisfy writing proficiency)		5
For limitations on free electives see page 232.		
	Total	128

### Performance requirements

In addition to the previously stated requirements, satisfactory completion of the program requires an average grade of at least 2.0 in the courses taken to satisfy the engineering, chemistry and mathematics and physics requirements.

## Major in Engineering Physics

**Coordinators:** *Hoda Abdel-Aty-Zohdy (engineering), John M. McKinley (physics)*

The program in engineering physics is offered jointly by the School of Engineering and Computer Science and the College of Arts and Sciences. This program blends the pure and applied, the theoretical and practical aspects of scientific knowledge into a meaningful educational experience. Through the university's cooperative education program, engineering physics students may opt to combine a relevant work experience with their formal education.

To earn the degree of Bachelor of Science with a major in engineering physics, students must complete a minimum of 128 credits, demonstrate writing proficiency (see *Undergraduate degree requirements*) and meet the following requirements:

	Credits	
<b>General education (excluding mathematics and science)</b>	24	
<b>Mathematics and sciences</b>		
MTH 154-155	Calculus	8
MTH 254	Multivariable Calculus	4
APM 257	Introduction to Differential Equations	3
CHM 144-145	General Chemistry	
or (CHM 164-165)		8
PHY 151-152	Introductory Physics	8
PHY 158	Physics Laboratory	2
PHY 317	Modern Physics Laboratory	2
PHY 351	Intermediate Theoretical Physics	4
PHY 361	Mechanics I	4
PHY 371	Modern Physics	4
Another course	in physics in addition to any required in options below, chosen from:	
PHY 331	Optics (4)	
PHY 366	Vibrations and Waves (4)	
PHY 381	Electricity and Magnetism I (4)	
PHY 472	Quantum Mechanics I (4)	
		4
		51
<b>Engineering</b>		
CSE 132	Introduction to Computer Science	4
CSE 171	Introduction to Digital Logic and Microprocessors	4
EE 222	Introduction to Electrical Circuits	4
EE 326	Electronic Circuit Design	4
ME 241	Thermodynamics	4
SYS 317	Engineering Probability and Statistics	3
SYS 325	Lumped Parameter Linear Systems	3
		26

**Professional option**

(The following two options are offered as typical. Students with different interests can construct different options in consultation with the program coordinators.)

**Solid state physics and technology option**

EE 384	Electronic Materials and Devices	4
PHY 472	Quantum Mechanics I	4
Design elective, chosen from:		4
EE 378	Design of Digital Systems (4)	
EE 426	Advanced Electronics (4)	
EE 437	Introduction to Communication Electronics (4)	
EE 470	Microprocessors and Microcomputers (4)	
EE 487	Integrated Electronics (4)	
SYS 410	Systems Optimization and Design (4)	

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**Applied mechanics option**

PHY 366	Vibrations and Waves	4
ME 361	Mechanics of Materials	4
Design elective, chosen from:		4
ME 454	Solar and Alternate Energy Systems (4)	
ME 461	Analysis and Design of Mechanical Structures (4)	
ME 482	Fluid and Thermal Energy Systems (4)	
ME 486	Machine Design (4)	
ME 487	Mechanical Engineering CAD/CAM Systems (4)	

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**Technical electives, chosen from:**

MTH 256	Introduction to Linear Algebra (3)	
APM 263	Discrete Mathematics (4)	
PHY 318	Nuclear Physics Laboratory (2)	
PHY 331	Optics (4)	
PHY 366	Vibrations and Waves (4)	
PHY 372	Nuclear Physics (4)	
PHY 381	Electricity and Magnetism I (4) or	
EE 345	Electric and Magnetic Fields (4)	
PHY 418	Modern Optics Laboratory (2)	
PHY 472	Quantum Mechanics I (4)	
PHY 482	Electricity and Magnetics II (4)	
EE 351	Electromechanical Energy Conversion (4)	
EE 378	Design of Digital Systems (4)	
EE 384	Electronic Materials and Devices (4)	
ME 331	Introduction to Fluid and Thermal Energy Transport (4)	
ME 361	Mechanics of Materials (4)	
Any 400-level EGR, EE, ME or SYS courses (4-8)		

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 7-8

**Free electives** (can be used to satisfy writing proficiency)

7-8

*For limitations on free electives, see page 232.*

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 Total 128
**Performance requirements**

In addition to the previously stated requirements, satisfactory completion of the program requires an average grade of at least 2.0 in the engineering and computer science courses and also in the mathematics and science courses taken to meet program requirements.

## Course Offerings

Courses offered through the School of Engineering and Computer Science carry the following designations: computer science and engineering courses, CSE; electrical engineering courses, EE; systems engineering courses, SYS; mechanical engineering courses, ME. Courses offered under the general title of engineering are listed under EGR. For some of the courses, the semester(s) in which they are usually offered is indicated at the end of course description. However, this is subject to change.

To register for 300- and 400-level courses, students must have attained major standing.

### ENGINEERING

#### **EGR 101 Introduction to Engineering (1)**

Introduction to the various disciplines of engineering. The course will be a series of weekly lectures on topics in engineering. Offered fall, winter. (Graded S/U)

#### **EGR 106 Machine Shop Practice (2)**

Introduction to basic machining principles and machine shop techniques, uses of lathes, milling machines and other power machines. Emphasis is on practical experience.

#### **EGR 108 Engineering Drawing (2)**

Introduction to the use of drafting instruments and procedures. Geometric construction and projection, dimensioning, tolerancing and graphic symbols. Offered fall, winter.

#### **EGR 372 Properties of Materials (4)**

The atomic, molecular and crystalline structure of solids, including a description of x-ray analysis, metallography and other methods of determining structure; correlation of structure with the electric, magnetic and mechanical properties of solids. With laboratory. Offered fall, winter.

Prerequisite: CHM 144, PHY 152 and major standing.

#### **EGR 391 Cooperative Engineering and Computer Science (1)**

A seminar course for cooperative engineering and computer science students to be taken in the semester following a cooperative training assignment. A report of the training assignment must be submitted within four weeks of the beginning of the course. May be repeated up to three times.

Prerequisite: Consent of the cooperative education coordinator.

#### **EGR 400 Engineering Seminar (1)**

Lectures and discussions conducted by faculty, graduate students and speakers from industry and other universities. Emphasis is on current research interests of the school. May be taken twice.

#### **EGR 401 Professional Engineering (1)**

Seminars of professional interest to engineers, including such topics as professionalism, ethics, engineering law, engineering economics and technical communications. Graded S/U.

Prerequisite: Senior status in engineering.

#### **EGR 407 Environmental Engineering (4)**

A design course that includes consideration of resources and recycling in terms of available energy; economic/thermodynamic combined situations are illustrated through field trips and by guest speakers. A group or individual project is required.

Prerequisite: ME 241.

#### **EGR 490 Senior Project (2 to 4)**

Independent work on advanced laboratory projects. Topic must be approved prior to registration. May be taken more than once.

#### **EGR 494 Independent Study (2 to 4)**

Advanced individual study in a special area. Topic must be approved prior to registration. May be taken more than once.

#### **EGR 495 Special Topics (2 to 4)**

Advanced study of special topics in engineering. May be taken more than once.

**COMPUTER SCIENCE AND ENGINEERING****CSE 115 Natural and Artificial Languages (3)**

A study of the similarities and differences among the languages of people and machines. Topics will include general characteristics of communication, human linguistic abilities, computer languages and human/computer interfaces. LIN 115 must be taken concurrently. Corequisite: LIN 115.

**CSE 125 Introduction to Computer Use (4)**

A first course in computer usage for non-engineering and computer science majors. Introduction to computer hardware, software and business applications. Topics include word processing, spreadsheets, data base management, data communications and graphics software. Programming concepts in data base languages. Problem solving methodology is emphasized. Instruction is divided between lecture and computing laboratory. Offered fall, winter.

Prerequisite: MTH 012 or equivalent.

**CSE 130 Introduction to Computer Programming (4)**

Introduction to digital computers and algorithmic programming in a language such as PASCAL. Topics covered include data storage and manipulation, control structures and subprogramming. Engineering and computer science majors should enroll in CSE 132. Students cannot receive credit for both CSE 130 and CSE 132. Offered fall, winter.

Prerequisite: MTH 012 or equivalent.

**CSE 132 Introduction to Computer Science (4)**

Introduction to an algorithmic language such as PASCAL and to data structures including arrays, records and linked structures. Emphasis is on programming and algorithmic problem solving. Students cannot receive credit for both CSE 130 and CSE 132. Offered fall, winter.

Corequisite: MTH 141.

**CSE 171 Introduction to Digital Logic and Microprocessors (4)**

Introduction to digital logic and microprocessors. Machine language programming of microprocessors. Use of microcomputers for laboratory data acquisition and analysis. Offered fall, winter.

Prerequisite: CSE 132 and MTH 154.

**CSE 201 Engineering Computer Use (1)**

Microcomputer software of use to engineering and computer science students. Word processing, spreadsheets, data base management, data communications and graphics. Students cannot receive credit for both CSE 201 and CSE 125.

**CSE 220 Computer-based Information Systems I (4)**

Introduction to business data processing using the COBOL programming language. Emphasis is on structured programming and top-down development in an interactive environment. Offered fall, winter.

Prerequisite: Ability to program in at least one high level language.

**CSE 221 Computer-based Information Systems II (4)**

Continuation of CSE 220. Advanced capabilities of the COBOL language are studied. Topics include report writer, relative, direct and indexed files, data dictionaries, debugging. Sophisticated business data processing systems will be programmed. Credit applies to graduation but not the major.

Prerequisite: CSE 220 or equivalent.

**CSE 232-245 Programming Language Labs****Group A:**

CSE 232 Language Laboratory — FORTRAN (1); Prerequisite: CSE 130 or 132 or one high-level language.

CSE 233 Language Laboratory — COBOL I (1); Prerequisite: CSE 130 or 132 or one high-level language.

CSE 234 Language Laboratory — COBOL II (1); Prerequisite: CSE 233.

CSE 235 Language Laboratory — PASCAL (1); Prerequisite: one high-level language.

(Students cannot receive credit for both CSE 235 and CSE 130 or CSE 132)

CSE 236 Language Laboratory — PL/I (1); Prerequisite: CSE 262

CSE 237 Language Laboratory — ADA (1); Prerequisite: CSE 262

CSE 238 Language Laboratory — C (1); Prerequisite: CSE 262

CSE 239 Language Laboratory — Modula-2 (1); Prerequisite: CSE 262



**Group B**

CSE 240 Language Laboratory — LISP (1); Prerequisite: CSE 262

CSE 241 Language Laboratory — FORTH (1); Prerequisite: CSE 262

CSE 242 Language Laboratory — APL (1); Prerequisite: CSE 262 and MTH 256

CSE 243 Language Laboratory — SNOBOL (1); Prerequisite: CSE 262

CSE 244 Language Laboratory — PROLOG (1); Prerequisite: CSE 262

CSE 245 Language Laboratory — SMALLTALK (1); Prerequisite: CSE 262

**CSE 248 Systems Analysis and Design (4)**

Function and responsibility of the systems analyst, including techniques in interview, charts, design, analysis, development, presentation and implementation. Other topics discussed include cost/benefit analysis, EDP auditing, COM and word processing.

Prerequisite: CSE 220.

**CSE 262 Data Structures (4)**

Elementary data structures and their application in computer programming. Linear lists, arrays, trees, forests and generalized lists and their implementation using sequential and linked storage. Recursive and non-recursive algorithms for representative data structure operations. Searching and sorting. Student projects for the course will be run on a minicomputer or mainframe with a complex operating system. Offered fall, winter.

Prerequisite: CSE 132 and MTH 154.

**CSE 280 Computer Organization and Assembly Language Programming (4)**

Introduction to the internal structure and operation of a digital computer. Hardware organization, machine language, instruction execution, digital arithmetic, addressing techniques and digital representations of data. Assembly language programming; assemblers and linkers; loading relocatable modules. Offered fall, winter.

Prerequisite: CSE 171.

**CSE 315 Computer Parsing of Natural Language (4)**

An examination of the syntactic and semantic properties of natural language and a survey of the techniques for computer parsing. Course work will include student projects in the computer analysis of language. Identical to LIN 315. Offered fall, winter.

Prerequisite: LIN/CSE 115 or ALS 176, CSE 130 or CSE 132.

**CSE 335 Programming Languages (4)**

Fundamental concepts in programming languages studied by comparative language analysis. Several high-level languages are studied in depth and their approaches to the fundamental issues in language design are compared. Issues include: data types and structures, control structures, binding times, run-time, storage organization, flexibility vs. efficiency, compiled vs. interpreted languages, strong vs. weak typing, block structure and scope of names. Offered fall, winter.

Prerequisite: CSE 262, CSE 280, MTH 256 and major standing.

**CSE 340 File Systems Design (4)**

Study of hardware configurations and software systems design for data-oriented applications. Characteristics of mass-storage devices and the impact of the characteristics on data processing algorithm design, standard file access techniques, file design for data processing applications. Offered fall.

Prerequisite: CSE 130 or CSE 132, junior standing.

**CSE 343 Foundations of Computer Science (4)**

An introduction to the theoretical foundations of computer science. Recursive functions, computability in programming languages, validity of algorithms, finite automata, Turing machines. Offered fall, winter.

Prerequisite: APM 263, CSE 262 and major standing.

**CSE 345 Database Design and Implementation (4)**

An introduction to the systematic design, creation and implementation of a relational data base using microprocessor-based data base management systems such as R:base 5000 and dBase III Plus. The course will emphasize practical applications of data bases and the solution of real problems. Intended for students wishing a minor in computer science; it may not be used for credit toward a degree program in Computer Science and Engineering. Students cannot receive credit for both CSE 345 and CSE 445. Offered winter.

Prerequisite: CSE 130 or CSE 132, junior standing.

**CSE 388 Computer Hardware Design (4)**

Boolean function minimization using Boolean algebra, Karnaugh Map and Quine McCluskey method. Combinational network design using multiplexers, decoders, encoders and priority encoders. Code converter design using adder circuits. Logical system design using PLAs and Gate arrays. Sequential system: State minimization using row matching, implication chart and next class table methods. Sequential processor design. Keyboard decoding system. Introduction to computer organization, microprogramming and microprogram-controlled computer design. Students cannot receive credit for both CSE 388 and EE 378. Offered fall, winter.

Prerequisite: CSE 171, PHY 152 and major standing.

**CSE 402 Social Implications of Computers (1)**

Seminars dealing with the professional, social, and ethical issues of computer science and engineering. Presentations by faculty, students, and visiting professionals. (Graded S/U). Credit cannot be earned for both CSE 402 and EGR 401.

Prerequisite: Senior standing in the School of Engineering and Computer Science.

**CSE 413 Statistical Pattern Recognition (4)**

Applications of digital computer techniques to a variety of problems in pattern recognition. Linear decision functions, Bayes decision theory, maximum likelihood estimation, multivariate normal features, nonparametric techniques, feature selection, clustering and unsupervised learning. Applications include industrial inspection and the processing of remote sensing, biomedical and pictorial data. Offered fall.

Prerequisite: MTH 256, CSE 262, a course in statistics and major standing.

**CSE 415 Expert Systems and Decision Support Systems (4)**

The study of expert systems and decision support systems technologies. Both kinds of systems deal with reasoning with incomplete knowledge. Inexact logic, decision models, knowledge representation methods and design issues such as architecture of the systems, iterative design methods and evaluation. A project is required. Offered winter.

Prerequisite: CSE 262, CSE 335 and CSE 416.

**CSE 416 Artificial Intelligence (4)**

An introduction to artificial intelligence techniques including: knowledge representation using semantic networks, scripts, frames, predicate calculus, production and expert systems, and procedures; learning via symbolic and adaptive algorithms; natural language understanding; and game playing and other searching problems. The techniques will be examined theoretically, through examination of well known research systems, and through the development of student systems as projects during the term. Offered fall.

Prerequisite: CSE 240 or LISP, CSE 262, CSE 335.

**CSE 417 Applied Numerical Methods: Approximations (4)**

Propagation of errors; classical methods for the solution of non-linear equations, summation of series, approximation of functions, numerical integration, numerical solution of differential equations and the Fast Fourier Transform. Emphasis on student development of general purpose subroutines for use in engineering and scientific applications. Students cannot receive credit for both CSE 417 and APM 433. Offered fall.

Prerequisite: CSE 132, MTH 254 or MTH 256, and major standing.

**CSE 418 Applied Numerical Methods: Matrix Methods (4)**

Systems of linear and nonlinear equations, eigenvalue problems, optimization methods, statistical methods. Students cannot receive credit for both CSE 418 and APM 434. Offered winter.

Prerequisite: MTH 256, CSE 131 or CSE 132, and major standing.

**CSE 438 Verification of Computer Programs (4)**

Introduction to systematic methods of program verification, including proving and testing. Topics include program correctness, formal verification of programs, program and system testing, software tools. A significant part of the course will be its lab component. Offered winter.

Prerequisite: CSE 262, APM 263 and major standing.

**CSE 439 Software Engineering (4)**

The course will study, in a realistic environment, the techniques and methodology of developing programs for user applications. Topics include specifications, top-down modular design, structured programming, documentation, testing and verification. Offered fall.

Prerequisite: CSE 262 and major standing.

**CSE 440      Software Quality (4)**

A first course in software quality, intended for students who have mastered fundamental design and programming skills. The impact of software design techniques on structural quality for both object-oriented and traditional decomposition techniques. Assessment of software quality via scientific experimentation and software metrics with emphasis given to software understandability and maintainability. Offered winter. Prerequisite: Knowledge of data structures and major standing.

**CSE 445      Data Base Systems (4)**

A study of the design and implementation of relational, hierarchical and network data base systems. Query/update data languages, conceptual data model, physical storage methods, data base system architecture. Data base security and integrity. Relational data base systems are emphasized. A project involving an on-line data base system is normally assigned. Students cannot receive credit for both CSE 345 and CSE 445. Offered fall, winter.

Prerequisite: CSE 262 and major standing.

**CSE 447      Computer Communications (4)**

Emphasis on functional characteristics of digital components related to computer communications and the design of computer communications control software; telecommunication transmission facilities, signal and conversion devices, terminals, controllers, interfaces, error detection and correction, multiplexing and concentration, line control procedures and protocols, and control software; case studies include point-to-point connections between computer and terminals, local area networks and private networks, and value-added networks and digital support in the telephone system. Offered fall.

Prerequisites: CSE 450 or equivalent or permission of the instructor.

**CSE 450      Operating Systems (4)**

Introduction to the concepts and design of multi-programmed operating systems. Typical topics include: historical perspectives; sequential processes; concurrent processes; processor management; store management; scheduling; file management, resource protection; a case study. Offered fall, winter.

Prerequisite: CSE 262, CSE 280 and major standing.

**CSE 455      Introduction to Computer Graphics (4)**

An introduction to the software and hardware aspects of computer graphics systems. Vector and raster displays. Typical data structures and programming language requirements. Emphasis on real time-interactive graphics systems. Offered fall.

Prerequisite: CSE 262, MTH 256 and major standing.

**CSE 456      Advanced Computer Graphics (4)**

A study of the mathematics, algorithms and data structures used for the computer storage, manipulation and rendering of geometric objects. Topics covered will be chosen from curve and surface representation, including Bezier and B-Spline techniques; solid modeling, including Constructive Solid Geometry and Boundary Representation Schemes; surface and solid intersection techniques; hidden line and surface removal; and realistic shading and rendering techniques. Offered winter.

Prerequisite: CSE 455.

**CSE 464      Computer Organization and Architecture (4)**

Stored program computers, organization of arithmetic-logic unit, central processing unit, main and auxiliary memory, input/output units and exercises in microprogramming. Central and distributed processing computer networks, architecture of some main frame computers and some microprocessors, parallel and pipeline processing. Offered winter.

Prerequisite: CSE 388 and either CSE 280 or CSE 470.

**CSE 465      Compiler Design (4)**

The student is directed through development of a compiler for a simple language that can be executed on a simulated computer. Topics include: overview of grammars and languages; scanning input strings from a source language; parsing via bottom-up methods; internal forms for source programs; semantic routines; and symbol table organization. The compiler is constructed in a high-level language such as Pascal. Offered winter.

Prerequisite: CSE 262 and APM 263. Corequisite: CSE 335.

**CSE 470      Microprocessor-based Systems Design (4)**

Application of microprocessors and microcomputers to the solution of typical problems; interfacing microprocessors with external systems; programming considerations. This is a laboratory, design oriented course. Several short design projects and one large design project will be given. Credit cannot be earned for both CSE 470 and EE 470. Offered fall, winter.

Prerequisite: CSE 388 or EE 378. (Computer science majors may take CSE 470 with the permission of the instructor.)

**CSE 471      Design of Embedded Software Computer Systems (4)**

The use of threaded interpretive languages in the design of board-level computer systems. Embedded software drivers for parallel and serial communications, A/D converters and other peripheral interface devices. Project-oriented course. Offered winter.

Prerequisite: CSE 470. Corequisite: CSE 241.

**CSE 478      Switching Theory and Digital Logic (4)**

Combinational switching functions, minimization and analysis, implementation using relay circuits, TTL, CMOS and other popular logic families. Symmetric functions, threshold logic and iterative circuits. Analysis and synthesis of clock mode, level mode and pulse mode sequential circuits. Design and implementation of digital systems. Turing machines and finite automata. Offered fall.

Prerequisite: CSE 388 and APM 263.

**ELECTRICAL ENGINEERING****EE 222      Introduction to Electrical Circuits (4)**

Resistive dc circuits, Kirchoff laws, Thevenin and Norton theorems, controlled sources, operational amplifiers, superposition, source transformations. Transient and forced response in RC, RL and RLC circuits, impedance concept and phasors, RMS values and average power. With laboratory. Offered fall, winter.

Prerequisite: MTH 155 and PHY 152.

**EE 326      Electronic Circuit Design (4)**

Semiconductor diodes; static and dynamic characteristics and diode models. The design and analysis of detectors, clipping and clamping circuits, comparators, rectifiers, function generators and digital circuits with diodes. Bipolar and unipolar transistors (BJT, j-FET, MOSFET, enhancement and depletion types), DC analysis and design of the biasing circuits for the different configurations; transistor models; design and analysis of transistor amplifiers; stability and limitations. Software simulations. Analysis and design of different MOS inverter structures. With laboratory and design projects. Offered fall, winter.

Prerequisite: EE 222, MTH 155, PHY 152 and major standing.

**EE 345      Electric and Magnetic Fields (4)**

Fundamentals of electric and magnetic fields. Fundamental laws, basic postulates, Maxwell's equations, electrostatics, magnetic fields of steady currents, time varying fields and electromagnetic waves.

Prerequisite: MTH 254, PHY 152 and major standing. Offered winter.

**EE 351      Electromechanical Energy Conversion (4)**

Magnetic circuits, transformers, electromechanical energy conversion. Operation of dc and ac machines. Equivalent circuits, input/output characteristic, and efficiency. Analytical and computer design considerations for electrical machines. With laboratory. Offered fall.

Prerequisite: SYS 325.

**EE 378      Design of Digital Systems (4)**

Development of the components and techniques at the gate and flip-flop level needed to design digital systems for instrumentation, communication, control and related fields. Topics include combinational logic circuits, memory devices, sequential circuits and organization of digital systems. Students cannot receive credit for both EE 378 and CSE 388. With laboratory. Offered fall, winter.

Prerequisite: CSE 171 and EE 326.

**EE 384 Electronic Materials and Devices (4)**

Basic concepts of quantum mechanics as applied to electronic devices. Semiconductor physics, including the quantization concept; carrier models and the conduction mechanisms routinely used in description of operational behavior of solid state devices. Theory of P-N junction; junction statics, volt-ampere characteristic and the switching response. Junction devices; gain and other features. Field effect devices, concepts, models and analytical procedures related to j-FET, MOS-capacitor and MOS transistors. Fundamentals of integrated circuits and basic fabrication steps. Software simulations. Offered fall.

Prerequisite: EE 326.

**EE 426 Advanced Electronics (4)**

Transistor circuit design and analysis. Multistage small signal, and power amplifiers design, feedback in amplifiers, frequency response, stability and sensitivity. Design and analysis of linear and nonlinear operational amplifier circuits. Regulator and power supply circuit design and analysis; circuit protection. Design of signal generators, multivibrators and function generators. Emphasis is placed on designing electronic circuits through a sequence of laboratory experiments and projects. Offered winter.

Prerequisites: EE 326 and SYS 325.

**EE 437 Introduction to Communication Electronics (4)**

Analysis and design of analog and digital electronic data communication circuits and systems. Spectral analysis, linear system responses, small and large signal tuned amplifiers. Amplitude and angle modulation methods, modulator and demodulator circuits, introduction to design, AM and FM reception principles and receivers. Pulse modulation and multiplex systems. Digital communication systems, pulse code modulation, time division multiplex, pulse shift keying, frequency shift keying and other types of modulation. Introduction to noise problems in communication circuits and systems. With laboratory. Offered fall and winter.

Prerequisites: EE 326 and SYS 325.

**EE 470 Microprocessors-based Systems Design (4)**

Application of microprocessors and microcomputers to the solution of typical problems; interfacing microprocessors with external systems; programming considerations. This is a laboratory, design oriented course. Several short design projects and one large design project will be given. Credit cannot be earned for both CSE 470 and EE 470. Offered fall, winter.

Prerequisite: CSE 388 or EE 378.

**EE 472 Microcomputer-based Control Systems (4)**

Microcomputer-aided control system design and implementation techniques; board-level microcomputer and digital signal processor technology; design and realization of digital controllers, estimators and filters; hardware development of stand-alone on-line microcomputer/processor based control systems; real-time applications and multi-processor systems. A laboratory and project oriented course.

Prerequisites: EE 326, EE 470 and SYS 431.

**EE 485 MOS Very Large Scale Integration (4)**

MOS transistor fundamentals, characteristics and future trends. Basic MOS logic circuits design, NMOS, PMOS and CMOS. High density memory design, MOS RAM design and applications. Latch-up, reliability, redundancy, wafer-scale integration. Digital VLSI MOS circuits, design techniques, performance evaluation, speed/area/power trade off, static and dynamic techniques, chip partitions, pipelining and architecture considerations. Analog VLSI MOS circuits, cell design, switched capacitor filters, temperature effects and noise considerations.

Prerequisite: EE 384.

**EE 487 Integrated Electronics (4)**

Modern microelectronics processes and fabrication of integrated circuits. Crystal growth and wafer preparation, photolithography, dielectric and polysilicon film deposition, epitaxial growth, oxidation, diffusion, ion implantation, etching, metallization and integrated circuits layout principles. Introduction to MOS-based and bipolar junction transistor-based microcircuits design and fabrication. With laboratory and projects. Offered winter.

Prerequisite: EE 384.

**MECHANICAL ENGINEERING****ME 221 Statics and Dynamics (4)**

Introduction to mechanics, particle statics and dynamics, equilibrium, analysis of structures and dynamics of rigid bodies about fixed axes. With laboratory. Offered fall, winter.

Prerequisite: MTH 155. Corequisite: PHY 151.

**ME 241 Thermodynamics (4)**

Introduction to the fundamental concepts, principles and analytical techniques of classical thermodynamics. Study of various forms of energy, its conversion from one form to another and the effects of both energy conversions and energy transfers on system and material properties. Macroscopic properties and thermodynamics property relationships are studied, along with the fundamental laws of thermodynamics. Applications to engineering systems and processes. With laboratory which emphasizes concepts in experimental design. Offered fall, winter.

Prerequisite: CHM 144 or CHM 164, MTH 155, PHY 151.

**ME 321 Dynamics and Vibrations (3)**

Kinematics and dynamics of systems of particles. Work and energy, impulse and momentum. Planar rigid body motion. Vibration of lumped mechanical systems. Undamped and damped free vibrations including torsional vibrations for single-degree-of-freedom systems. Harmonically forced vibrations for single-degree-of-freedom systems. Applications to engineering problems. Offered fall.

Prerequisite: ME 221, APM 257. Corequisite: SYS 325.

**ME 331 Introduction to Fluid and Thermal Energy Transport (4)**

Introduction to the fundamentals of fluid mechanics and heat transfer; conservation and momentum principles; viscous and inviscid flow; laminar and turbulent flow; introduction to viscous and thermal boundary layer theory; one-dimensional conduction heat transfer and characteristics and dimensionless correlations of convection heat transfer; applications to problems of engineering interest. With laboratory which emphasizes concepts of experimental design. Offered fall, winter.

Prerequisite: ME 221, ME 241, MTH 254 and major standing.

**ME 361 Mechanics of Materials (4)**

Introduction to the mechanics of deformable bodies: distribution of stress and strain in beams, shafts, columns, pressure vessels and other structural elements, factor of safety, yield and fracture criteria of materials with applications to design. With laboratory including two-dimensional truss and beam design on computer. Offered fall, winter.

Prerequisite: ME 221. Corequisite: EGR 372.

**ME 438 Fluid Transport (4)**

Continued study of the fundamentals of fluid mechanics and their applications, angular momentum principle; generalized study of turbomachines, potential flow of inviscid fluids, laminar and turbulent boundary layer theory, dimensional analysis and similitude, compressible flow. With laboratory emphasizing engineering design. Offered fall.

Prerequisite: ME 241, ME 331 and APM 257.

**ME 448 Thermal Energy Transport (4)**

Continued study of basic concepts, properties and descriptions of conduction, convection and thermal radiation heat transfer; thermal boundary layer theory; forced and natural convection, convective heat transfer correlations, combined conduction convection. Thermodynamics of thermal radiation, radiation intensity, surface properties and energy exchange. With laboratory which emphasizes experimental design concepts and development of empirical relationships. Offered winter.

Prerequisite: ME 241, ME 331 and APM 257.

**ME 449 Numerical Techniques in Heat Transfer and Fluid Flow (4)**

Overview of practical numerical solution techniques. Major emphasis is on concepts, methodology, and physics associated with the formulation of the discretization equations appropriate for the representation and solution of linear and nonlinear partial differential equations governing heat transfer and fluid flow. Personal and mainframe computers will be used for the solution of a variety of engineering and design problems. Offered winter.

Prerequisite: ME 438 and ME 448 or equivalent.

**ME 454 Solar and Alternate Energy Systems (4)**

The analysis and design of energy conversion systems. Principles of optimum power transfer and efficiency. Availability analysis of systems for heating, chemical conversion and electrical generation. Emphasis on solar applications and alternative energy technology. Includes design project(s). With laboratory. Offered winter.

Prerequisite: ME 241 and ME 331.

**ME 456 Energy Systems Analysis (4)**

The analysis and design of thermodynamic systems. Applications include thermodynamic cycles such as those applicable to vapor-compression power systems, gas turbine and reciprocating piston engines, and vapor compression refrigerators and heat pumps; thermodynamics of non-reacting mixtures including psychrometry; concepts of available energy; the thermodynamics of reacting mixtures, including chemical equilibrium concepts, applied to combustion systems. Design project (and/or laboratory) required. Offered winter. Prerequisite: ME 241 and major standing.

**ME 461 Analysis and Design of Mechanical Structures (4)**

Use of methods of advanced mechanics of materials to design mechanical structures to meet elastic strength criteria. Topics include plates and shells, torsion of noncircular cross-sections, beams on elastic foundation, curved and composite beams, rotating disks, thick-walled cylinders, and energy methods. Offered fall. Prerequisite: ME 361.

**ME 472 Materials Properties and Processes (4)**

Study of mechanical behavior of real engineering materials and how they influence mechanical design. True stress/strain properties of materials, plastic deformation and fracture of materials, failure theories, fatigue damage under cyclic loading, creep and high temperature applications. Material properties of engineering metals, ceramics and composites. Behavior of materials during and after manufacturing processes such as stamping, drawing, extrusion, etc. Offered winter. Prerequisite: ME 361 and EGR 372.

**ME 482 Fluid and Thermal Energy Systems (4)**

Study of systems involving fluid and thermal phenomena. Includes conventional and unconventional energy conversion, fluid and thermal energy transport. Analysis for the purpose of design and optimization of systems are emphasized using basic integral, differential and lumped-parameter modeling techniques. The course bridges conventional engineering design disciplines with design-oriented laboratory projects. Offered fall. Prerequisite: ME 241, ME 331 and APM 257.

**ME 486 Machine Design (4)**

Study of machine elements and systems. Stress, strength, deflection, buckling, and cost considerations, design optimization criteria and strategies. Analysis and design of fasteners, springs, welds, bearings, power transmitting elements and complex structures subjected to static and/or dynamic loads. Includes major design project. Offered winter. Prerequisite: ME 361.

**ME 487 Mechanical Engineering CAD/CAM Systems (4)**

Introduction to the use of CAD/CAM systems in mechanical engineering design. Fundamentals of computer graphics, finite element modeling and interactive design. Analysis and evaluation of the static, dynamic and thermal mechanical systems designed on the CAD/CAM system. Includes design project(s) in various topics. Offered fall. Prerequisite: ME 361. Corequisite: ME 321.

**ME 492 Senior Mechanical Engineering Design Project (3)**

Independent or team experience in engineering design of systems, components, or processes involving mechanical and/or fluid and thermal sciences. Emphasis will be given to the design process, utilizing the fundamental concepts, principles and methodologies developed in the various disciplines encountered in earlier course work. Projects, both individual and team, will be supervised by mechanical engineering faculty. Normally taken during senior year. Prerequisite: Major standing, completion of all 300-level professional subjects, approval of project faculty supervisor.

**SYSTEMS ENGINEERING****SYS 317 Engineering Probability and Statistics (3)**

Elements of probability for discrete and continuous random variables; examples and problems from various areas of engineering are used to illustrate developments and their applications. Topics covered include finite sample spaces, two or more events, random variables, distribution functions, expected value, functions of a random variable, two or more random variables; introduction to statistics, control charts and tolerancing. Offered fall, winter. Prerequisite: Major standing. Corequisite: MTH 254 or MTH 256.

**SYS 325 Lumped-parameter Linear Systems (3)**

Laplace transform methods, transfer functions and impedance concepts in the analysis of electrical and mechanical lumped-parameter linear systems. Natural and forced behavior of first- and second-order systems. Relationship between pole-zero pattern and dynamic response. Frequency response methods. Computer techniques for analysis and design. Offered fall, winter.

Prerequisite: EE 222, APM 257 and major standing.

**SYS 410 System Optimization and Design (4)**

Classical optimization techniques including Lagrange multipliers and Kuhn-Tucker conditions. Computer techniques for system optimization including linear programming, constrained and unconstrained nonlinear programming. System design — case studies. The course emphasizes a capstone design experience involving system modeling, simulation and optimal design. Offered fall.

Prerequisite: MTH 256 and SYS 325.

**SYS 422 Intelligent Robots (4)**

Overview of industrial robots, their components and typical applications. Kinematics of robots and solution of kinematic equations. Path planning. Vision and pattern recognition. Robot and vision programming languages. Laboratory experience in the development and implementation of a robot language environment using minirobots. Offered fall.

Prerequisites: CSE 132, SYS 325.

**SYS 431 Automatic Control Systems (4)**

Performance specifications for automatic control systems. Modeling transfer functions, signal flow graphs and Mason's gain formula. Static error coefficients, stability theory and Routh's criterion. The root locus method. Frequency response and the Nyquist criterion. Design of compensation networks. Laboratory includes the analysis of actual physical systems and the design of compensators for these systems with circuit realization. Offered fall and winter.

Prerequisite: SYS 325.

**SYS 433 Modern Control System Design (4)**

State-of-the-art design methodology for control systems, state space modeling of physical systems, modal transients, feedback control. Integrated system design by analytical and computer simulation methods emphasized. The course includes a design project for which the student is required to model, design, implement and evaluate a controller for a physical system. With laboratory. Offered fall.

Prerequisite: SYS 431.

**SYS 458 Electrical Energy Systems (4)**

Generation, transmission and distribution of electrical energy. Analysis and design of three-phase circuits, per unit normalization, system design evaluation and load-flow, symmetrical components and stability. Offered winter.

Prerequisite: SYS 325.

**SYS 463 Foundations of Computer-aided Design (4)**

The design of computer graphics software for electrical, mechanical and systems engineering. Raster graphics fundamentals, fill algorithms, transformations, curve generation, user input techniques and 2-D animation. Application programs using data structure are written in PASCAL. Offered fall.

Prerequisite: CSE 262 and major standing.

**SYS 469 Simulation in Engineering (4)**

Basic modeling and simulation methods for discrete, lumped, and continuum systems; software verification; interactive graphical output interpretation; model validation and credibility considerations. Emphasis on modern simulation theory, software and design demonstration of practical engineering applications. Offered winter.

Prerequisite: SYS 325 or CSE 343.

**SYS 483 Production Systems (4)**

Design of computer systems to control the flow of material in manufacturing systems from forecast to finished product. Topics include parts explosion, bill-of-material, inventory control, Pareto distribution, lead time, MRP, shop floor control, line balancing, etc. Offered fall.

Prerequisite: SYS 317.



**SYS 485 Statistical Quality Control (4)**

Fundamentals of statistical quality control and their use in the design of systems. Control charts for mean and range for variable, control charts for attributes, cusum charts, runs and other process quality monitoring topics. Single, double and multiple sampling inspection plans, sequential sampling and related topics. Offered winter.

Prerequisite: SYS 317.

# GENERAL STUDIES

**Interim Director:** *Carole Crum*

**Faculty council for general studies:** *John Cowlshaw, chairperson; Don Amalfitano, student representative; Paul Chao, assistant professor, School of Business Administration; Thaddeus Grudzien, assistant professor, Biological Sciences; Linda Hildebrand, assistant professor, Kresge Library; Norman Kloosterman, assistant professor, School of Nursing; David Lau, assistant professor, Rhetoric, Communications and Journalism; Jerry Marsh, special instructor, School of Engineering and Computer Science; David Meyer, associate professor, School of Human and Educational Services; Kevin Nathan, assistant professor, School of Business Administration; Laurie Osborne, assistant professor, English; Subbaiah Perla, associate professor, Mathematics; Ann Pogany, assistant professor, Kresge Library; Marilyn Raymond, special instructor, School of Health Sciences; Bob Van Til, assistant professor, School of Engineering and Computer Science; Miguel Villalobos, assistant professor, Mathematics; Hilda Zubrzycki, student representative*

## The Bachelor of General Studies

The Bachelor of General Studies degree (B.G.S.) is a university-wide baccalaureate program that offers maximum flexibility and opportunity for student decision-making about courses of study at Oakland University. The degree is primarily intended for students wishing to create a program to meet their individual goals through interdisciplinary study.

Students entering the General Studies program design a program of study utilizing courses from many departments to prepare them for a particular job or career choice. Students may select courses from any field of study offered by an academic department, subject to prerequisites and policies set by the individual departments. This program offers students the opportunity to plan a unique and challenging academic program in cooperation with a General Studies faculty adviser.

Students changing major into B.G.S. must meet the program requirements described in the catalog extant at the time of the change, or may meet program requirements described in a subsequent catalog. Any catalog which students are following must not be more than six years old at the time of graduation.

Frequently, students seeking the degree have earned academic credits from other colleges and have been encouraged by their employers to pursue a baccalaureate degree. The General Studies program has flexible policies on transfer credits from other institutions, and it provides a personalized program to meet the educational needs of individuals and employers. Pre-enrollment counseling is available to those who are considering this degree.

Students applying to the General Studies program are first admitted to pre-B.G.S. status. Students will be granted major standing upon approval of their plan of work and supporting rationale by the General Studies Faculty Advising Committee. The B.G.S. program is administered by the Department of Academic Services and General Studies, 121 North Foundation Hall (370-3227).

As the Bachelor of General Studies is an alternative to a traditional degree, it is not permissible to seek a double degree with the Bachelor of General Studies serving as one of those degrees. For the same reason, students who have already earned a baccalaureate may not earn an additional baccalaureate in General Studies.

## Two-Plus-Two program for associate degree holders

The General Studies program allows students to combine broad liberal arts and professional courses from the university curriculum with associate degrees from Michigan community colleges. The Two-Plus-Two program provides for transfer of up to 62 semester credits from accredited two-year community colleges in Michigan. Students with associate degrees in any area except nursing may qualify for the Two-Plus-Two General Studies program. Holders of associate degrees in nursing are subject to a course by course evaluation.

The program requires that courses accepted for transfer must have a grade of C or above, that at least 12 semester credits have been earned in liberal arts courses, and that all course work has been taken at accredited institutions.

### Requirements for the degree in Bachelor of General Studies

To earn the Bachelor of General Studies degree, students must meet the following requirements:

1. Complete the writing proficiency requirement.
2. Complete the general education requirements. (See *Undergraduate degree requirements*).
3. Complete a minimum of 124 semester credits.
4. Complete 32 of those credits at the 300- or 400-level.
5. Complete 32 credits at Oakland University; complete the last 4 credits toward the degree at Oakland.
6. Successfully complete at least the last 24 credits at Oakland University as an admitted candidate for the Bachelor of General Studies degree. Effective fall 1990, courses used to meet the writing proficiency requirement or the general education requirement may not be counted in these 24 credits. Candidacy is authorized by the university and the Faculty Council for General Studies when a student's plan of work and supporting rationale have been approved by the General Studies Faculty Advising Committee.

### Concentrations or minors

General Studies students may wish to develop programs that include concentrations or minors offered by other academic schools or departments within the university. Approximately 50 minors and concentrations are available to General Studies students; a complete listing may be obtained from the General Studies office.

Students should consult a General Studies counselor to determine policies and procedures on seeking minors or concentrations.

### Advising

Advising is central to the program as students design an individualized and unique program of study based upon interests and needs. Students must follow a specific advising procedure as follows:

1. Meet with a General Studies counselor in a preliminary appointment. The counselor will explore the suitability of the program to student needs and interests. The counselor will also discuss student eligibility to enter the program. Students entering the program through a change of major or through the readmission process must have a cumulative grade point average and academic progress indicator of at least 2.00. Students on academic probation will not be considered for the program.
2. Be assigned a faculty adviser. When pre-B.G.S. has been declared as a program of study, students will again meet with the counselor to receive the plan of work form and rationale guidelines. Students and the counselor will mutually select a faculty adviser.
3. Develop a plan of work and rationale with the faculty adviser. Students will initiate a meeting with the faculty adviser to discuss their goals and the courses that may help achieve those goals. In addition to creating a plan of work, students will write a rationale for course selection.
4. Attain committee approval. After the faculty adviser approves them, the plan of work and rationale are returned to the General Studies office and sent to the Faculty Advising Committee for approval. When the plan of work and rationale have been approved at a monthly meeting of the committee, students will be granted major standing.
5. Make substitutions as needed to the plan of work. Students who want to take courses other than those listed on their approved plans of work must gain consent of their faculty adviser or a General Studies counselor. Plan of Work Substitution forms are available from the General Studies office or faculty advisers. They must be submitted to the General Studies office.

### **Conciliar honors**

Conciliar honors are awarded to General Studies students by the Faculty Council for General Studies.

There are two ways in which students may gain conciliar honors. Students who have cumulative grade point averages of 3.60 or better are automatically nominated for conciliar honors. Students may be nominated for honors if they have cumulative grade point averages between 3.30 and 3.59. Students may nominate themselves or be nominated by a faculty adviser. Written nominations, accompanied by faculty recommendations, should be made on the basis of excellence in scholarship, appropriate community and university experience, and/or achievement of academic distinction while overcoming extreme adversity. Nominations will be considered by the advising committee and will be forwarded to the faculty council for final approval.

### **On-campus Evening Degree Programs**

Students may earn undergraduate degrees at night in 20 majors, including General Studies. See *Evening programs* for details.

# SCHOOL OF HEALTH SCIENCES

**Dean:** *Ronald E. Olson*

**Office of the Dean:** *Alfred W. Stransky, associate dean for community health; Arthur J. Griggs, assistant to the dean; A. Jayne Hoskin, academic adviser*

**Consulting professors:** *Federico A. Arcari, Duane L. Block, John P. Cullen, Joseph A. Rinaldo, Jr., Julius Rutzky, Robert L. Segula, Kenneth L. Urwiller, John R. Ylvisaker, Richard J. Zaenker*

**Clinical professors:** *Seymour Gordon, Myron M. LaBan, Moon J. Pak, John R. Pfeifer, Gerald C. Timmis*

**Clinical associate professors:** *Ali A. Abbasi, George R. Gerber, David R. Pieper, Jeanne M. Riddle, Alexander Ullmann*

**Clinical assistant professor:** *Nitin C. Doshi*

**Adjunct assistant professor:** *Sonya Friedman*

## General Information

The School of Health Sciences offers degree and non-degree programs in health and medically related fields. Currently, programs leading to the Bachelor of Science degree include industrial health and safety and medical laboratory sciences. A program leading to the Master of Physical Therapy degree is offered to students initially completing a required undergraduate pre-physical therapy curriculum and a Bachelor of Science in health sciences. A program leading to the Master of Science degree is offered in exercise science. Non-degree programs at the undergraduate level include exercise science and health behavioral sciences.

Administratively, the programs in exercise science and physical therapy are housed in the Department of Kinesiological Sciences and the program in medical laboratory sciences is housed in the Department of Laboratory Sciences. The Meadow Brook Health Enhancement Institute is a university facility which cooperates closely with the School of Health Sciences. The institute offers programs addressing the important elements of health enhancement, including nutrition, weight control, physical fitness and others. The institute also provides programs for cardiac rehabilitation, industrial health and movement re-education.

## Health Science core curriculum

The health science core curriculum is a common component of introductory course work required for each of the baccalaureate programs offered through the School of Health Sciences. The core curriculum also represents an appropriate starting point for undecided health science students, since its flexibility allows for entry into any of the health science programs at Oakland University, as well as most health science degree programs at other universities.

Students pursuing the physical therapy degree are initially required to complete a pre-professional program (pre-physical therapy) which entails the health science core curriculum. Following this step, students must apply for admission to major standing in physical therapy which is both selective and competitive. The limited number of students accepted into the major program must complete the Bachelor of Science in health sciences and Master of Physical Therapy degree in order to function professionally as physical therapists.

The programs in industrial health and safety and medical laboratory sciences do not incorporate a pre-professional component; thus, students may declare either major upon entry to the

university. In these cases, the core curriculum will be completed during the course of the baccalaureate program. Early completion of some of the core curriculum courses is recommended, since they are prerequisites to required advanced courses in the industrial health and safety or medical laboratory sciences programs.

The academic requirements for each of the baccalaureate programs of the school are described in the pages that follow. In addition to the core curriculum, the requirements include additional prerequisite-level course work that complements the core curriculum, the program major course requirements, the university general education requirements and the university writing proficiency requirement.

Students completing the core curriculum course work at Oakland University may, in some instances, substitute equivalent or higher level courses for core curriculum courses; this action must be approved by the appropriate program director and the School of Health Sciences Committee on Instruction. Students transferring from other universities or colleges to Oakland University must have their transcripts evaluated by the School of Health Sciences to determine which core curriculum or program course work requirements have been met.

### Core curriculum courses\*

BIO 200; 207 or 321	PHY 101-102 or 151-152
CHM 144-145	HBS 200
MTH 122 or 141 or 154	HS 101
STA 225 or 226	

\*See the academic requirements of the individual health science programs for core curriculum course preferences or requirements.

### Approved minors

School of Health Sciences students may elect to complete a minor in another discipline offering such an option. It is recommended that students who are considering declaring a minor consult as early as possible with the School of Health Sciences academic adviser and the minor field adviser. Credits earned toward a degree in the School of Health Sciences can be double counted toward any minor to which they would otherwise apply offered by the other schools or the college.

### Petition of exception

For students enrolled in health science programs, all Petitions of exception must be reviewed by a faculty member or the academic adviser and reviewed by the appropriate program director before referral to the Health Sciences Committee on Instruction. See the *Academic Policies and Procedures* section of the catalog for further information (*Petition of exception*).

## Course Offerings

### HS 101 Careers in the Health-Related Professions (0)

Seminar/survey of professional opportunities in the various health fields such as medical technology, histotechnology, cytotechnology, nuclear medicine technology, exercise science, industrial health and safety, medical physics, physical therapy, perfusion technology, occupational therapy, respiratory therapy and pharmacy.

### HS 201 Health in Personal and Occupational Environments — Ideas, Concepts, Issues and Applications (4)

Current information about the impact of environmental and life-style factors on health. Examination of issues related to human exposure to physical, chemical and biological stresses. The impact of exercise, weight control, substance abuse, nutrition and stress management on a person's ability to cope with environmental stresses will be analyzed. Satisfies the university general education requirement in natural science and technology.

**HS 324 Clinical Application of Learning Theories (2)**

Basic child, adolescent, adult/older adult learning theory as it relates to patient interaction (crisis intervention, evaluation, teaching, discharge planning) and to instruction of students, peers, and patients on an individual or group basis. For Physical Therapy and Medical Technology students.

**HS 331 Pharmacology (2)**

An introduction to the principles of pharmacology. Identical with NRS 230.

Corequisite: BIO 207.

**HS 391 Research I (1)**

Theory and application of the principles of problem solving and the scientific method with an emphasis on current research. For Physical Therapy and Medical Technology students.

**HS 401 Introductory Pathology (4)**

Basic principles of human pathology appropriate for students pursuing curricula in the health related disciplines. Diseases of the major systems of the body are studied.

Prerequisite: BIO 200 and BIO 207 or 321.

**HS 405 Special Topics (2, 3 or 4)**

Prerequisite: Permission of instructor.

# DEPARTMENT OF KINESIOLOGICAL SCIENCES

**Chairperson:** *Osa Jackson*

**Exercise science program interim director:** *Alfred W. Stransky*

**Physical therapy program director:** *Osa Jackson*

**Physical therapy clinical coordinator:** *Marilyn J. Raymond*

**Associate professors:** *Osa Jackson (Physical Therapy), Alfred W. Stransky (Exercise Science)*

**Assistant professors:** *Kornelia Kulig (Physical Therapy), Charles R. C. Marks, (Exercise Science)*

**Special instructors:** *Christine Pillow (Physical Therapy), Marilyn J. Raymond (Physical Therapy)*

**Clinical professors:** *A. Charles Dorando (Physical Therapy), Freddy M. Kaltenborn (Physical Therapy), Murray B. Levin (Exercise Science), Clarence B. Vaughn (Physical Therapy)*

**Clinical associate professors:** *William R. Back (Exercise Science), Barry A. Franklin (Exercise Science), John J. Karazim (Exercise Science), John F. Kazmierski (Exercise Science), Creagh M. Milford (Exercise Science), Rajendra Prasad (Exercise Science), Allen Silbergleit (Physical Therapy)*

**Clinical assistant professors:** *Joseph A. Arends (Exercise Science), Allen L. Babcock (Physical Therapy), Jack E. Belen (Physical Therapy), Peter M. Boruta (Physical Therapy), Frank Kava (Physical Therapy), Kristie S. Kava (Physical Therapy), Michael R. Lubetsky (Physical Therapy), Frederick P. Maibauer (Physical Therapy), Robert C. Nestor (Exercise Science), Ricky E. Olson (Physical Therapy), Chandra S. Reddy (Exercise Science), Thomas E. Schomaker (Exercise Science)*

**Clinical instructors:** *Henry D. Boutros (Physical Therapy), Michael D. Cribbs, (Exercise Science), Philip H. Keila (Physical Therapy), Cathy Larson (Physical Therapy), James C. Pipp (Physical Therapy), Elizabeth Fromm Ross (Physical Therapy), Dorothy J. Smith (Physical Therapy)*

The Department of Kinesiological Sciences administers the programs in exercise science and physical therapy. These programs share many common goals in research, teaching and service that relate to the study of human motion.

## Exercise Science Program

The exercise science program offers elective courses for students interested in the relationship among physical activity and weight control, disease prevention, stress management, nutrition and optimal health and performance.

Opportunities exist for students to establish personal programs of exercise, weight control, nutrition, stress management and substance abuse avoidance.

Disease prevention and quality of life are components of many of the course offerings. Selecting courses in exercise science can be especially meaningful to students entering a health-related career, with the recent emphasis placed on health promotion and disease prevention within the health care delivery system.

For a description of the Master of Science in exercise science program see the *Oakland University Graduate Catalog*.



## Physical Therapy Program

The physical therapy program has a three-fold purpose. The first is to provide an educational program that prepares students for the Master of Physical Therapy degree and a professional career in physical therapy. The second is to provide opportunities for the advancement of knowledge in physical therapy through research. The third is to provide service to the public. This is done, in part, through continuing education courses and lectures, and by providing a resource of physical therapy expertise. With its three-fold purpose, the physical therapy program is an integral part of the university, providing students opportunities to develop personal skills for productive citizenship, along with the professional skills of physical therapy.

Physical therapy is an integral part of the health care system. Physical therapists are concerned with the prevention and treatment of acute and chronic conditions that cause disorders of movement. In order to provide appropriate treatment, a thorough knowledge of the neuromusculoskeletal and cardiopulmonary systems is paramount so that patients can be knowledgeably evaluated and their problems identified. Following evaluation, a treatment program is developed to resolve the problems. Physical therapists work in concert with the referring physician and other members of the rehabilitation team.

Evaluation, prevention and treatment of movement disorders requires specific knowledge of basic and applied medical science. Such understanding is built upon a foundation of the basic sciences of biology, chemistry, physics, anatomy, physiology, kinesiology and pathology. Of equal importance is a background in the behavioral sciences, for this provides basic knowledge in the development of interpersonal relationships with patients, families and other health professionals.

The Oakland University physical therapy program is accredited by the American Physical Therapy Association.

### Program description

Entry into the physical therapy program is competitive, and is contingent upon satisfactory completion of the health science core curriculum, required courses complementing the core curriculum, and the university general education requirement. Acceptance is based on academic performance, letters of recommendation, exposure to the profession, personal interviews and Allied Health Professions Admissions Test scores. Application to the physical therapy program typically occurs in the winter semester of the sophomore year and may be initiated by Oakland University students or by students transferring from other institutions. Transfer students must demonstrate completion of a pre-professional curriculum equivalent to Oakland University's in terms of both content and semester hour total (71 semester hour credits). Transfer students are reminded that a maximum of 62 semester hour credits are transferable from a community or junior college (see *Transfer policies and procedures*). Preference will be given to students who have completed a majority of their credits at Oakland University.

Students accepted into the physical therapy professional program are required to complete the Bachelor of Science in health sciences degree as outlined in this section, followed by a graduate level curriculum which culminates in the awarding of the Master of Physical Therapy degree. The Bachelor of Science in health sciences is awarded when a minimum of 137 semester hours have been earned. This degree is a reflection of academic achievement but does not allow the student to practice physical therapy. The Master of Physical Therapy is awarded upon completion of a minimum of 49 additional semester hours of graduate level course work. This degree allows the graduate to apply to sit for the professional licensure examination. The duration of the professional program is three years for full-time students. Students who already hold a bachelor's degree are not required to earn a second. However, such students must still complete the preprofessional core requirements prior to admission to the professional program and all professional course requirements prior to receiving the master's degree.

A description of the 49 semester hours of graduate level course work required to complete the physical therapy program and earn the Master of Physical Therapy degree is available from the School of Health Sciences. Following is a list of the physical therapy classes offered:

HS 534	Administration
PT 512	Arthrology
PT 513	Musculoskeletal System
PT 521	Neuromuscular System
PT 522	Special Problems of the Neuromuscular System
PT 533	Electrotherapy
PT 541	Personal Movement Analysis II
PT 553	Clinical Education III
PT 554	Clinical Education IV
PT 555	Clinical Education V
PT 561	Physical Therapy and the Human Life Cycle II: Adulthood and Aging
PT 571	Cardiopulmonary System
PT 572	Rehabilitation Procedures
PT 577	Special Topics
PT 592	Research II
PT 593-597	Elective Specialty Seminar
PT 598	Independent Study
PT 599	Research III

### Requirements for the B.S. degree with a major in health sciences

Students seeking the Bachelor of Science degree with a major in health sciences must complete a minimum of 137 credits through the following requirements:

1. Complete the writing proficiency requirement. In satisfying this requirement, students may need to complete RHT 100 and RHT 101 (with grades of 2.0 or better) or their equivalent at another college or university. Credits associated with these courses are not included in the 137 credits required for this degree.
2. Meet the university general education requirements (see *Undergraduate degree requirements*). In completing the health science core curriculum and major program requirements, physical therapy majors will automatically satisfy the field groups in mathematics and logic, in natural science and technology, and in social science.
3. Complete the health science core curriculum. For physical therapy students, the mathematics course MTH 122 is required.
4. Complete BIO 322, PHY 158, PSY 100 and PSY 331, all of which complement the core curriculum.
5. Be admitted to major standing in the professional program.
6. Complete the major program as follows: BIO 381 and 460; EXS 304; HS 324, 331, 391, and 401; PHY 325; PT 300, 311, 330, 331, 332, 333, 340, 351, 360, 370, 420, 442, 452, and 460.
7. Complete all physical therapy major program course work with grades of 2.5 or higher and maintain a cumulative GPA of 2.70 or higher in the major course work.

### Grade point policy

For purposes of this policy, the term "grade" means 1) an overall grade for a course, or 2) either a clinical grade or a theory grade, when a course contains both components (the component grade).

Students accepted into the physical therapy major program must satisfactorily complete all remaining courses required for graduation with a grade of 2.5 or higher and must maintain a cumulative grade point average of 2.70 in the major course work. Failure to meet either standard may result in probation, suspension or dismissal from the program. Specific guidelines governing such action follow:

1. A student receiving one course or component grade below 2.5, but greater than or equal to 2.0, during any semester, or receiving a semester GPA below 2.70, will be placed on probation in the program. A student will be informed if placed on probation and will

be required to complete remedial work successfully before probation will be lifted. All initial decisions regarding the imposition of probation, the remedial work required, and the removal of probation will be made by the physical therapy promotion and graduation committee.

2. A student receiving two or more course or component grades below 2.5, but greater than or equal to 2.0, during any semester, or receiving one course or component grade below 2.0 during any semester is subject to suspension from the program. Suspension involves temporary ineligibility to take additional major course work, until such time that the course(s) completed unsatisfactorily or their equivalent are again offered and are satisfactorily completed. This period is typically one year. A student will be informed if placed on suspension, including information on the course work that must be satisfactorily repeated (that is, with a course or component grade of 2.5 or higher) before the suspension is lifted, and the time within which the work must be completed. All initial decisions regarding the imposition of suspension, the course work to be repeated and the removal of suspension will be made by the physical therapy promotion and graduation committee.
3. A student is subject to dismissal from the program as a result of any one of the following conditions: receipt of two course or component grades below 2.0 during completion of the professional program, failure to achieve a course or component grade of at least 2.5 in a course repeated during suspension, being subject to probation more than twice or to suspension more than once, or failure to be removed from probation within one semester. A student will be informed of dismissal from the program, including the grounds for such action. All initial decisions regarding dismissal will be made by the physical therapy promotion and graduation committee. Once dismissed, a student may not reenter the physical therapy program.
4. The action to place a student on probation or suspension shall be for a definite term. A probation or suspension subsequent to that time period, even if immediately following, shall be an additional probation or suspension for the purposes of paragraph 3 above.
5. Appeals of physical therapy promotion and graduation committee decisions may be made to the dean of the School of Health Sciences. The dean's decision shall be final.

## Code of ethics

Since ethical conduct is critical to a health profession, students are required to abide by the Physical Therapy Code of Ethics and Guide for Conduct, published by the American Physical Therapy Association. Violations will be reviewed by the Physical Therapy promotion and graduation committee and could result in dismissal from the program.

## Course Offerings

### EXERCISE SCIENCE

#### EXS 101 Exercise (Jogging) and Health Enhancement (2)

An examination of lifestyle factors related to disease prevention and improved quality of life. This course combines regular exercise and health enhancement lectures. The mode of exercise in this course is walking-jogging. Course content in EXS 101, 102 and 104 includes the same lecture topics. Students who have received credit or who are currently enrolled in EXS 102 or 104 may not repeat the lecture material or final examination. An independent project and/or a different final examination must be completed before receiving credit.

#### EXS 102 Exercise (Swimming) and Health Enhancement (2)

An examination of lifestyle factors related to disease prevention and improved quality of life. This course combines regular exercise and health enhancement lectures. The mode of exercise in this course is swimming. Course content in EXS 101, 102 and 104 includes the same lecture topics. Students who have received credit or who are currently enrolled in EXS 101 or 104 may not repeat the lecture material or final examination. An independent project and/or a different final examination must be completed before receiving credit.

**EXS 103      Exercise (Strength Training) and Health Enhancement (2)**

An examination of lifestyle factors related to disease prevention and improved quality of life. This course combines regular exercise and health enhancement lectures. The mode of exercise in this course is strength training.

**EXS 104      Exercise (Aerobics) and Health Enhancement (2)**

An examination of lifestyle factors related to disease prevention and improved quality of life. This course combines regular exercise and health enhancement lectures. The mode of exercise in this course is aerobics. Course content in EXS 101, 102, and 104 includes the same lecture topics. Students who have received credit or who are currently enrolled in EXS 101 or 102 may not repeat the lecture material or final examination. An independent project and/or a different final examination must be completed before receiving credit.

**EXS 202      Introduction to Exercise Science (2)**

An examination of graduate and occupational opportunities in exercise science. This course includes special topics in motor learning, exercise physiology, kinesiology and sports medicine.

**EXS 204      Weight Control, Nutrition and Exercise (4)**

Theories dealing with weight loss and nutrition including such topics as fundamental nutrition, the relationship of foods to weight control, the physiology of weight loss and the body's internal weight control mechanisms. Included are laboratory experiences to help students apply concepts. Recommended for students attempting to develop the necessary skills for successful weight loss and improved nutritional habits.

**EXS 207      American Red Cross Advanced First Aid (2)**

Understanding of procedures in the immediate and temporary care of victims of an accident or sudden illness. In addition, course content includes "safety-proofing" facilities and equipment.

**EXS 211      American Red Cross Senior Lifesaving and Water Safety Instruction (2)**

Principles and procedures for swimming, lifesaving and water safety with student participation. ARC certification upon successful completion of course.

**EXS 215      Stress Management (2, 3 or 4)**

Concepts and techniques to enable students to manage stress more effectively.

**EXS 304      Exercise Physiology (4)**

Effects of exercise and physical training on the physiological systems of the body, with emphasis on cardio-respiratory systems. Includes muscle contraction mechanisms, circulatory and respiratory adjustment during exercise, and nutrition for physical activity. Laboratory experiences are provided for insight into the dynamics of human performance.

Prerequisite: BIO 104 or 200.

**EXS 350      Human Motion Analysis (4)**

The study of basic mechanical and kinesiological principles and their functions, interrelationships, and involvement with the mechanics of human motion.

Prerequisite: BIO 205.

**EXS 493      Independent Study and Research (1, 2, 3 or 4)**

Special study areas and research in exercise science.

Prerequisite: Departmental permission.

**PHYSICAL THERAPY****PT 300      Kinesiology (3)**

Study of selected anatomical, structural and functional properties of human muscular, skeletal and connective tissue structure. Normal human movement is emphasized to develop a base of knowledge for clinical assessment and treatment. Laboratories in surface anatomy and gait analysis are included. Abnormalities and physical dysfunctions are discussed on a limited basis.

**PT 311      Biomechanics (3)**

The study of mechanical principles of human movement and its analysis. Anthropometry, muscle mechanics, mechanics of materials, and coordination are studied. Instrumentation for kinetic and kinematic evaluation of human motion are presented. Advanced gait analysis is included.

**PT 330 Introduction to Physical Therapy (4)**

Theory and practice of basic therapeutic techniques utilized in physical therapy. Lecture/laboratory modules include: professional orientation, history taking, range of motion, massage, wheelchair prescription, assistive devices, transfer training and gait training.

**PT 331 Evaluation Procedures (4)**

Study of basic evaluation principles and procedures for the patient with musculoskeletal and neuromuscular problems. Lecture, laboratory and problem-solving sessions on manual muscle testing, goniometry, sensory and reflex testing and neuro developmental assessment.

**PT 332 Physical Agents (3)**

Lecture/laboratory focusing on the principles and procedures for using physical agents. Modules focus on superficial and deep heat, cryotherapy, infrared, ultraviolet, hydrotherapy, compression garments and traction.

**PT 333 Clinical Medicine and Physical Therapy (4)**

Lecture/discussion covering the etiology, pathology, symptomatology, treatment and prognosis of patient disorders associated with the medical specialty areas covered in this course, which include: cardiopulmonary, oncology, burn care, orthopedics, rheumatology and neuromuscular diseases.

**PT 340 Personal Movement Analysis I (2)**

Systematic exploration of movement habits/options based on the sensorimotor integration of the individual student. Self-exploration of facilitation techniques that enhance sensorimotor integration will be explored. Effects of cognitive, affective and psychomotor factors on movement will be considered.

**PT 351 Clinical Education I (2)**

Orientation to clinical education including the practice of basic patient evaluation through supervised experience in the clinical environment.

**PT 360 Computer Applications in Physical Therapy (1)**

Specialized applications of computer techniques to physical therapy including basic knowledge to understand instruction manuals for computerized instrumentation.

Prerequisite: Computer proficiency or permission of instructor.

**PT 370 Therapeutic Exercise (4)**

Introduction to principles and techniques of therapeutic exercise. Students will begin to formulate treatment programs to resolve patient problems and foster awareness of the ramifications of these procedures on the client and his/her life.

**PT 420 Neurophysiology and Clinical Neuroscience (3)**

Integration of neuroanatomy and neurophysiology as it forms a rationale for patient evaluation and treatment planning. Special emphasis given neurophysiology/neuroanatomy rationale related to neuromuscular and skeletal dysfunctions. Lecture, laboratory and practical experiences.

**PT 442 Emotional Aspects of Patient-Therapist Interaction (2)**

Study of the various factors impinging upon the patient, the family or meaningful others, other members of the medical team and ultimately the patient-therapist relationship and what the physical therapist needs to consider when interacting with the patient or family or meaningful others.

**PT 452 Clinical Education II (2)**

Clinical education including advanced patient evaluation and initiation of treatment planning and implementation under direct supervision in the clinical environment.

**PT 460 Physical Therapy and the Human Life Cycle I: Infancy through Adolescence (3)**

Examines the human developmental progression from conception up to and including adolescence and the special physical therapy adaptations that are required at each stage of development. Course format is varied with discussion, demonstration, lectures, small group activities, field observations and patient assessment.

# DEPARTMENT OF LABORATORY SCIENCES

**Chairperson:** *Lynne Williams*

**Medical laboratory sciences program director:** *Lynne Williams*

**Medical laboratory sciences clinical coordinator:** *Mary L. Sherman*

**Cytotechnology directors:** *Sudah Kini (Henry Ford Hospital), Richard J. Pollard (Harper Hospital)*

**Histotechnology director:** *Alireza Armin*

**Nuclear medicine technology medical director:** *Michael M. Joh*

**Associate professor:** *Lynne Williams (Medical Laboratory Sciences)*

**Special instructor:** *Mary L. Sherman (Medical Laboratory Sciences)*

**Clinical professors:** *Jay Bernstein (Histotechnology), Richard H. Walker (Medical Technology)*

**Clinical associate professors:** *Alireza Armin (Histotechnology), Billy B. Baumann (Medical Laboratory Sciences), William B. Fuqua (Medical Laboratory Sciences), Barbara J. Jenkins (Medical Technology), John H. Libcke (Medical Technology), Aaron Lupovitch (Medical Technology), Richard J. Pollard (Cytotechnology), Boris K. Silberberg (Medical Technology)*

**Clinical assistant professors:** *Abdul A. Al Saadi (Histotechnology), Elena I. Dvorin (Medical Laboratory Sciences), Evelyn R. Hansen (Medical Laboratory Sciences), Michael M. Joh (Nuclear Medicine Technology)*

**Clinical instructors:** *James Adams (Medical Technology), Barbara J. Cahalan (Medical Technology), Ellen Chapin (Nuclear Medicine Technology), Harriet L. Cronin (Medical Technology), Dorothy Cummings (Histotechnology), Susan Dingler (Cytotechnology), Deanna Dupree Klosinski (Medical Technology), Margaret M. Kluka (Medical Technology), Ross R. Lavoie (Cytotechnology), Melanie Madercic (Histotechnology), Joseph Roszka (Histotechnology), Joyce Salancy (Medical Technology), Carolyn A. Shalhoub (Medical Technology), Deborah Thompson (Medical Technology), Robert Weimer (Histotechnology), Peggy Wenk (Histotechnology)*

## Medical Laboratory Sciences Program

The medical laboratory sciences program is designed to prepare students for professional opportunities in a variety of settings. Graduates may find employment opportunities in hospital or commercial clinical laboratories, research facilities, biomedical industries (sales or service representatives, research and development, quality assurance) and public health centers/laboratories. In addition, the medical laboratory sciences curriculum meets basic requirements for entry into post-baccalaureate professional programs, including medicine, dentistry and osteopathy.

Medical laboratory scientists perform many routine and specialized laboratory tests for the purpose of developing data for the determination of the presence and extent of disease, as well as implications pertaining to the cause of disease. Laboratory science is a very diversified field. Many areas of specialization have evolved within the profession to ensure the expertise of individuals performing in clinical settings. Generally, employment in a hospital or community clinical laboratory requires certification in a specialization field. Professional certification is obtained by completing an accredited clinical internship program and satisfying other applicable

licensure requirements, depending on the specialization.

The Oakland University program addresses each of the major laboratory science specializations, including cytotechnology, histotechnology, medical technology and nuclear medicine technology. Cytotechnologists and histotechnologists are involved in the diagnosis of disease based on cellular or tissue alterations. Medical technologists perform a wide range of diagnostic procedures, including chemical, microscopic, bacteriological and immunological procedures used in the diagnosis and study of disease. Nuclear medicine technologists utilize small amounts of radioactive materials for diagnostic evaluations of the anatomic or physiologic conditions of the body and to provide therapy with radioactive sources.

Students may be admitted as medical laboratory sciences majors directly from high school or by transfer from other colleges or universities. As described below (*Admission to clinical specializations*), students have the option of completing the medical laboratory sciences degree by completing a hospital-based clinical internship specialization program in cytotechnology, histotechnology, medical technology or nuclear medicine technology during their senior year. Acceptance into these internship programs is selective and based on grades, personal interviews and letters of recommendation. Application for acceptance into a specialization internship program will occur either at the completion of the sophomore year or during the junior year depending on the specialization. The junior year curriculum will vary for students depending on the specialization followed.

Students not wishing to pursue professional certification or not selected in a clinical specialization internship program may complete the medical laboratory sciences degree by following the academic program for the medical technology specialization and substituting adviser-approved electives for the clinical year (internship) course work. Such students will be eligible to reapply for clinical internship opportunities in medical technology either before or after graduation, if desired.

### **Requirements for the B.S. degree with a major in medical laboratory sciences**

Students seeking the Bachelor of Science degree with a major in medical laboratory sciences must complete a minimum of 136 credits through the following requirements:

1. Complete the writing proficiency requirement. In satisfying this requirement, students may need to complete RHT 100 and RHT 101 (with grades of 2.0 or better), or their equivalents, at another college or university. Credits associated with these courses are not included in the 136 credits required for this degree.
2. Meet the university general education requirements (see *Undergraduate degree requirements*). In completing the health science core curriculum, medical laboratory sciences majors will automatically satisfy the field groups in mathematics and logic, and in natural science and technology.
3. Complete the health science core curriculum.
4. Complete BIO 322 or 206, CHM 149, CHM 203-204 and MLS 201, all of which complement the core curriculum.
5. Complete the major course requirements specified under one of the four medical laboratory sciences specializations (cytotechnology, histotechnology, medical technology or nuclear medicine technology).
6. Complete all medical laboratory sciences major program course work with a cumulative GPA of 2.50 or higher.

### **Admission to clinical specializations**

To be accepted in a clinical specialization, students must complete appropriate application processes with individual (hospital based) accredited programs. Applications for the histotechnology, cytotechnology and nuclear medicine technology programs are processed in the spring semester following the sophomore year (or completion of the health science core curriculum). Applications for medical technology clinical programs are processed during fall semester of the junior year. Students should have a 3.00 overall grade point average. Students with lower

grade point averages may be admitted provisionally pending satisfactory completion of appropriate fall semester, junior year course work.

### **Grade point policy**

Students must maintain a cumulative grade point average of 2.50 in all course work applied to the medical laboratory sciences major. Students in a specialization will be placed on probation if they earn a grade less than 2.0 in any course or if their cumulative grade point average in major course work falls below 2.50. Students who earn a second grade less than 2.0 must have their programs reviewed by the faculty to determine remediation or termination from the program.

In order to remove probationary status, students must raise their major grade point average to 2.50 or higher.

### **Specialization in cytotechnology**

**Directors:** *Sudah Kini (Henry Ford Hospital), Richard J. Pollard (Harper Hospital)*

A cytotechnologist is a trained medical laboratory technologist who detects cell disease by light microscopic examination of cell samples from all areas of the human body.

Students may be accepted into the cytotechnology specialization after completing the health science core curriculum, the courses that complement the core curriculum and the university general education requirements. In the junior year, students follow the prescribed academic program at Oakland University. The senior year consists of a 12-month internship at an approved hospital school of cytotechnology. The internship includes an integrated presentation of didactic material, microscopic study, specimen preparation, clinical observation, cytogenetics, laboratory management, and a research project.

#### **Cytotechnology specialization course requirements**

Students accepted into the cytotechnology specialization must complete the following courses: BIO 205, 305, 306, 307, 325, 326, 341, 393 and 423; MLS 312; and 28 credits in clinical courses, CT 401 and 402.

### **Specialization in histotechnology**

**Director:** *Alireza Armin*

Histotechnologists perform a variety of diagnostic and research procedures in the anatomic sciences. Basic histologic techniques involve the processing and staining of tissue specimens that have been removed from humans or animals by biopsy or autopsy. Advanced techniques involve the use of the electron microscope, immunofluorescence microscopy, autoradiography, cytogenetics and medical photography.

Students may be accepted into the histotechnology specialization after completing the health science core curriculum and the university general education requirements. In the junior year, students follow the prescribed academic program at Oakland University. The senior year consists of a 12-month affiliation at William Beaumont Hospital School of Histotechnology.

#### **Histotechnology specialization requirements**

Students accepted into the histotechnology specialization must complete the following courses: BIO 205, 305, 306, 307, 325, 341, 423, 429 and 430; MLS 312; and 28 credits in clinical courses, HT 401, 402, 403 and 404.

### **Specialization in medical technology**

Medical technologists perform a wide range of diagnostic procedures, including procedures in hematology, clinical chemistry, microbiology, serology, urinalysis and immunohematology (blood banking).

Students may be accepted into the medical technology specialization after completion of the health science core curriculum, the courses that complement the core curriculum and the



university general education requirements. The junior year consists of the prescribed academic program at Oakland University and the senior year consists of a 9 or 12-month affiliation at an approved hospital school of medical technology. Upon completion of the internship, the student must pass a national certification examination to become a registered medical technologist.

Currently, the following hospitals are affiliated with Oakland University: Detroit Receiving Hospital, Detroit; Garden City Osteopathic Hospital, Garden City; Holy Cross Hospital, Detroit; Pontiac General Hospital, Pontiac; Providence Hospital, Southfield; St. John Hospital, Detroit; St. Joseph Hospital, Flint; and William Beaumont Hospital, Royal Oak. Internships have also been arranged with other Michigan hospital programs under individually approved agreements.

Oakland University is studying modifications of the medical technology program that would alter the curriculum to include four years of on-campus academic work followed by a shortened clinical rotation at an affiliated hospital. Students are encouraged to consult periodically with the School of Health Sciences academic adviser for information on these modifications.

#### **Medical technology specialization requirements**

Students accepted into the medical technology specialization must complete the following courses: BIO 365, 366, 421, 422, 423, 325 (or CHM 453, 454); MLS 313, 314, 316, 317, 326, 327, 328; and 28 credits in clinical courses, MT 415, 416, 418, 421, 423 and 428, or adviser-approved electives.

### **Specialization in nuclear medicine technology**

**Medical director:** *Michael M. Joh*

**Program coordinator:** *Ellen Chapin*

Nuclear medicine technologists utilize small amounts of radioactive materials for diagnostic evaluations of the anatomic or physiologic conditions of the body and to provide therapy with radioactive sources.

Students are accepted into the nuclear medicine technology specialization after completion of the health science core curriculum, the courses that complement the core curriculum and the university general education requirements. The junior year consists of the prescribed academic program at Oakland University. The senior year consists of a 12-month affiliation at St. John Hospital School of Nuclear Medicine Technology.

#### **Nuclear medicine technology specialization requirements**

Students accepted for nuclear medicine technology major standing must complete the following courses: BIO 205, 206, 325, 423; PHY 158, 490 (radiation biology), PHL 318; HS 331, 401; MLS 210, 312, 325, 328, 405; 28 credits in clinical courses, NMT 401, 402.

## **Course Offerings**

### **CYTOTECHNOLOGY**

**CT 401**            **Clinical Internship (14)**

Microscopic study of cellular alterations indicative of cancer and precancerous conditions, bacterial, viral and parasitic infections, and hormonal abnormalities; cytogenetics; and a research project.

**CT 402**            **Clinical Internship (14)**

Continuation of CT 401.

### **HISTOTECHNOLOGY**

**HT 401**            **Basic Histotechnique and Histochemical Staining Methods (12)**

Didactic and practicum experience in preparing histologic sections for light microscopy, including the study of over 50 different histologic staining methods and their specific applications.

**HT 402 Basic Electron Microscopy (8)**

Didactic and practicum experience in basic biological electron microscopy. Electron microscopic histochemistry and special techniques are also covered. Emphasis is on the electron microscope as a medical diagnostic tool.

**HT 403 Immunohisto-cytochemistry (4)**

A course designed to teach basic and advanced procedures of fluorescent and enzyme-labeled antibody techniques. The course includes the preparation of tissues, staining with labeled antibodies and the use of the fluorescence microscope in clinical medicine and research.

**HT 404 Cytogenetics (4)**

An intensive course in human cytogenetics. Human chromosome methodology, chromosome identification and chromosomal abnormalities and their application in clinical medicine.

**MEDICAL LABORATORY SCIENCES****MLS 201 Careers in Medical Laboratory Sciences (0)**

An introductory seminar in medical laboratory sciences, including career opportunities in clinical settings (medical technology, histotechnology, cytotechnology, nuclear medicine technology, industrial sales and/or research and development, basic medical research, and education).

**MLS 210 Medical Terminology (1)**

This course is designed as an independent study using a programmed text. Initial emphasis is on learning Greek and Latin word parts and rules for combining them, with cumulative study directed to the analysis and definition of medical terms. Graded S/U.

**MLS 312 Hematology/Cellular Pathophysiology (3)**

Topics include current concepts of hematopoiesis, including selected topics in red blood cell, white blood cell, and platelet morphogenesis, physiology and pathophysiology; an introduction to the basic principles involved in cellular disease mechanisms.

Prerequisite: BIO 207 or 321; permission of instructor.

**MLS 313 Immunohematology (3)**

Discussion of the immunologic and genetic basis for the study of red cell antigen/antibody systems, including physiologic and pathophysiologic consequences of foreign antigen exposure. Laboratory included.

Prerequisite: BIO 207 or 321; permission of instructor.

**MLS 314 Hemostasis (3)**

In depth study of the basic physiology and pathophysiology of the human hemostatic system. Laboratory included.

Prerequisite: BIO 207 or 321; permission of instructor.

**MLS 316 Medical Hematology (4)**

Theory and techniques in hematology, including red blood cell, white blood cell and platelet morphogenesis, physiology, and pathophysiology.

Prerequisite: BIO 207 or 321; permission of instructor.

**MLS 317 Hematology Laboratory (1)**

To accompany MLS 316.

Prerequisite: Permission of instructor.

**MLS 325 Special Topics in Instrumentation and Clinical Analysis (1)**

An introduction to theoretical and practical aspects of instrumentation and clinical analysis applicable to nuclear medicine technology. Laboratory included.

Prerequisite: Specialization in nuclear medicine technology.

**MLS 326 Instrumentation and Clinical Analysis (3)**

An introduction to theoretical and practical aspects of instrumentation and clinical analysis. Includes practical experience in the calibration, operation, and preventive maintenance of laboratory instruments. Laboratory included.

Prerequisite: Permission of instructor.

**MLS 327 Clinical Chemistry (3)**

A theoretical introduction to the fundamentals of clinical chemistry with emphasis on pathophysiology and clinical correlations.

Prerequisite: BIO 325.

**MLS 328 Clinical Chemistry Laboratory (1)**

Provides practical experience in the application of clinical instrumentation and current clinical methodologies to the performance of clinical chemistry assays.

Prerequisite: Successful completion of MT 326 with grade of 2.0 or better.

**MLS 405 Special Topics (1, 2, 3 or 4)**

Prerequisite: Permission of instructor.

**MLS 451 Clinical Education (6)**

Prerequisite: Permission of instructor.

**MLS 490 Individual Laboratory Work (2, 3, 4)**

Prerequisite: Permission of instructor.

**MLS 497 Apprentice College Teaching (2)**

Directed teaching of selected undergraduate courses. May be repeated for credit. Graded S/U.

Prerequisite: Permission of instructor.

**MEDICAL TECHNOLOGY****MT 415 Clinical Practicum — Urinalysis/Coagulation (3)**

Didactic and practicum experience at an affiliated hospital school of medical technology, in the fields of urinalysis and coagulation.

Prerequisite: Permission of instructor.

**MT 416 Clinical Practicum — Hematology (5)**

Didactic and practicum experience at an affiliated hospital school of medical technology, in the area of hematology.

Prerequisite: Permission of instructor.

**MT 418 Clinical Practicum — Immunohematology (4)**

Didactic and practicum experience at an affiliated hospital school of medical technology, in the field of immunohematology.

Prerequisite: Permission of instructor.

**MT 421 Clinical Practicum — Microbiology (7)**

Didactic and practicum experience at an affiliated hospital school of medical technology, in the field of medical microbiology, including parasitology and mycology.

Prerequisite: Permission of instructor.

**MT 423 Clinical Practicum — Serology (2)**

Didactic and practicum experience at an affiliated hospital school of medical technology, in the field of serology.

Prerequisite: Permission of instructor.

**MT 428 Clinical Practicum — Chemistry (7)**

Didactic and practicum experience at an affiliated hospital school of medical technology, in the field of clinical chemistry.

Prerequisite: Permission of instructor.

**NUCLEAR MEDICINE TECHNOLOGY****NMT 401 Clinical Internship I (14)**

Didactic and clinical experience in clinical nuclear medicine including instrumentation, radiopharmacy, ligand assay, organ imaging and therapy with radionuclides.

**NMT 402 Clinical Internship II (14)**

Continuation of NMT 401.

## Industrial Health and Safety Program

Program director: *Uwe Reischl*

Associate professors: *Uwe Reischl, Richard J. Rozek*

Clinical associate professor: *Joseph P. Chu*

Clinical assistant professors: *Joseph A. Calcaterra, Vikas Kapil, David S. Sugano*

Clinical instructors: *Frank M. Cleary, Daniel P. Glazier, Sarunas S. Mingela*

The Bachelor of Science degree program in industrial health and safety addresses the interests and aspirations of students seeking responsible involvement in the field of occupational health and safety. State-of-the-art concepts in industrial hygiene and occupational safety are presented with relevant exposure to the basic physical, chemical, biological and behavioral science disciplines. The program is multidisciplinary in nature and provides advanced perspective course offerings from the areas of physical/life science, social/behavioral science and work organization.

The curriculum is designed as a four-year baccalaureate program. However, students can obtain certificates after completing the industrial health and safety core sequence of courses. This normally involves the successful completion of the first four semesters of course work.

A one-semester internship is required for both the certificate and the Bachelor of Science degree. This internship provides first-hand field experience in the practice of industrial hygiene and occupational safety. Internship placements will be the responsibility of the program and will include labor, industry and government settings.

Graduates of the program will find employment opportunities within industry, labor, and local, state and federal health agencies. Many courses in this program are scheduled in the evening to accommodate part-time students.

### Requirements for the Bachelor of Science Degree with a Major in Industrial Health and Safety

Students seeking the Bachelor of Science degree with a major in industrial health and safety must complete a minimum of 136 credits through the following requirements:

1. Complete the writing proficiency requirement. In satisfying this requirement, students may need to complete (with grades of 2.0 or better) RHT 100 and RHT 101 (or their equivalent at another college or university). Not all credits associated with these courses will apply to the 136 credits required for the degree.
2. Meet the university general education requirements (see *Undergraduate degree requirements*). In completing the health science core curriculum, industrial health and safety majors will automatically satisfy the field groups in mathematics and logic, and in natural science and technology.
3. Complete the health science core curriculum. The biology sequence of BIO 200, 207 is preferred.
4. Complete BIO 205, CHM 203-204 and PHY 158 which complement the core curriculum.
5. Complete the major courses: HS 201 and IHS courses numbered 201, 202, 211, 212, 303, 304, 330, and 440.
6. Complete ENV 335 and HST 302.
7. Complete 16 credits of program perspective course work. Perspective courses may not be counted toward both the general education requirements and this requirement.
8. Complete all math and science prerequisite courses within the health science core curriculum and all industrial health and safety required IHS courses with grades of 2.0 or higher.

## Industrial health and safety program perspective requirement

Program perspective courses are designed to give students greater insight into various aspects of industrial health and safety. Students must complete 16 credits from the list of courses below. Twelve or more of the credits must be in courses at the 300 level or above. (This, along with the 20 credits of 300 level or above courses required in the curriculum, satisfies the university requirement of completing 32 credits at the 300 level or above.) Courses cannot be double counted towards both general education and the program perspective requirement.

AN 333, 392, 420

BIO 319, 325, 341

CHM 225

CSE 125

ECN 150, 309, 310, 326, 328, 338

ENV 308, 312, 372, 373, 390, 461, 484, 486

EXS 304

HBS 400

IHS 313, 421, 431, 450, 451, 452, 453

ORG 330

PS 350

PSY 100, 350, 351

PT 324

SOC 100, 345, 357

## Grade point policy

Industrial health and safety majors must achieve minimum course grades of 2.0 in science core prerequisite courses and in required IHS courses. A final course grade below 2.0 places a student on probation, which requires a meeting with the program director or his designated representative to discuss a method of remediation. In most cases, the method of remediation involves repeating the course in which the unsatisfactory grade was earned.

## Certificate option

A certificate in industrial health and safety may be issued to students who complete the core sequence and basic science courses. A minimum of 68 credits must be completed, including the following: completion of the university writing proficiency requirement; HS 201, IHS 201, IHS 202, IHS 211, IHS 212, IHS 240, IHS 304, MTH 141, CHM 144, CHM 145, PHY 101, PHY 102, PHY 158 and course electives to total 68 credits minimum.

## Minor in industrial health and safety

Students seeking the Bachelor of General Studies who complete the requirements for the certificate option in industrial health and safety are eligible to receive a minor in industrial health and safety. Students should apply for this minor with forms available from the General Studies office.

## Course Offerings

### IHS 201 Industrial Hygiene II (4)

Methods of environmental testing. Evaluation of occupational stresses found in selected work environments. Noise, heat, ventilation, microwave radiation, ionizing radiation, illumination. The role of labor and management in controlling environmental quality.

Prerequisites: HS 201, CHM 144.

### IHS 202 Industrial Hygiene III (4)

Advanced methods of environmental testing. Focus on air contaminants in the work environment. Analysis of toxic fumes and gases, dusts, and fibers. Analytical techniques for laboratory and field applications.

Prerequisites: IHS 201, CHM 145, MTH 141 or 154.

**IHS 211 Industrial Safety II (4)**

Safety assessment for occupational environments. Analytical techniques, structural analysis, strength of materials, electrical safety, fire life-safety, medical management of injuries, personal protective clothing. Prerequisite: HS 201.

**IHS 212 Industrial Safety III (4)**

Introduction to concepts in security and protection of property, disaster response planning, hazardous materials handling during transport, and safety planning and management. Report preparation, writing, and oral presentations.

Prerequisite: IHS 211.

**IHS 240 Industrial Health and Safety Internship (4)**

Practical training and field exposure to industrial work settings. Intended only for students seeking the certificate in IHS.

Prerequisite: Advanced standing and departmental permission.

**IHS 303 Industrial Toxicology (3)**

Introduction to the basic concepts and techniques of toxicology with special attention given to industrial work environments. Evaluation of the effects of toxic substances on the human body. Focus on responses of various systems within the body to selected toxic agents.

Prerequisites: IHS 202, CHM 204, BIO 207.

**IHS 304 Introduction to Epidemiology (3)**

An introduction to the uses of epidemiology in public health practice, using selected diseases to illustrate the development of knowledge on disease causation and the application of such knowledge to disease control.

Prerequisites: IHS 202, STA 225.

**IHS 313 Fire Prevention and Protection (2)**

Fundamentals of flame generation and propagation; fire behavior in open and confined spaces; theory of fire fighting methods, methods and devices for fire detection and suppression.

Prerequisites: IHS 202, IHS 212.

**IHS 330 Environmental Standards (3)**

Examines ambient and work place air, noise, radiation, water and pesticide standards. Topics will be analyzed in terms of standard development, enforcement at state and federal levels, and the validity of the standard's ability to protect health.

Prerequisites: IHS 202, IHS 212, PHY 102, PHY 158.

**IHS 405 Special Topics (2, 3, or 4)**

Prerequisite: Permission of instructor.

**IHS 440 Advanced Industrial Health and Safety Internship (4)**

Field training in industrial safety and health in close collaboration with professional industrial hygiene and safety personnel. Exposure to health and safety program planning and evaluation. Graded S/U.

Prerequisite: Advanced standing and departmental permission.

**IHS 450 Robotic Safety (2)**

Information and issues related to worker safety in industrial environments where robots are used will be presented. The state-of-the-art of advanced automation will be surveyed with emphasis on system safety and injury prevention features required to assure an adequate worker/robot interface.

Prerequisites: IHS 202, IHS 212.

**IHS 451 Industrial Ventilation (2)**

Design and control applications for reducing worker exposure to airborne contaminants. Concepts and principles of dilution and local exhaust ventilation will be presented. Methods for assessment of industrial ventilation systems required to prevent the accumulation of flammable or explosive concentrations of gases, vapors, or dusts.

Prerequisites: IHS 202, IHS 212, MTH 141.

**IHS 452 Industrial Noise Control (2)**

Concepts in engineering controls required in the management of noise overexposure in industrial environments. Analysis of engineering design options and mechanical modifications effective in controlling worker exposure to undesirable industrial noise will be presented.

Prerequisites: IHS 202, IHS 212.

**IHS 453 Radiation Safety (2)**

Safety aspects of occupational hazards associated with the use of ionizing radiation in industry will be presented. Methods for the identification, evaluation, and control of potential worker overexposure conditions will be reviewed. Biological effects of acute and chronic worker exposure will also be reviewed.

Prerequisites: IHS 202, IHS 212, PHY 102, PHY 158.

**IHS 490 Independent Study (1, 2, 3 or 4)**

Student initiated and problem-oriented independent study focusing on occupational health and safety issues. Graded S/U.

Prerequisite: Departmental permission.

## Health Behavioral Sciences

Director: *Carl R. Vann*

Professors: *Philip Singer, Carl R. Vann*

Clinical professor: *Daniel E. DeSole*

Clinical associate professor: *Ruben S. Kurnetz*

Clinical assistant professors: *Michael N. Musci, Anthony R. Tersigni*

Courses in health behavioral sciences are recommended as electives for students pursuing degree programs offered by the School of Health Sciences. Students interested in a program in health services administration should consult the Department of Political Science in order to combine courses in health behavioral sciences with a program in public administration.

### Concentration in health behavioral sciences

The concentration in health behavioral sciences should be taken in conjunction with a regular departmental major or independent major. Its purpose is to offer a multidisciplinary perspective of the behavioral sciences on the many and varied aspects of the health disciplines, problems and concerns. It provides a cross-cultural as well as an American perspective. It is especially relevant to students seeking careers in health-related fields and it offers significant insights and opportunities for study to students pursuing programs in general education, administration and law.

The requirement for the concentration in health behavioral sciences is successful completion of 20 credits, chosen from: HBS 200, 300, 359, 400 and 499; AN 333 and 420; ECN 467; and PA 568 and 569.

## Course Offerings

**HBS 200 Health Care Dimensions (4)**

Development, present status, and dynamics of the American health care system emphasizing structure of the various health professions and the problems, opportunities, and constraints of health care delivery, and professionalism. Other topics are relationships between the health care cultures and personality and professional roles of health care practitioners, and issues involving hospitals and health care.

**HBS 300 Independent Study in the Health Behavioral Sciences (4, 8, 12 or 16)**

A semester of off-campus independent study and applied research. Projects are developed with and supervised by faculty within the framework of methodology and explanation in the behavioral sciences.

**HBS 359 Public Policy and Health Care (4)**

An examination of the status and evolution of public policies relating to health and health care, the policy-making processes in health care and the various implications of trends in health care policy.

**HBS 400 Field Practicum in Health Behavioral Sciences (4, 8, 12 or 16)**

Primarily for students seeking careers in health-related fields, this course is a supervised field placement combined with academic content and individually guided research. Students are placed with hospitals, government and voluntary health agencies, comprehensive medical service organizations, etc.

**HBS 499 Senior Seminar in Health Behavioral Sciences (4)**

# SCHOOL OF HUMAN AND EDUCATIONAL SERVICES

**Dean:** *Gerald J. Pine*

**Associate Dean:** *F. James Clatworthy*

**Office of the Dean:** *Nancy Collins, coordinator, advising center; Jean Goebel, adviser; Jean Kirsch-Sullivan, administrative assistant to the dean; Patricia Loncharich, adviser; Geraldine Palmer, coordinator of school and field services*

**Continuum Center:** *Elinor Waters, director; Jane Goodman, associate director; Roberta "Jeff" Daily, counselor/trainer; Judith Hoppin, counselor/trainer; Mary Lou Stone, coordinator, Older Adult Project; Joanne Marlowe, coordinator, Alliance Project*

**Ken Morris Center for the Study of Labor and Work:** *David Cooper, director; Irene Lopez, program specialist, Union Minorities/Women Leadership Training Project; Michael Long, program manager; Symantha Myrick, program coordinator; Cynthia Riggs, public relations specialist*

**Lowry Early Childhood Center:** *Gerald G. Freeman, director; Stephanie C. Riley, program coordinator*

**Office of Research and Development:** *Gerald J. Pine, co-director; Donald M. Miller, co-director*

**Resource Center:** *Laura Snider-Feldmesser, director*

## Programs Offered

The School of Human and Educational Services offers programs designed to prepare students for careers in teaching and related human service activities. The programs include a Bachelor of Science in elementary education, teaching certification for secondary education in music, and a Bachelor of Science in human resource development with specialization in either human services or training and development. A minor in human resource development and a concentration in labor studies are also available.

The School of Human and Educational Services offers programs leading to the Doctor of Philosophy in reading, the Education Specialist in school administration, the Master of Arts in counseling, and the Master of Arts in Teaching in four areas: early childhood; curriculum, instruction and leadership; reading and language arts education; and special education.

In addition, programs leading to Master of Arts in Teaching degrees in mathematics and English are offered jointly by the School of Human and Educational Services and the College of Arts and Sciences.

For information on these programs, see the *Oakland University Graduate Catalog*.

## Additional Services

### Advising Center

The S.H.E.S. Advising Center is responsible for providing academic advising and career counseling for students in the Bachelor of Science degree in elementary education, initial certification for second undergraduate degree students and the Bachelor of Science degree in human resource development with specializations in human services and training and development.



### **Continuum Center**

The Continuum Center is an adult counseling center that assists men and women of all ages in personal exploration and planning. Workshops for personal, career and professional development are offered, as well as individual counseling. Workshops and training in such areas as supervisory training, assertiveness training, career or retirement planning and communications also are offered on a contractual basis.

### **Lowry Early Childhood Center**

The Lowry Early Childhood Center provides care to young children, toddlers through kindergarten-age. The center is a research facility for students and faculty concerned about child growth and development. It is a training site for students enrolled in the School of Human and Educational Services human development and child studies programs.

### **Ken Morris Center for the Study of Labor and Work**

The Ken Morris Center for the Study of Labor and Work provides teaching, research, consultation and public service activities for labor organizations and their members. It coordinates the Concentration in Labor Studies, and oversees other credit and non-credit courses, primarily for adult working students who are active in unions. Courses, conferences, residential institutes and special lectures and training, taught at on- and off-campus locations, are offered on topics related to work, the needs of working people and labor organizations, and other areas of special concern to union members, leaders and staff.

### **Office of Research and Development**

The Office of Research and Development facilitates action research and professional development conducted in collaboration with schools, school districts, education service agencies and other institutions and organizations. Field-based studies on teaching and learning are carried out in cooperation with school building and program teams at the preprimary, elementary and secondary school levels. Examinations are made of alternative practices in instruction, curriculum and professional development. Outstanding practitioners are occasionally affiliated as teacher-researchers for selected studies and projects.

### **Office of School and Field Services**

The Office of School and Field Services is responsible for the coordination of all off-campus sections of graduate education courses, as well as the placement of pre-service interns and special education practicum students. Special credit offerings, educational forums and conferences also are coordinated through this office.

### **Resource Center**

The Resource Center provides support for the academic, research and development activities of the School of Human and Educational Services. Patrons are provided with a functional setting for the examination, study, research, development, production and evaluation of instructional materials and technologies. Workshops, seminars and consultation services in instructional technology are available.

### **Board of Visitors**

The Board of Visitors of the School of Human and Educational Services is composed of outstanding leaders in the field of education and human services. The Board of Visitors' role is to advise and counsel the dean and faculty of the school. The board also assists the school in providing programs responsive to the learning and training needs of the public schools and human service agencies as they cope with changing society in the complex technological and diverse culture of southeastern Michigan.

Members of the Board of Visitors are:

*Sandra Adams, Teacher, Costello Elementary School, Troy*

*C. Danford Austin, Director, Teacher Preparation and Certification, Michigan Department of Education*

*Mary Jane Bauer, Teacher, Seaholm High School, Birmingham*

*W. Robert Docking, Superintendent, Bloomfield Hills School District*

*William G. Keane, Superintendent, Oakland Intermediate School District*

*Charles T. King, Consultant, Professional Development/Human Rights Department, Michigan Education Association*

*Byron K. Love, Deputy Superintendent, Pontiac School District*

*Eleanor Monks, Former Chair, Rochester Community Schools Board of Trustees*

*Joseph Nicita, Superintendent, Macomb Intermediate School District*

*John Pagen, Former Superintendent, Warren Consolidated Schools*

*William H. Saville, Superintendent, Avondale Schools*

*John M. Schultz, Superintendent, Rochester Community School District*

*Dana Whitmer, Former Superintendent, Pontiac School District*

*Lisa Woodring, Teacher, DeKeyser Elementary School, Utica*

# DEPARTMENT OF CURRICULUM, INSTRUCTION AND LEADERSHIP

**Chairperson:** *Sharon P. Muir*

**Professors:** *James W. Hughes, Jacqueline I. Loughheed, Sharon P. Muir, Roderic E. Righter*

**Associate professors:** *Beverley B. Geltner, Patrick J. Johnson*

**Assistant professors:** *Julia J. Dorminey, Joyce A. Eckart, Dawn M. Pickard  
Dyanne M. Tracy*

## General Information

The Department of Curriculum, Instruction and Leadership offers courses designed to prepare students for careers in teaching. The courses are designed for a Bachelor of Science in elementary education and for support of the secondary education program in music.

The undergraduate elementary education program enables students to earn concurrently a B.S. degree from Oakland University and recommendation for a Michigan Elementary Provisional Certificate (see *Michigan Teacher Certification*). The program is approved by the National Council for Accreditation of Teacher Education (NCATE). Students who hold a bachelor's degree pursue the program as second undergraduates.

## Admission to the B.S. in Elementary Education

Students seeking to pursue elementary education may be admitted to Oakland University if they possess a 2.80 high school grade point average (GPA) or a 2.70 college GPA. Students so admitted are given pre-elementary education status.

Students already holding an undergraduate degree in another discipline may also be admitted. Such students must follow the undergraduate degree program, and will also be admitted with pre-elementary education status; however, previous undergraduate course work may apply to the requirements. Accepted students will meet with an adviser who will determine equivalencies (472 O'Dowd Hall, 370-4182).

## Elementary education candidacy

Admission to elementary education candidacy is a prerequisite for some courses in the elementary education major (see course descriptions or *Schedule of Classes*). Students who hold pre-elementary education status must satisfy three criteria for admission to elementary education candidacy:

1. A grade point average (GPA) of at least 2.70, including a minimum grade of 2.0 in all courses. The GPA must represent at least 24 credits and includes all courses completed at Oakland University and at all previous colleges at the time the student applies for candidacy. Education courses will not be considered.
2. A minimum score of 174 on each Pre-professional Skills Test (PPST) subtest — reading, writing and mathematics. The test, which may be taken at any site approved by the Educational Testing Service, is administered at Oakland at least twice each year. Information on test registration is available from the department office.
3. Completion of the writing proficiency requirement.

To obtain candidacy in elementary education, students present the original PPST score report to the SHES Advising Center, which verifies the GPA and initiates change of status for qualified students. Students retain candidacy status so long as the GPA needed for admission to the major is maintained. Students who lose candidacy are reassigned to pre-elementary education status. Personnel in the School of Human and Educational Services (SHES) Advising Center provide academic advice for elementary education candidates.

### **Admission to the major**

Students who hold elementary education candidacy must complete EED 110 before applying for the major or professional program.

Admission, which occurs once each year, is selective; meeting the minimum requirements does not guarantee admission to the major.

Minimum criteria for admission to the major are:

1. Candidacy in elementary education
2. Completion of all general education requirements
3. A minimum of 70 documented clock hours' experience working with children in non-custodial activities, 50 hours within the last three years and 20 hours during the calendar year prior to application. Field experience in EED 110 does not meet this requirement. Examples of activities and documentation forms are available from the SHES Advising Center.
4. 2.0 minimum grade in each non-professional course
5. Minimum grade of 2.8 in EED 110
6. Submission of a completed application by the published deadline, including an essay administered at an announced date and time.

Qualitative criteria may be required as well. Preference will be given to students who have completed a majority of their credits at Oakland University. Male and minority students are especially encouraged to apply.

### **Advising**

The School of Human and Educational Services Advising Center is located in 472 O'Dowd Hall (370-4182). All students are required to attend an orientation to plan their first semester courses. During the first semester at Oakland, students should schedule an advising appointment to review the program plan and degree requirements. In subsequent semesters, advising appointments should be scheduled far in advance of pre-registration time so that the staff may adequately serve students' needs.

## **Requirements for the Bachelor of Science in Elementary Education**

### **Program requirements**

Admission to the major is required before beginning a four-semester professional sequence. Pre-elementary education students plan their course work with an adviser in the School of Human and Educational Service (SHES) Advising Center. To earn the B.S. degree, they must:

1. complete a minimum of 124 credits. At least 32 credits, including the last 8, must be taken at Oakland University and at least 32 credits must be at the 300-level or above. Education credits may not be older than six years upon completion of the program. Courses transferred from NCATE-accredited colleges may be approved.
2. meet university general education requirements, including special general education requirements for elementary education majors (described below).
3. complete a major or two minor concentrations (described below).
4. complete MTE 210, SCS 105, 4 hours of pre-professional course work and 60 hours of professional education course work.

5. earn a minimum grade of 2.0 in each non-professional course, a minimum grade of 2.0 in EED 455 (2.8 required for certification), and a minimum grade of 2.8 in each remaining pre-professional and professional course; maintain a 2.70 GPA in non-professional courses.
6. maintain a cumulative GPA of at least 2.70.
7. be in compliance with all legal curricular requirements for Michigan certification.

### General Education

Elementary education majors must take STA 225 to meet the university general education requirement in mathematics. Recommended course work in other areas follows:

Literature: Choose one from ENG 100, ENG 224 or ENG 241

Language: ALS 176 is preferred unless modern language is a major or minor

Western Civilization: HST 114 or HST 115

Social Science: One from SOC 100, PSY 100, PSY 130, PS 100 or ECN 150

Natural Science/Technology: Choose one from BIO 110, BIO 190, BIO 300, BIO 104 or BIO 200

Art: Any course listed in the catalog that meets the requirement.

International Studies: Any course listed in the catalog that meets the requirement.

### Major/minor concentrations

In keeping with state requirements, one major concentration or two minor concentrations selected from the following subject areas is/are required for certification. The concentration identifies subjects that a graduate is certified to teach in grades 6-8. Course work is limited to the classes listed or their equivalents.

**History/social science minor (24 credits)** — HST 114 and 115; PS 100; 4 credits of ECN; 4 credits from IS 210, 220, 230, 250, 270 preferred, or IS 240, 260; 4 credits from the following electives: AN 102, 222; HST 101, 102, 218; PSY 100; SOC 100, SOC 190 or a course in geography. (Physical geography will not meet this social studies requirement.)

**History/social science major (36 credits)** — Meet requirements of the social studies minor plus 12 additional credits of IS or the social studies minor electives.

**Language arts minor (24 credits)** — RDG 332; ALS 176; 4 credits of literature from ENG 100, 105, 111, 214, 220, 224, 241, 290, 301, 303; and 12 credits from literature electives or the following: ALS 102; ENG 215; LIN/SCN 207; SCN 201, 202; THA 100, 213, 230, 267, 350.

**Language arts major (36 credits)** — Meet requirements of the language arts minor plus 12 additional credits selected from literature or language arts minor electives.

**Mathematics minor (20 credits)** — MTE 210, 211, 410; MTH 141; STA 225. Students who test out of MTH 141 must elect one course from: MTH 121, 122, 154, 185.

**Mathematics major (30 credits)** — Meet requirements of the mathematics minor plus at least 10 credits from: APM 263; CSE 130, 232, 233, 235; MTH 121, 122, 154, 155, 185, 254, 256, 372; STA 226, 322, 323, 324.

**Modern languages minor (24 credits)** — All credits must be in one language, SPN, FRH, or GRM; 16 must be at the 300-level or above.

**Modern languages major (36 credits)** — Meet requirements of the modern languages minor plus an additional 12 credits.

**Science minor (24 credits)** — SCS 105; 4 credits from BIO 104, 110, 190/195, 200, or 300; 4 credits from CHM 104, 110, or 140; 4 credits from ENV 308, 322; 4 credits from PHY 104, 105, 106, 107; and 4 credits from PHY 115, 127, or 100/101.

**Science major (36 credits)** — Meet requirements of the science minor plus an additional 12 credits from the minor electives or the following: BIO 301, 303, 311, 313, 317, 323/324; 325, 327, 341, 373, 375, 377, 387; CHM 201, 203, 204, 234, 235, 453/457, 454/457; ENV 461, 474; PHY 102/100, 107, 158, 306; SCS 490.

An optional second major concentration or third minor concentration in fine arts may be added to the certificate. Students may pursue a general concentration of art, music and theatre or a specialized concentration in one area — art, music or theatre.

**Fine arts general minor (24 credits)** — 4 credits AH; 4 credits SA; 4 credits MUT or MUS excluding music education; 4 credits MUE and/or MUA except MUA 373; 4 credits THA 100, 200, 268 or 269; 4 credits THA 213, 267 or 350.

**Fine arts specialized minor (24 credits)** — All credits are in one area — art, music or theatre — including a minimum of 8 credits in history, theory, literature or appreciation (AH or MUT, MUS or THA 100, 200, 268, or 269,) and a minimum of 8 credits in application or performance (SA or MUE, MUA except MUA 373, or THA 213, 267, 350).

**Fine arts general major (36 credits)** — Meet requirements of the fine arts general minor plus 4 credits AH or SA; 4 credits MUA, MUT or MUS including music education; 4 credits THA.

**Fine arts specialized major (36 credits)** — Meet requirements of the fine arts specialized minor plus 12 credits in the same area — art, music or theatre — with prior approval of an adviser.

### Professional program

Upon being admitted to the program, students are expected to maintain continuous enrollment during the fall and winter semesters in at least one professional education course. The professional education courses are: EED 302, 305, 354, 420, 470; FE 210, 215; RDG 331, 333, 396, 414; SE 355. A recommended sequence is provided at the time of admission. A field experience is required concurrently with methods courses. Prerequisites are required for some professional education courses (i.e., FE 215 and SCS 105 for EED 305, STA 225 for EED 354, and FE 215 and MTE 210 for EED 302). Students who lose eligibility may retake a course; readmission then is automatic if the requirement is met. Continuation in the program also is based on the expectation that students demonstrate the characteristics of and conduct themselves as members of the teaching profession.

**Internship:** EED 455 must be taken in the final semester of one's degree program. *Application for the internship, EED 455, must be made one full semester in advance of the intended enrollment.* Contact the department for date of required orientation meeting (early each semester) at which application is made. Students must petition the department to enroll in more than 16 credits during the internship semester. Admission criteria for the internship are: a) satisfactory grade point average and minimum required grades; b) completion of all professional education course work, except RDG 414; c) satisfactory completion of content area test(s) as required by the Michigan Department of Education. Students who do not successfully complete the content area tests will be offered an alternative to EED 455 for earning the B.S. degree without certification. A minimum grade of 2.0 in EED 455 is required for graduation, a minimum grade of 2.8 for certification.

## Additional Information

### Secondary teaching minor in social studies

Secondary teachers who do not have a social studies major concentration, but who wish to add a teaching minor in social studies to an existing certificate must meet the following requirements: 24 credits in the social sciences (HST, PS, PSY, SOC). At least 12 credits must be taken at the 200 level or above with a concentration of at least 8 credits in each of two social sciences.

### Michigan teacher certification

Successful completion of requirements for the B.S. in elementary education and a minimum grade of 2.8 in EED 455 and meeting additional requirements that may be established by the Michigan Department of Education are required in order to be recommended for a provisional elementary certificate. Exit tests in content areas will be required for certification applicants

beginning in September, 1991. Applicants should be aware that a conviction for a felony or for a misdemeanor involving moral turpitude of a minor may constitute grounds for denial of a certificate by the State of Michigan.

**Teaching Certification for Elementary Education:** The Michigan Elementary Provisional Certificate issued after September 1, 1988, is valid for teaching all subjects in grades K-5, all subjects in self-contained classrooms for grades 6-8 in which a majority of the instruction is provided by one teacher, and in majors and minors in departmentalized programs for grades 6-8.

## Course Offerings

For FE and SE course descriptions, see the Department of Human Development and Child Studies; for RDG courses, see the Department of Reading and Language Arts.

### ELEMENTARY EDUCATION

#### EED 110 Public Education for the Future (4)

Assists pre-elementary education majors in deciding whether or not to pursue education as a career. Examines, through lectures and extensive written assignments, topics pertaining to public education. Includes a required field experience.

Prerequisite: Oakland University writing proficiency and elementary education candidacy.

#### EED 302 Teaching Mathematics in the Elementary School (4)

Assists prospective teachers in developing sound pedagogical strategies and instructional techniques for teaching mathematics in the elementary school. Includes a required field experience.

Prerequisites: MTE 210, admission to major and FE 215.

#### EED 305 Teaching Science to Children (4)

Develops philosophies, rationale, and methods for teaching elementary school science. Explores knowledge and skills for planning instruction, using instructional models, integrating the curriculum, using current instructional materials and evaluating outcomes. Includes a required field experience and a weekend field trip; additional field experiences available.

Prerequisite: SCS 105, admission to major and FE 215.

#### EED 354 Testing and Assessment for Teachers (4)

Prepares a teacher-in-training to make effective use of formal and informal teacher-created assessment techniques in the process of planning, implementing and evaluating instruction. Includes a required field experience.

Prerequisite: STA 225 and admission to major.

#### EED 420 Interaction Laboratory for Teacher Development (4)

Acquaints prospective teachers with the importance of human interactive skills, including sensitivity to cultural differences. Provides understanding of the flexible line separating personal and professional behavior. Includes student involvement in role-playing and action-oriented problem solving. Includes a required field experience.

Prerequisite: Admission to major.

#### EED 455 Internship in Elementary Education (12)

Provides teaching and other appropriate activities in an area classroom with guidance by a university supervisor and a cooperating teacher. General and specific instructional concerns of interns are explored in five or more concurrent seminars. Completion of a program evaluation survey is required before a grade is reported to the registrar.

Prerequisite: See program requirements — internship.

Corequisite: RDG 414.

#### EED 470 Teaching Social Studies in the Elementary School (4)

Examines instructional objectives and strategies, curriculum materials and evaluative procedures for social studies education. Upon completion of the course, students are able to develop, defend and implement an elementary social studies program. Includes a required field experience.

Prerequisite: Admission to major and FE 215.

**EED 490 Independent Study (2 or 4)**

Pursues directed individual reading and research. May include a field placement as well as development of specific teaching materials.

Prerequisite: Permission of department (present written consent by faculty who will supervise study).

**SCIENCE STUDIES****SCS 105 Science for the Elementary Teacher (4)**

Develops science concepts and processes based on recent elementary school curricula in the fields of earth, physical and chemical science. For elementary education majors only; includes laboratory experiences.

Prerequisite: Elementary education candidacy.

**SCS 490 Independent Problems in Science Education (2 or 4)**

Individual work in science for educators. Credits may be applied to a major or minor in science for teachers.

Prerequisite: Permission of instructor.

**SECONDARY EDUCATION****SED 354 Testing and Assessment for Teachers (4)**

Prepares a teacher-in-training to make effective use of formal and informal teacher-created assessment techniques in the process of planning, implementing and evaluating instruction. Includes a required field experience.

Prerequisite: Admission to secondary teaching social studies major.

**SED 427 Methods of Teaching Secondary Students (2)**

Emphasizes the development of teaching strategies and human interaction techniques unique to secondary students and classrooms. Topics include discipline, motivation, instructional technology, skill assessment, evaluation and affective learning.

**SED 455 Internship in Secondary Education (12)**

Provides teaching and other appropriate activities in an area classroom with guidance by a university supervisor and a cooperating teacher. General and specific instructional concerns of interns are explored in concurrent seminars. Completion of a program evaluation survey is required before a grade is reported to the registrar.

Prerequisite: Permission of major department.



# DEPARTMENT OF HUMAN DEVELOPMENT AND CHILD STUDIES

**Chairperson:** *Donald M. Miller*

**Distinguished Professor Emeritus:** *Laszlo J. Hetenyi*

**Professors Emeriti:** *Edward A. Bantel, Sidney W. Graber*

**Professors:** *Gerald G. Freeman, Donald M. Miller, Ronald M. Swartz*

**Associate professors:** *Marc Briod, Anne Cairns Federlein, Carol A. Swift*

**Assistant professors:** *Ann H. Atkinson, Andrew Gunsberg, Richard C. Pipan*

As a department within the School of Human and Educational Services, the faculty of the Department of Human Development and Child Studies offers courses in early childhood, educational foundations and special education at the undergraduate level for students pursuing a teacher education career. The department houses master's degree programs in early childhood education and special education.

## Course Offerings

### EARLY CHILDHOOD

**EC 220 Early Childhood Development — Experiences with the Young Child (4)**

Child development. Instruction, observation and experience with focus on children and their developmental needs during infancy and early childhood, especially in the context of particular settings.

Corequisite: EC 221.

**EC 221 Early Childhood Development Experience Block (1, 2, 3 or 4)**

Experience in a setting with young children. One credit must be taken concurrently with EC 220 and 224. Students who take additional credits of EC 221 must be taking another early childhood course concurrently.

**EC 223 Physical and Social Environment in Early Childhood Programs (4)**

Various aspects of the social and physical environment for young children. Includes analysis of what makes a healthful, pleasant physical environment and how the roles and relationships of various staff members contribute to this environment.

Prerequisite: Admission to early childhood program; taken with no more than one other early childhood course.

**EC 224 Early Childhood Programming Activities for the Young Child (4)**

Uses of various media and materials, supportive play activities, and specific art, music, science, language and other educational activities for young children. Provides a basic repertoire of skills for the early childhood staff member.

Prerequisite: EC 220 or equivalent.

Corequisite: EC 221 and admission to the program.

**EC 225 Health and Nutrition — Childhood (4)**

Includes knowledge of basic health and safety requirements and basic nutritional and dietary needs for early childhood.

Prerequisite: Admission to early childhood program; taken with no more than one other early childhood course.

**EC 320 Topics in Early Childhood Curriculum (2 or 4)**

Selected curriculum topics relevant to early childhood teachers, with focus on specific curriculum areas identified by advanced early childhood students or special groups working in this field.

Prerequisite: Completion of at least two 200-level early childhood courses.

**EC 322 Introduction to Early Childhood: Theory and Practice (4)**

Introduction to the field of early childhood: growth and development of infants and young children, optimal learning environments for the young child, and methods and materials. For students who wish some background in early childhood but who are not HRD/EC majors.

Prerequisite: FE 210 and 215 or permission of instructor.

Corequisite: EC 221.

**EC 324 Parent and Community Involvement in Early Childhood Programs (4)**

In-depth study of home/school coordination and education. Development of skills and sensitivities in the areas of parent education, parent-teacher conferences, utilization of parents in the classroom and working with parents in the home.

Prerequisite: At least two 200-level childhood courses, or permission of instructor.

**EC 325 Learning Environment in Early Childhood (4)**

In-depth study of the learning environment and curriculum in early childhood education, including theoretical and practical aspects. Analysis of curriculum areas as they relate to individual children's needs and to the total learning environment.

Prerequisite: At least two 200-level early childhood courses, to be taken with no more than one other early childhood course.

**EC 326 Introduction to Early Childhood Program Operation (4)**

Overview of types of program operation in early childhood. Designed to give teacher and childcare development majors the skills to direct programs which are in operation.

Prerequisite: At least two 200-level early childhood courses, to be taken with no more than one other early childhood course.

**EC 450 Advanced Studies in Early Childhood (2 or 4)**

Current issues affecting the field of early childhood, especially those related to current legislation, child advocacy, and the child welfare concern; research methodology appropriate for young children; and/or in-depth issues such as development of infants or exceptional children.

Prerequisite: Completion of all 200-level early childhood courses and at least two 300-level early childhood courses.

**EC 456 Internship in Early Childhood (12)**

Work in practicum settings with young children, parents, or caregivers. Students will gradually assume total responsibility for an intensive field experience. Consists of 301 hours of on-site practicum. Includes bi-weekly seminar. No other courses may be taken concurrently and it is strongly advised that the student not be employed or take other courses. Apply September for winter, January for fall.

Prerequisite: 30 credits in early childhood courses with an overall 2.50 grade point average.

**EC 490 Independent Study and Research (2 or 4)**

A program of directed individual reading and research.

Prerequisite: Permission of the Department of Human Development and Child Studies (granted only if students present written faculty consent to supervise their study).

**FOUNDATIONS OF EDUCATION****FE 210 Social and Philosophical Issues in Elementary Education (4)**

Study of elementary education in broad perspective, as both an interpersonal activity and a social institution. Topics include immediate and ultimate aims of elementary education, social and cultural differences within and between schools, and assumptions underlying school policy. Not to be taken concurrently with FE 215.

Prerequisite: Admission to elementary education, and satisfaction of the university writing proficiency requirement.

**FE 215 Educational Psychology for Elementary Teachers (4)**

Incorporates and places into perspective learning theories, developmental theories, biological theories and evaluation, with emphasis on the effects of varied qualities of experience during childhood and early adolescence. Includes a required field experience.

Prerequisite: Admission to elementary education and satisfaction of the university writing proficiency requirement.

**FE 301 Human Nature (4)**

An analysis of human nature through evolutionary, developmental, cultural and philosophical perspectives. Implications for the helping professions.

**FE 344 Social and Philosophical Issues in Secondary Education (4)**

Study of secondary education in broad perspective, as both an interpersonal activity and a social institution. Topics include immediate and ultimate aims of secondary education, social and cultural differences within and between schools, and assumptions underlying school policy.

**FE 345 Educational Psychology for Secondary Teachers (4)**

Psychological factors in learning and development are examined in lectures, class discussions and observations. These may be observations of actual teaching in the schools, or of videotapes of teaching. Attention to regular and exceptional development during the adolescent years.

**SPECIAL EDUCATION****SE 355 Identifying Learning and Behavior Differences in Students (4)**

Familiarizes students with the characteristics of all types of exceptional students, including the gifted and talented. Introduces special education law and services for handicapped persons. Requires field placement in a special education setting where students practice informal observation and assessment techniques for determining individual differences.

# DEPARTMENT OF HUMAN RESOURCE DEVELOPMENT

**Chairperson:** *David P. Meyer*

**Professor Emeritus:** *William F. Moorhouse*

**Associate professors:** *John W. Atlas, F. James Clatworthy, David N. Cooper, William C. Fish, David P. Meyer, Billy Joe Minor, Robert G. Payne, Luellen Ramey*

**Adjunct Associate Professor:** *Elinor Waters*

The School of Human and Educational Services offers a program in human resource development (HRD) leading to a Bachelor of Science degree.

This program prepares students for service-action careers related to human problems, services and social change. It provides students with an opportunity to acquire knowledge and skills usable in a wide range of human service activities. Students may select a major specialization in human services, or training and development.

A primary goal of the program is to develop potential leaders who have the analytic, interpersonal and organizational skills to respond to human needs in an era of rapid social change. The basic approach to the program is joining understanding, skills and service. Problem-solving and decision-making abilities are developed through field experiences and on-the-job internships.

## Advising

The School of Human and Educational Services Advising Center is located in 472 O'Dowd Hall (370-4182). During the first semester at Oakland, students should schedule an advising appointment to review the program plan and degree requirements.

## Requirements for the Bachelor of Science in Human Resource Development

To earn a Bachelor of Science degree with a major in human resource development, students must:

1. Complete a minimum of 124 credits.
2. Complete at least 32 credits at Oakland University.
3. Complete at least 32 credits in courses at the 300-level or above.
4. Take the last 8 credits needed to complete the baccalaureate degree requirements at Oakland University.
5. Have a cumulative grade point average of at least 2.50.
6. Satisfy the writing proficiency requirement (see *Undergraduate degree requirements*).
7. Complete the university general education requirement of 32 credits (see *Undergraduate degree requirements*).
8. Complete a specialization in human services or training and development. The specialization must consist of 1) a specified core of courses; and 2) supporting cognate courses, professional elective courses (HI, HRD or LE) and field placements, including an internship of at least 8 credits.

## Specialization in human services

**Coordinator:** *Luellen Ramey*

**Committee:** *Billy Joe Minor, John Atlas*

This specialization has been developed in cooperation with agency and industry employers in the community. It prepares students for a wide variety of human service occupations in such

fields as employment and training, probation and corrections, mental health, substance abuse, youth or family services and services for older persons.

Students develop helping profession competencies through human interaction courses, special topic courses in human resource development and field experiences, culminating in the internship.

#### **Requirements for admission to the specialization**

Students may apply for admission to the human services program after satisfactory completion of at least 32 semester hours of credit at an accredited college or university with a grade point average of 2.50 or better. Courses that carry no numerical or letter grades (such as S or U) are excluded from the calculation of the grade point average. Before admission, students must also have completed HI 261 or an equivalent course, HI 360, 361 and 363 with a minimum grade of 2.5 in each course and have met the university writing proficiency requirement.

Before completing the above requirements, students who have a GPA of 2.50 or better may enroll as pre-HRD majors. Grades in courses submitted for credit in the specialization in human services must be 2.0 or better. To continue in the program, students must maintain a minimum overall grade point average of 2.50.

#### **Specialization course requirements**

Students seeking a specialization in human services must:

1. Earn a minimum of 24 credits in a core consisting of HI 360, 361, 363 (prerequisite: HI 261); HRD 362 and 366.
2. Earn a minimum of 22-24 credits in cognate courses at the 200 level or above, including a) a course in human development from PSY 220, 270, 271, 331, 336 or 379; b) a course dealing with social change chosen from: HRD 401, LE 320, ECN 309, 338, PS 305, SOC 205, 301, 314, 315, 336, 346 and 350, or a course approved by an HRD adviser; c) a course in planning research, evaluation or statistics chosen from: HRD 420, PSY 250, SOC 202, 203, or STA 225 (those who intend to pursue a Master of Social Work degree should consult with an HRD adviser regarding cognate statistics requirements); d) an ethics and behavioral foundations course: HRD 301, 302, PHL 318, PSY 310, 314, 380; e) a course in human service populations: GRY 400, PSY 313, 325, 332, 376, SOC 240, 331, 335, 465, WS 300, LE 326; f) a course in information management: RHT 335 (ENG 380 or 382 may be substituted with adviser permission). The cognate requirement may also be met by a concentration in Gerontology, Labor Education, or Social Services.
3. Complete a minimum of 12 credits of professional course electives carrying an HI, HRD or LE designation.
4. Complete field placements consisting of a minimum of three substantially different placements or three significantly different roles in a minimum of two settings for a total of 590 clock hours. An 8- or 12-credit internship, HRD 490, is to be completed in the senior year.

#### **Specialization in training and development**

**Coordinator:** Robert Payne

**Committee:** F. James Clatworthy, David P. Meyer

Training and development is the process of systematically developing human resources within a work organization to create motivation and increase efficiency. The specialization in training and development requires course work in behavioral sciences, human relations, training and program delivery. These courses provide preparation for a variety of careers in government, health and human services, and in business and industry.

An internship during the senior year provides work experience in an appropriate setting.

### Requirements for admission to the specialization

Students may be admitted to the training and development specialization after completion of a minimum of 32 semester hours of credit at an accredited college or university with a minimum grade point average of 2.50; completion of HI 261 or an equivalent course; HI 360 and HI 361 or HI 363 with a minimum grade point average of 2.50; and completion of the university writing proficiency requirement.

Before applying for admission, students who have a GPA of 2.50 or better may enroll as pre-HRD majors. Grades in courses submitted for credit towards the specialization must be 2.0 or better. To continue in the program, students must maintain an overall grade point average of 2.50 or better.

### Specialization course requirements

Students seeking a specialization in training and development must:

1. Earn a minimum of 24 credits in core courses, including one in each of the following six categories: a) human relations and effective interaction (prerequisite: HI 261 or equivalent): HI 360 and 361, 363, 461, or 463; b) assessment of individuals: HRD 362 or PSY 311; c) adult learning theory and design of training programs: HRD 310; d) development process: HRD 364, 368 or HI 464; e) adult instruction: HRD 420 and 421 or 422; f) professional growth: HRD 369, 467, 469, or an HI, HRD, LE, or VTE course approved by an adviser.
2. Earn a minimum of 22-24 credits in cognate courses. The requirement may be satisfied by completing a minor in management (22 credits) or by earning one course in each of the following six categories (24 credits): a) writing skills for instruction: RHT 335 (ENG 380 or 382 may be substituted with adviser approval); b) organizational theory: HRD 401, LE 322, ORG 330, 331 or 334; c) economics or accounting: ECN 150, 200, 201, 338 or ACC 200; d) planning and evaluation: HRD 402, 440, PSY 250, SOC 202 or 203; e) labor relations and employee involvement: LE 324, 326, MGT 433, HST 302, SOC 350, 354, 359 or PHL 316; f) computer literacy: CSE 125, 130 or RDG 396.
3. Earn a minimum of 12 additional credits, chosen from the following categories: a) any course that counts toward the requirements for a minor in management; b) any course listed above under either the cognate or core courses; c) any HI, HRD, LE, or VTE course.
4. Successfully complete an 8- or 12-credit internship, HRD 490, during the senior year.

### Occupational/technical education within the training and development specialization

Coordinator: *Robert G. Payne*

Oakland University offers several courses for students wishing additional preparation in the occupational/technical area. The following courses may be applied as substitutions for certain requirements of the specialization in training and development, as approved by an HRD adviser: RDG 338, SE 355, VTE 300, 310, 312, 420, 421, 490.

### Minor in human resource development

Coordinator: *David P. Meyer*

The School of Human and Educational Services offers a minor in human resource development for students who wish to combine their majors with an introduction to human interaction skills and knowledge and techniques in human resource development.

To obtain a minor in human resource development, students must earn at least 24 credits in human interaction (HI) and human resource development (HRD) courses, including a minimum of 8 credits in each area; the plan of study is subject to the approval of an HRD adviser. Courses counted towards the minor must have a cumulative grade point average of 2.50 or better and no course may carry a grade less than 2.0.

### Related minors and concentrations

Normally, students seeking the Bachelor of Science with a major in human resource development may not earn more than one minor or concentration. Students who wish to obtain more than one must obtain the approval of the human resource development program adviser.

The gerontology concentration, co-sponsored by the School of Human and Educational Services and the College of Arts and Sciences, is recommended for HRD students planning careers of service to older people. A description of the concentration is on page 190.

### Concentration in labor studies

**Coordinator:** *David N. Cooper (Ken Morris Center for the Study of Labor and Work)*

**Academic advisory committee:** *Lizabeth A. Barclay (Management), John Barnard (History), De Witt S. Dykes, Jr. (History), Michael Long (Ken Morris Center for the Study of Labor and Work), David P. Meyer (Human Resource Development), Billy Joe Minor (Human Resource Development), Robert G. Payne, (Human Resource Development)*

Labor studies is an interdisciplinary concentration that provides an academic background for understanding the empirical and theoretical bases of labor organizations. The program may be particularly useful to individuals interested in the operational aspects of unions, including the dynamics of staff, leadership and participative roles.

The concentration is open to any student who has been admitted to the university. Core courses will be scheduled to maximize accessibility to both full-time and part-time students. Students who seek to apply credits toward a degree must contact an adviser to design a degree plan and to select appropriate courses. The following course selections are subject to prerequisite requirements as well as departmental policies.

A required application for the Labor Studies Concentration is available from either the Human Resource Development or Academic Services and General Studies advising offices.

The concentration requires a minimum of 24 credits distributed among the following four areas of preparation:

1. Core, 12 credits minimum, with the option of registering for all of the following courses:
  - LE 320 Introduction to Labor Studies (4)
  - LE 322 Union Structure and Governance (4)
  - LE 324 Work and the Law (4)
  - LE 326 Collective Bargaining and Dispute Resolution (4)
  - HST 302 American Labor History (4)
2. To fulfill the remaining 12-credit requirement, students may elect additional courses from the core and/or courses from the following three cognate areas, with no more than one course from each cognate area.
  - a. **Organizational Theory and Practice:**
    - HRD 401 Change Process and Organizational Analysis (4)
    - ORG 330 Introduction to Organizational Behavior (4)
    - SOC 353 Seminar in Socio-Technical Systems (4)
    - SOC 381 Theories of Modern Organizations (4)
  - b. **Work Life Processes:**
    - ECN 338 Economics of Human Resources (4)
    - HI 363 Dynamics of Group Relationships (4)
    - HI 464 Consultation (4)
    - HS 201 Health in Personal and Occupational Environments — Ideas, Concepts, Issues and Applications (4)
    - SCN 202 Group Dynamics and Communication (4)
    - SCN 304 Communication in Organizations (4)
    - SOC 350 The Transformation of the Workplace (4)
    - SOC 354 Quality of Work Life (4)
    - SOC 359 Human Factors in Quality Control (4)

**c. Community and Society:**

- HRD 302 Ethics and Personal Crises (4)  
 HRD 331 Community Mental Health (4)  
 HRD 335 Substance Abuse (4)  
 HRD 364 Career Development (4)  
 PS 110 Contemporary Political Issues (4)  
 PSY 235 Social Psychology (4)  
 PSY 326 Psychology of Social Issues (4)  
 SOC 331 Racial and Ethnic Relations (4)  
 SOC 357 Industrial Sociology (4)  
 SOC 455 Contemporary Work Roles, Careers and Labor Markets (4)

## Course Offerings

### HUMAN INTERACTION

**HI 261 Fundamentals of Human Interaction (4)**

Introduction to key aspects of interpersonal relationships such as self disclosure, feedback, conflict, trust and nonverbal communication. Examines various theories of healthy relationships and personal maturity. Self-appraisal, role plays, simulations and group interaction are used.

**HI 360 Interviewing Practicum (2)**

An application of the methods studied in HI 361. Students practice helping interview skills in a supervised laboratory setting, are video-taped, critiqued and evaluated.

Prerequisite: HI 261.

Corequisite: HI 361.

**HI 361 The Helping Interview (2)**

Listening and responding skills, establishing mutual trust and acceptance, gathering information and providing support in a one-to-one helping relationship. Introduction to related theory and research. Instructional techniques include role-playing and simulation.

Prerequisite: HI 261 or equivalent.

Corequisite: HI 360.

**HI 363 Group Dynamics (4)**

Deals with relationships among group members, including peer and supervisory interaction, in settings such as community agencies, industry and adult training. Covers such basic concepts and practices as teamwork, conflict resolution, consensus, group leadership and support groups.

Prerequisite: HI 261 or equivalent.

**HI 460 Advanced Practicum (2)**

An application of the theories, research, and methods studied in HI 461. Students practice introductory counseling skills in a supervised laboratory setting, are videotaped, critiqued and evaluated.

Corequisite: HI 461.

**HI 461 Introduction to Counseling (2)**

Theory and practice of guidance and counseling in brief. Covers professional, ethical and legal issues in helping others. Compares major counseling approaches in both theory and application.

Prerequisite: HI 361.

Corequisite: HI 460.

**HI 463 Group Facilitation (4)**

Theory and practice of small group process in the helping relationship. Explores several approaches to group leadership and offers an opportunity to experience and/or lead small groups in order to prepare students to foster group interaction.

Prerequisite: HI 363.

**HI 464 Consultation (4)**

Includes study of processes of internal and external consultation, strategies for intervention in organization and consulting approaches in support of individual helping professionals, supervisors and administrators.

Prerequisite: Junior standing and HI 360 and HI 361 or HI 363.



**HUMAN RESOURCE DEVELOPMENT****HRD 264 Educational and Career Exploration (2)**

Introduction to key aspects of personal career decision making, encompassing self assessment, occupational research and the relationship between academic majors and future career options. Use of computerized career guidance systems, inventories and exercises in exploration, planning and goal setting.

**HRD 301 Human Nature (4)**

The various ways in which human nature has been understood, with attention to the behavioral, humanistic, Marxist, and Christian beliefs about man and their implications for policies and practices in the teaching and helping professions. Strives to develop tolerance for alternative views of man, and to appreciate the varieties of human behavior. Identical with PHL 301.

**HRD 302 Ethics and Personal Crises (4)**

Historical examination of perennial moral crises in sexual behavior, abortion, suicide, euthanasia, criminal punishment and war from the points of view of major historical figures in ethics. Use of ethical knowledge in helping others make moral decisions in personal life is addressed. Identical with PHL 302.

Prerequisite: RHT 101 or equivalent.

**HRD 310 Training Design (4)**

Adult learning theory including cognitive, affective, psychomotor domains. Instructional design models, needs analysis, occupational task analysis, development of competencies and learning objectives. Determination of appropriate training approach. Selection and evaluation of instructional materials and media. Identical with VTE 310.

Prerequisite: RHT 101 or equivalent.

**HRD 331 Community Mental Health (4)**

A critical examination of mental health treatment programs, community mental health centers and family-care programs. Socio-cultural factors in the onset of mental illness and roles as members of a treatment team and community resources in mental health.

**HRD 335 Substance Abuse (4)**

Comprehensive study of the modes of prevention and treatment programs for substance abuse. Readings and reports include basic information about various drugs and alcohol, with history, categories and definitions, misuse, abuse, legitimate use, laws, attitudes and reasons people abuse drugs.

**HRD 362 Assessment of Youth and Adults (4)**

Techniques in appraising people for educational, occupational and personal-social decisions. Students are introduced to measurement terminology, techniques of test administration and interpretation. Emphasis on synthesis of data in case studies and conferences.

**HRD 364 Career Development (4)**

Sources of occupational, educational and personal-social information. Techniques for using guidance information in the helping process. Theories of career choice and adjustment, the work ethic and life/work planning.

**HRD 366 The Human Services (4)**

Overview of human service work. Covers historical and philosophical bases, service populations, values and professional roles. Surveys conditions of healthy human functioning and deviancy, as well as service modalities, human systems and legislative issues.

**HRD 368 Work and Training Development (4)**

Study of the training function within business and industry. Emphasis is placed on the politics and organization of the training function in relationship to management, union and jointly funded projects.

Prerequisite: HRD 310, 420, 421 or permission of the instructor.

**HRD 369 Field Work in HRD (2, 4, 6 or 8)**

Intermediate-level supervised experiences in HRD settings such as training and personnel departments in business, industry and government, employment offices and human service agencies. Students submit application to instructor, then obtain information to seek an approved site.

Prerequisite: Permission of instructor by application.

**HRD 390 Special Project in HRD (2, 4, 6 or 8)**

Directed reading or research in an HRD topic. May be elected for independent study. Student selects topic, obtains faculty sponsor's permission before registration and writes report. May be taken with special permission more than once, for 8 credits total.

Prerequisite: Permission of a faculty sponsor by application.

**HRD 401 Change Process and Organizational Analysis (4)**

Study of structure of HRD services in organizations and the processes of effecting individual and group change. Influence of assigned roles of administrators and workers on attitude and behavior. Theory and research of institutional growth and change.

Prerequisite: Junior standing and two courses in HI, HRD or VTE.

**HRD 402 Program Planning and Evaluation (4)**

Emphasizes skills in developing performance objectives and in organizing, writing and presenting proposals for program development. Methods of evaluation of training and development and human service programs i.e., action and survey research design.

Prerequisite: Junior standing and HRD 362.

**HRD 420 Instructional Methods (2)**

Methods of instructing adults in training programs using instructional materials and media. Application of adult learning theory and evaluation of learning based upon competencies. Teacher-student interaction process and use of audio-visual equipment. Identical with VTE 420.

Prerequisite: HRD 310.

Corequisite: HRD 421 or HRD 422.

**HRD 421 Instruction Presentation Lab (2)**

An application of the methods studied in HRD 420. Students present training program lessons and exercises in a supervised laboratory setting, are video-taped, critiqued and evaluated.

Corequisite: HRD 420.

**HRD 422 Instructional Media Lab (2, 4, 6 or 8)**

The application of instructional media production techniques. Students develop instructional media for a training program which was designed under HRD 310 or obtained from a training manager. May be taken more than once for a total of 8 credits.

Prerequisite: HRD 310.

Corequisite: HRD 420 or permission of instructor.

**HRD 431 Death and Dying (4)**

Seminar on the philosophical, religious, cultural and psychological issues in death and dying. Topics include: religious views of death and after-life; ethical issues in suicide and euthanasia; cultural attitudes toward death and funerals; psychological studies of counseling the dying and the bereaved; children and death; forming attitudes toward one's own death. Recommended for upper-level students only.

Prerequisite: Junior standing and two HI/HRD courses or permission of instructor.

**HRD 440 Strategic Planning (4)**

Development of long-range plans to accomplish the training and development mission. Simulation, group problem solving and preferred future planning used to acquire strategic planning skills.

Prerequisite: Junior standing and two HI, HRD or VTE courses.

**HRD 451 Strategies for Helping Older Adults (4)**

Considers physical and psychological changes occurring with aging and implications of these changes for helpers, differences in helping techniques appropriate for older people and special techniques useful for older people, such as the life review.

Prerequisite: HI 261 and PSY 331 or instructor's permission.

**HRD 452 Community Resources for the Elderly (4)**

Assesses community needs and services for elders and their families and ways to promote intra- and inter-agency cooperation within the aging network. Investigates services offered by senior centers, long-term care, day care and respite care organizations, home health care agencies and retirement communities.

Prerequisite: HI 261, PSY 331 or instructor's permission.

**HRD 467      Workshop (2 or 4)**

Opportunity for industry/agency personnel and students to focus on various programs and practices. Offered as needed to meet needs of agency or industry employers and training directors. May be taken more than once for 8 credits total.

Prerequisite: Course work or experience in the workshop topic.

**HRD 469      Seminar (2 or 4)**

Scope is predefined and based on a broad topic in the HRD field. Students select research areas and contribute their findings to the class. Visiting consultants and the instructor provide direction and content. May be taken more than once for a total of 8 credits.

Prerequisite: Course work or experience in the seminar topic.

**HRD 490      Internship in HRD (4, 8 or 12)**

A culminating experience where students apply learning in a supervised HRD setting. Students must submit application to instructor two or more months in advance, then obtain information to seek an approved site.

Prerequisite: Senior standing in HRD, completion of core courses, a grade point average of at least 2.5 and permission of instructor by application.

**LABOR EDUCATION****LE 320      Introduction to Labor Studies (4)**

Origin and development of labor organizations, emergence of collective bargaining. Identification of structures and functioning of unions. Impact of unions on the economy and body politic. Impact of unionism on technological innovation, trade, employee involvement, and changing work force.

**LE 322      Union Structure and Governance (4)**

Analysis of development, composition, structure, behavior, and internal operational processes of U.S. labor organizations from the local to the national federation level. Focus on organizational behavior in different unions, political processes, and issues involving union democracy and contract administration.

**LE 324      Work and the Law (4)**

Survey of law governing labor-management relations and the regulation of internal union affairs. Case and statutory law on rights and duties of employers and unions. Review of OSHA, ERISA, workers' compensation, unemployment compensation, EEOC, and other employment-related legislation. Identical with SOC 324.

**LE 326      Collective Bargaining and Dispute Resolution (4)**

Historical, legal, economic, and philosophical aspects of collective bargaining and contract administration. Analysis of bargaining data, contract provisions, simulated bargaining, and methods of dispute resolution.

**VOCATIONAL AND TECHNICAL EDUCATION****VTE 300      Vocational/Technical Education (2)**

Historical development, philosophy, purpose and intent of vocational and technical education including the structure, function and purposes of educational institutions in our society.

Prerequisite: Permission of instructor.

**VTE 310      Occupational Course Design (4)**

Identical with HRD 310.

Prerequisite: VTE 300.

**VTE 312      School Safety and Health (2)**

Analysis of accident causation and prevention in school facilities. Study of federal, state and local codes which apply to safety and health in schools. Review of concepts, methodology and procedures for assessment of safety and health hazards in school science laboratories and vocational education and training facilities.

Prerequisite: Permission of instructor.

**VTE 401      Supervised Occupational Experience (1, 2, 3 or 4)**

Directed technical-occupational experience required for vocational education teacher certification. Work must be in a trade area directly related to the area to be certified. May be taken more than once for total of four credits.

Prerequisite: Permission of instructor.

**VTE 420            Methods and Materials of Instruction (2)**

Identical with HRD 420.

Prerequisite: VTE 310.

Corequisite: VTE 421.

**VTE 421            Laboratory Instruction (2)**

Identical with HRD 421.

Corequisite: VTE 420.

**VTE 490            Internship (2, 10)**

Supervised student teaching experience in a vocational/technical education setting. Students with fewer than nine months of full-time teaching experience must register for 10 credits. Others may apply for permission to register for two credits which cover performance evaluation.

Prerequisite: 12 credits in VTE, senior standing and a minimum overall GPA of 2.50.

# DEPARTMENT OF READING AND LANGUAGE ARTS

**Chairperson:** *George E. Coon*

**Professors Emeritus:** *Harold C. Cafone, Harry T. Hahn*

**Professors:** *Jane M. Bingham, George E. Coon, Ronald L. Cramer, W. Dorsey Hammond*

**Associate professors:** *Richard F. Barron, Gloria T. Blatt, Robert J. Christina, Anne Porter, Robert M. Schwartz*

As a department within the School of Human and Educational Services, the instructional staff of the Reading and Language Arts Department offers courses in reading, language arts, computer literacy and children's literature at the undergraduate level for students pursuing a teacher education career. The department offers a master's degree program in reading and language arts, a certificate program in computer literacy, and a doctor of philosophy degree in reading.

## Course Offerings

### **RDG 331 Teaching of Reading (4)**

Intensive preparation for the teaching of reading skills in the elementary grades. Identification of reading readiness, problems of program construction and a variety of teaching methods are included. Includes a required field experience.

Prerequisite: Admission to major and FE 215.

### **RDG 332 Literature for Children (4)**

The ability to evaluate children's literature critically, to understand its history, to assess children's needs and developmental levels, and to be able to select and use quality literature effectively with children are major objectives of the course.

Prerequisite: RHT 101 or equivalent.

### **RDG 333 Teaching the Language Arts (4)**

Preparation for teaching language arts in the elementary, middle and early secondary schools. Topics include teaching composition, creative writing, oral language development, listening, spelling, reading and the application of linguistic principles. Includes a required field experience.

Prerequisite: Admission to major and FE 215.

### **RDG 338 Teaching Reading in the Content Areas (4)**

A basic course in reading for prospective secondary teachers. Content will deal with the nature of the reading process and methods and materials for teaching the reading of English, social studies and other subjects to junior and senior high school students. Not open to elementary education majors.

### **RDG 396 Educational Uses of Microcomputers (4)**

General microcomputer literacy course designed with focus on educational applications to enable education students to utilize microcomputers for career and personal goals. Required for elementary education majors.

### **RDG 414 Reading Appraisal in the Elementary Classroom (4)**

Involves direct classroom appraisal of reading abilities of children in elementary school classrooms. Formal and informal diagnostic instruments are used. Diagnostic data are used for prescriptive teaching. Specifically involves reading instruction with pupils and involvement with school personnel.

Prerequisite: RDG 331.

Corequisite: EED 455.

### **RDG 490 Independent Study and Research (2 or 4)**

A program of directed individual reading and research.

Prerequisite: Permission of the Department of Reading and Language Arts (granted only if students present written faculty consent to supervise their study.)

# SCHOOL OF NURSING

**Dean:** *Andrea R. Lindell*

**Office of the Dean:** *Barbara Biallas, assistant to the dean; Sue Lindberg, program planning adviser*

**Professors:** *Andrea R. Lindell*

**Associate professors:** *Gary Moore, Carol Zenas*

**Assistant professors:** *Melinda G. Beaudry, Penny S. Cass, Mary Elizabeth Eddy, Kathleen A. Emrich, Rita Munley Gallagher, Frances C. Jackson, Mary A. Johnson, Norman Kloosterman, Anahid Kulwicksi, Diane Wilson*

**Instructors:** *Patricia Ketcham, Mary E. Mittelstaedt, Barbara Ann Russol*

**Special instructor:** *Ramune Mikaila*

**Visiting instructors:** *Rosanne Acciaioli, Jean Mohan, Mary Ruhana*

**Visiting professor:** *Ann M. Douglas*

**Visiting assistant professor:** *Faithy Justin*

**Visiting special instructor:** *Virginia R. Hosbach*

**Lecturers:** *Mary Jane Heaney, Frances Jercak, Susan T. Lankowsky, Doris Neumeyer, Carmon Nicholson-Weekes, Clementine Rice, Joann Richards, Suzanne Skowronski, Pam Tuoriniemi, Catherine Vincent*

**Applied nursing instructor:** *Carol Catron*

**Adjunct professors:** *Clara Adams-Ender, Cyril A. Akpom, Shahrokh Mansoori*

**Adjunct associate professors:** *Karen S. Ehrat, Joanne Napiewocki, Sharon Wilkerson*

**Adjunct instructor:** *Margaret L. Campbell*

## Board of Visitors

The Board of Visitors for the School of Nursing is composed of community leaders in the greater Detroit area. It assists the school in developing goals and objectives, curricula design, and clinical and research programs to meet the rapidly changing and expanding requirements of the health care field. Board members are available individually or collectively for consultation on such matters as facilities, equipment requirements, special topics and long-range planning.

Members of the Board of Visitors are:

*Ernest W. Baker, Chairman and President, Baker, Abbs, Cunningham & Klepinger, Inc.*

*Glenn Betts, Representative, United Auto Workers*

*Donald J. Bortz, Jr., President, Bortz Health Care Corporation*

*Charles L. Crissman, President, Crissman Cadillac, Inc.*

*Alan S. Funk, Executive Vice President, Jewish Home for the Aged*

*Joseph F. Galvin, Attorney, Schlusser, Lifton, Simon, Rands, Kaufman, Galvin & Jackier*

*Betty Gerisch, R.N., Bloomfield Hills, Michigan*

*Dorothy Hanna, R.N., Associate Hospital Director, William Beaumont Hospital, Royal Oak*

*Richard Lee Hogan, M.D., Detroit, Michigan*

*Ruth Huebner, Rochester, Michigan*

*Robert Hutton, Grosse Pointe Park, Michigan*

*Harold C. L. Jackson, Jr., Manager, General Publicity, General Motors Corporation*

*Bruce McIntyre, Publisher and President, Oakland Press*

*Richard Prior, M.D., Honorary Member*

*Boris Sellers, Executive Director, The Beaumont Foundation*

*Robert Shapiro, Vice President for Professional Affairs, Perry Drug Stores*

*Terry Treiber, Birmingham, Michigan*

## The Nursing Program

The School of Nursing offers instruction leading to the Bachelor of Science in Nursing (BSN).

The course of study combines general education in the humanities and the behavioral, biological and physical sciences with education in the theory and practice of nursing. Graduates qualify for employment as professional nurses in a variety of settings.

The major purposes of the program are:

1. To provide a program of quality baccalaureate nursing education grounded on a firm foundation in the liberal arts and sciences.
2. To prepare a generalist nurse for entry into professional practice.
3. To foster professional role development and commitment to continued personal and professional growth.
4. To prepare a graduate to take the licensure examination of the State Board of Nursing.
5. To prepare a graduate for application to graduate school.

## Graduate Program

The School of Nursing offers a program leading to the Master of Science in Nursing (MSN).

This program prepares nurses for advanced nursing practice in nursing administration or adult health nursing. For more information, see the *Oakland University Graduate Catalog*.

## Admission

### The prenursing year

Students wishing to enter the prenursing year, which for most students is equivalent to the freshman year, should have completed two years of high school mathematics, including algebra (a third year is highly recommended); one year of college preparatory biology; and one year of chemistry, with a grade of 2.8 or better in each. A cumulative average of 2.80 or better is required.

Prior to orientation, all students are required to take placement tests in mathematics, chemistry and rhetoric.

During the prenursing year, students must complete a minimum of 20 credits (or the equivalent) of introductory courses in the physical and behavioral sciences and the humanities.

### Admission to the School of Nursing

Application for admission to the nursing program occurs during the spring session of the prenursing year (generally, the freshman year). Students wishing to be considered for admission are required to meet with the program planning adviser to develop application materials (Program Planning Office, 434 O'Dowd Hall, 370-4071). The School of Nursing has an enrollment quota, which is filled with preference to applicants judged to be best qualified to undertake the program. Preference will be given to students who have completed a majority of their prenursing credits at Oakland University. The School of Nursing encourages and actively seeks applicants among male and minority students.

Admission to the nursing program is selective. It may occur either by progression of freshmen students currently enrolled at Oakland, or by transfer from other institutions. Consideration of students for the nursing program, which begins in the sophomore year, will be based on the applicant's:

1. Admissibility to and retention in the university.
2. Completion of all required prenursing courses with a minimum cumulative grade point average of 3.00. Calculation of the grade point average is based on all prenursing courses whether taken at Oakland University or at other institutions. Students must earn a minimum grade of 2.0 in required prenursing courses.
3. Submission of a completed health history and physical examination, including inoculation for tetanus, skin testing for tuberculosis (possible chest x-ray), rubella titer, and correction of any correctable physical limitations (at the student's expense).
4. Obtaining malpractice insurance of at least \$1,000,000 coverage for the sophomore, junior and senior years (at the student's expense).
5. Completion of an approved Heartsaver or BCLS/BLS class within the last year.
6. Submission of all required information to the School of Nursing by specified deadlines.

### Transfer policy

The program offered by the School of Nursing is designed to meet National League for Nursing accreditation criteria as well as to reflect the Oakland University philosophy of education. Thus, the program is more than a mere assemblage of courses. Records of students transferring to Oakland University from other academic institutions are evaluated and transfer credit granted as appropriate. Once matriculated at Oakland, students are expected to complete all remaining course work for the degree at Oakland. Exceptions that permit taking courses at another institution must have the prior consent of the School of Nursing Committee on Instruction. **A student who has completed 62 semester hours of credit from any accredited institution(s), including Oakland University, may not transfer additional credits from a community or junior college.**

### Requirements for the Bachelor of Science in Nursing Degree

To earn the Bachelor of Science in Nursing degree, students must complete a minimum of 128 credits and meet the following requirements:

1. Complete the writing proficiency requirement.
2. Complete all credits and courses prescribed in the degree curriculum, including: 32 credits in general education (see *Undergraduate degree requirements*); 59 credits in the nursing component; and 25 credits in the humanities and the behavioral, biological and physical sciences and 4 credits in electives as corequisites to the nursing component, as prescribed by the School of Nursing.
3. Maintain a cumulative grade point average of at least 2.50 in all nursing courses.
4. Complete at least 32 credits at the 300-level or above.
5. Be in compliance with all legal regulations of the School of Nursing.

### Plan of Study

Prior to registration for their first nursing (NRS) course, students must complete a Plan of Study in the student program planning office in the School of Nursing. The Plan of Study is a timetable of courses to be taken and assures orderly progress toward satisfying degree requirements.

The following is a model schedule, based on full-time study.



Fall			Winter		
<b>Prenursing</b>			<b>Prenursing</b>		
*CHM 104	Introduction to Chemistry	(4)	*RHT 101	Composition II	(4)
*RHT 100	Composition I	(4)	*BIO 200	Biology	(4)
*PSY 100	Introduction to Psychology	(4)		General Education	(4)
	OR			General Education	(4)
PSY 130	Psychology & Society				
	General Education	(4)			
<b>Sophomore</b>			<b>Sophomore</b>		
NRS 223	Introduction to Professional Nursing I	(5)	NRS 234	Introduction to Professional Nursing II	(6)
NRS 225	Effective Communication	(2)	NRS 205	Health Assessment	(2)
BIO 205	Human Anatomy	(4)	NRS 230	Pharmacotherapeutics	(2)
BIO 206	Human Anatomy Lab	(1)	BIO 207	Physiology	(4)
CHM 201	Organic and Biological Chemistry	(4)	BIO 307	Microbiology	(4)
<b>Junior</b>			<b>Junior</b>		
NRS 322	Pathophysiology	(3)	NRS 333	Emotional Disorders	(4)
NRS 323	Nursing Care of Children	(4)	NRS 334	Emerging Family	(4)
NRS 324	Nursing Care of Adults	(4)	PSY 270	Lifespan Development	(4)
NRS 325	Learning Resource Lab	(1)		General Education	(4)
	General Education	(4)			
<b>Senior</b>			<b>Senior</b>		
NRS 420	Professional Nursing in the Community	(8)	NRS 430	Leadership	(3)
NRS 422	Nursing Research	(3)	NRS 434	Nursing Care Adults II	(3)
Elective		(4)	NRS 436	Practicum	(5)
				General Education	(4)

Total: 128 credits

**NOTE:** MTH 011 (Elementary Algebra) is a corequisite to CHM 104. MTH 012 (Intermediate Algebra) is a prerequisite to some general education courses in the math and logic category. Credits for MTH 011/012 do not apply to the B.S.N.

\*Courses required for admission to the nursing program.

## Annual requirements

Each year students in the nursing program must supply written validation of:

1. Skin testing for tuberculosis and/or chest x-ray.
2. Malpractice insurance of at least \$1,000,000 coverage.
3. Completion of an approved Heartsaver or BCLS/BLS (CPR) class.

Students who have not submitted all of the above items prior to beginning clinical experiences will be excluded from clinical agencies until they have met all the above requirements.

## Course sequencing

The nursing curriculum has been developed based upon full-time study. Nursing courses must be taken in the order indicated on the Plan of Study. Students who have already completed non-nursing courses may have a lighter course load than normal, but they will not complete the program earlier.

Students are not allowed to register for the next year of the nursing major without having successfully completed all designated course requirements for the previous year. Students who are not eligible to progress to the next level are placed on inactive status. Their return to the program is contingent upon availability of space. Students who return to the nursing program from inactive status must comply with all School of Nursing policies currently in effect.

## Clinical placements

Nursing students are placed in hospitals and other clinical settings each semester. These clinical experiences provide students with opportunities to apply theory to practice in working with individuals, families or groups.

Cooperating agencies are located throughout the metropolitan Detroit area. Students are responsible for providing their own transportation to and from the clinical agency. It is imperative that students have access to their own transportation for community health clinical placements in the senior year.

## Academic standing policy

### Grade point policy

Each student's program progress will be reviewed at the end of each nursing course. The periods between reviews are grading periods. Grades are either numerical or S/U (satisfactory/unsatisfactory) as specified for the course. The term grade means:

1. an overall grade for a course, or
2. either a clinical grade or a theory grade, when a course contains both components (the component grade).

### Probation/termination

1. In courses or course components graded numerically, a student assigned a course or component grade below 2.5 is automatically placed on probation. A student assigned a course or component grade below 2.0 is subject to academic dismissal from the program. In the latter case, the school may impose a remediation program while probation continues or may immediately terminate the student from the nursing program. A student on probation who in the next grading period has no nursing grade(s) of unsatisfactory U or below 2.5 will be removed from probation if this is consistent with any remediation program imposed. A student on probation, who in the next grading period has a grade or grades of unsatisfactory or below 2.5, may be immediately terminated from the nursing program or may have a remediation program imposed while probation continues, as the school shall determine.
2. In courses or course components graded satisfactory/unsatisfactory (S/U), a student assigned a course or component grade of unsatisfactory (U) is automatically placed on probation. The school may impose a remediation program while probation continues. A student on probation who, in the next grading period, has no nursing grade(s) of U or below 2.5 will be removed from probation if this is consistent with any remediation program imposed. A student on probation who, in the next grading period, has a grade or grades of U or below 2.5 may be immediately terminated from the nursing program or may have a remediation program imposed while probation continues, as the school shall determine.
3. A student must maintain a G.P.A. of at least 2.50 in all nursing courses to remain in good academic standing. If a student's nursing G.P.A. falls below 2.50, the student is automatically placed on probation. If a student increases the nursing G.P.A. to at least 2.50 within the next two grading periods, the student will be removed from probation. If not, the school may impose a remediation program while probation continues or immediately terminate the student from the nursing program.
4. A student who earns course or component grades of unsatisfactory or below 2.5 in two nursing courses within the same grading period may be immediately terminated from the nursing program or may have a remediation program imposed while on probation, as the school shall determine.
5. A student who is placed on probation by the School of Nursing more than one time may be immediately terminated from the nursing program or may have a remediation program imposed while on probation, as the school shall determine.

### **Eligibility for graduation**

In addition to satisfying other stated requirements, to be recommended for graduation:

1. A student must be in good academic standing (non-probationary).
2. A student must have a cumulative G.P.A. of at least 2.50 in nursing courses.
3. A student must have a grade of at least 2.0 in all required non-nursing courses.

A student placed on probation at the expected time of graduation may have a remediation program imposed as the school shall determine.

### **Registered Nurse sequence**

The School of Nursing offers registered nurses an opportunity to earn a Bachelor of Science in Nursing. The purposes, philosophy and objectives of the B.S.N. program are the same for traditional and registered nurse students. However, flexible teaching methodologies take into account the clinical and life experiences of R.N. students. The first course in the nursing sequence is NRS 222, specifically designed as a transition course for registered nurses, to provide content not obtained in their previous educational experience.

Students who have satisfactorily completed a diploma or associate degree program in nursing and who possess a valid Michigan R.N. license may apply for admission to the B.S.N. program. Registered nurses must complete all credits and/or courses in the degree program.

Completion may be achieved in several ways, including:

1. CLEP (College Level Examination Program) and ACT Proficiency Examination Program (PEP) credit. Academic credit may be granted for courses for what students know, regardless of where or how they acquired the knowledge.
2. Transfer of credits. The School of Nursing evaluates previous course work to determine equivalency.
3. Credit by examination at Oakland University. Registered nurses may demonstrate competency by passing competency examinations, except as noted below.
4. Required course enrollment. When course requirements cannot be fulfilled by the above methods, R.N. students must enroll and successfully complete courses. All R.N. students are required to enroll in NRS 222, NRS 420, NRS 422, NRS 430 and NRS 436.

This program is designed to allow students to proceed at their own pace.

## **Additional Information**

### **Accreditation and program review**

The Oakland University School of Nursing is accredited by the National League for Nursing and has approval from the Michigan State Board of Nursing.

### **Sigma Theta Tau**

Theta Psi, the local chapter of Sigma Theta Tau International Honor Society in Nursing, was chartered in April 1986 at Oakland University. Candidates for membership are selected on the basis of superior scholastic achievement, evidence of professional leadership potential and dependable personal qualifications.

### **National Student Nurses' Association**

Prenursing and nursing students are eligible and encouraged to join and remain members of the National Student Nurses' Association. NSNA is the mechanism through which students participate in planning and formulating policies related to the School of Nursing.

## Qualification for licensure

Licensure is obtained through satisfactory performance on the licensing examination prescribed by the State of Michigan. Upon registration of the license, a nurse is known as a registered nurse (R.N.). Licensure in one state entitles a qualified holder to seek licensure by endorsement in other states.

Applicants who have been convicted of charges other than minor traffic violations may be denied a license to practice nursing.

## Course Offerings

Nursing courses may include student learning experiences in the classroom, learning resource laboratory, and clinical agencies in the community. Admission to the nursing program is required for enrollment in any required nursing course.

### **NRS 205 Health Assessment (2)**

Introduces students to the process of health assessment. Emphasis on physical examination of all body systems and techniques for communicating data collected to other health personnel.

Prerequisite: BIO 205 and 206.

### **NRS 222 Transition to Professional Nursing (5)**

Introduces framework of nursing curriculum, including the concepts of man, environment, health and nursing. Opportunity for the demonstration of clinical competency. For registered nurses only.

### **NRS 223 Introduction to Professional Nursing I (5)**

Introduces framework of nursing curriculum, including the concepts of man, environment, health and nursing. Basic nursing skills are applied to the care of clients experiencing commonly occurring, uncomplicated health deviations.

### **NRS 225 Effective Communication in Clinical Practice (2)**

Focus on effective communication as the basis for implementing the nursing process. Initiates development of skills in deliberative communication, and presents behavioral theory related to successful application of communication skills in both non-clinical and clinical interpersonal encounters.

### **NRS 230 Pharmacotherapeutics (2)**

Focuses on basic concepts of pharmacology and their application in the clinical setting. Identical with HS 331. Corequisite: BIO 207.

### **NRS 234 Introduction to Professional Nursing II (6)**

Continuation of NRS 223. Examines general principles involved in care of clients undergoing pharmacotherapeutic and/or surgical interventions. Gordon's Functional Health Framework is utilized as the basis for the assessment, planning, implementation and evaluation of nursing care to assigned clients.

Prerequisite: BIO 205 and 206.

### **NRS 322 Pathophysiology (3)**

Examines how physiological functions are modified by disease processes.

Prerequisite: Completion of all sophomore level courses.

### **NRS 323 Nursing Care of Children (4)**

Implications of increasingly complex variables related to health and illness in children. Emphasis is on the interaction of biological responses to stressors from birth through adolescence. Study provides the base for expanding competence in nursing skills centering on care function and more sophisticated application of nursing process with clients in various clinical settings.

Prerequisite: Completion of all sophomore level courses.

### **NRS 324 Nursing Care of Adults I (4)**

Explores the effect of variables related to health and illness in the adult. Emphasis is on the interaction of biological responses to stressors in the adult life cycle. Study provides the base for expanding competence in nursing skills centering on care functions and more sophisticated application of nursing process with clients in acute care clinical settings.

Prerequisite: Completion of all sophomore level courses.

**NRS 325      Learning Resource Lab: Adults/Children (1)**

Practice and validation of selected nursing care skills in the learning resource laboratory.

Corequisite: NRS 323 and 324.

Prerequisite: Completion of all sophomore level courses.

**NRS 333      Nursing Care of Clients with Emotional Disorders (4)**

Study focuses on the care of clients in acute psychiatric settings. Includes exploration of variables affecting the development of psychopathology and emphasizes the development of nursing interventions to provide care for patients experiencing acute psychiatric problems.

Prerequisite: Completion of all sophomore level courses.

**NRS 334      Nursing Care of the Emerging Family (4)**

Experience in the care of families throughout the childbearing cycle. Emphasis is on the care of mothers and infants in the labor room, delivery and post partum settings. Focus is on variables contributing to a healthy pregnancy, normal delivery and positive transition to parenthood.

Prerequisite: Completion of all sophomore level courses.

**NRS 360      Advanced Care of the Adult-Extern (4-6)**

Provides precepted theoretical and clinical practice and classroom instruction in an acute care setting, working with an adult population.

Prerequisite: Completion of all junior level courses.

**NRS 420      Professional Nursing in the Community (8)**

Exploration of the functions of the community health nurse with the individual, the family and the community. Emphasis is on analysis of client adaptation to environmental stressors, nursing actions directed toward prevention of illness, restoration, maintenance and promotion of public health, and collaboration with others in the community to achieve mutual goals.

Prerequisite: Completion of all junior level courses.

**NRS 422      Nursing Research (3)**

A broad overview of the research process in nursing. Includes content related to nursing theory, research design, and data analysis strategies. Major emphasis is on the use of research concepts for the purpose of evaluating relevant research for use in nursing practice.

Prerequisite: Completion of all junior level courses.

**NRS 430      Leadership in Professional Nursing (3)**

Seminar designed to enable students to develop a beginning framework for nursing leadership and practice. In-depth examination of management principles, theories and professional practice issues.

Prerequisite: Completion of all junior level courses.

Corequisite: NRS 436.

**NRS 434      Nursing Care of Adults II (3)**

Nursing of adult clients experiencing increasingly complex biopsychosocial alterations.

Corequisite: NRS 436.

Prerequisite: Completion of all junior level courses.

**NRS 436      Practicum in Professional Nursing (5)**

Practicum offered in a variety of acute care settings designed to facilitate the transition from student to practicing professional. Students will apply the nursing process to acutely ill clients while functioning as a leader and an agent of change.

Prerequisite: Completion of all junior level courses.

**NRS 460      Topics in Nursing (2-4)**

Provides comprehensive theoretical nursing content to senior nursing students in a specialty area, e.g., critical care, maternity, industrial, intensive care, operating room, etc. Clinical experience in a health care facility may be required.

Prerequisite: NRS 420 or 430.

**NRS 490      Independent Study (1-12)**

Options include the opportunity for selected students to participate in faculty research or preceptorships in areas of special interest. Permission of undergraduate program director is needed to enroll for more than 4 credits of independent study in one semester. May be taken more than once for a total of 12 credits.

# UNIVERSITY FACULTY

This list reflects faculty appointments effective June 1, 1989 as they were available on the publication date.

## Officers of Instruction

- JOSEPH E. CHAMPAGNE, President of Oakland University and Professor of Management; Ph.D., Purdue University  
 KEITH R. KLECKNER, Senior Vice President for University Affairs and Provost and Professor of Engineering; Ph.D., Cornell University

## The Faculty

- ALI A. ABBASI, Clinical Associate Professor of Health Sciences; M.D., Damascus University  
 HODA ABDEL-ATY-ZOHDY, Associate Professor of Engineering; Ph.D., University of Waterloo  
 BONNIE F. ABIKO, Assistant Professor of Art History; Ph.D., Princeton University  
 ROSANNE ACCIAIOLI, Visiting Instructor in Nursing; M.S.N., R.N., University of Michigan  
 JAMES R. ADAMS, Clinical Instructor in Medical Laboratory Sciences; M.S., Wayne State University  
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academic policies and provides opportunity for public deliberation on issues of importance to the university.

The Senate carries out much of its work through its committees, all staffed mainly by faculty members but generally including student and administrative representatives as well. Currently there are 14 such committees whose responsibilities reflect the range of the Senate's concerns.

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- Academic Standing and Honors  
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- General Education Committee
- Graduate Council
- Research Committee
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- Teaching and Learning Committee
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# ACADEMIC ADVISING INDEX

## **Academic Services and General Studies**

121 North Foundation Hall

370-3227

General Studies

Undecided—No Major Preference

## **College of Arts and Sciences**

219 Varner Hall

370-4567

African and Afro-American Studies

Anthropology

Art History

Biochemistry

Biology

Chemistry

Chinese Language/Civilization

Communication Arts

East Asian Studies (China or Japan)

Economics

Engineering Chemistry

Engineering Physics

English

Environmental Health

French

German

History

Independent major

Journalism

Latin American Language/Civilization

Latin American Studies

Linguistics

Mathematics

Medical Physics

Music

Philosophy

Physics

Political Science

Psychology

Public Administration and Policy

Russian Language/Civilization

Slavic Studies

Sociology

South Asian Studies (India)

Spanish

Undecided—Fine Arts, Letters,  
Science/Math or Social Science

## **School of Business Administration**

416 Varner Hall

370-3285

Accounting

Economics

Finance

General Management

Human Resources Management

International Management

Management Information Systems

Marketing

Quantitative Methods

## **School of Engineering and Computer Science**

159a Dodge Hall

370-2201

Computer Engineering

Computer Science

Electrical Engineering

Engineering Chemistry

Engineering Physics

Mechanical Engineering

Systems Engineering

Undecided—Engineering/Computer Science

## **School of Health Sciences**

159 Vandenberg Hall

370-4195

Cytology

Exercise Science

Histology

Industrial Health and Safety

Medical Laboratory Sciences

**School of Health Sciences** *continued*

Medical Technology

Nuclear Medicine

Physical Therapy

Undecided—Health Sciences

**School of Human and  
Educational Services**

472 O'Dowd Hall

370-4182 (Education)

370-3066 (HRD)

Early Childhood Education (HRD)

Elementary

Human Resource Development

Training and Development (HRD)

Youth and Adult Services (HRD)

Undecided—Education

**School of Nursing**

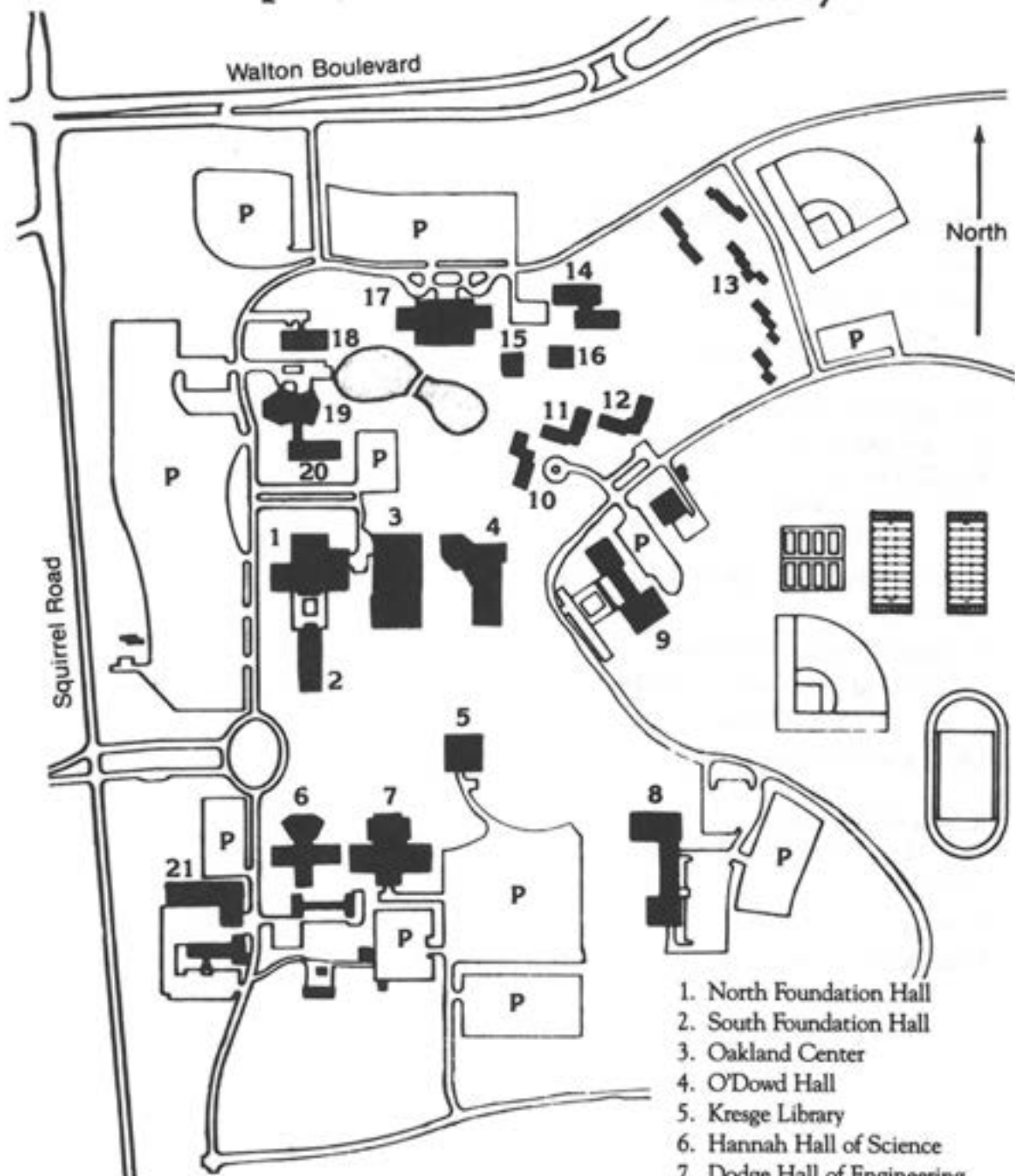
434 O'Dowd Hall

370-4071

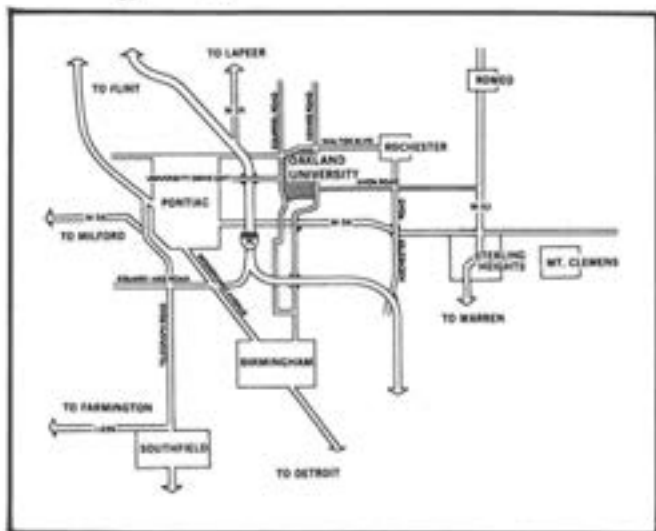
Nursing

Undecided—Nursing

# Main Campus of Oakland University



1. North Foundation Hall
2. South Foundation Hall
3. Oakland Center
4. O'Dowd Hall
5. Kresge Library
6. Hannah Hall of Science
7. Dodge Hall of Engineering
8. Varner Hall
9. Lepley Sports Center
10. Fitzgerald House
11. Anibal House
12. Pryale House
13. George T. Matthews Apartments
14. Hamlin Hall
15. Hill House
16. Van Wagoner House
17. Vandenberg Hall
18. Graham Health Center
19. Meadow Brook Theatre and Art Gallery
20. Wilson Hall
21. Public Safety and Services Building



## NOTES

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# NOTES

1. The first part of the notes discusses the importance of maintaining accurate records in a laboratory setting. It emphasizes the need for clear labeling and consistent documentation to ensure the reliability of experimental results.

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