

395 SPECIAL STUDIES IN POLITICAL SCIENCE V 1-4 R-4 prereq one course numbered above 300 in Political Science. Selected aspects of politics, government or international relations. Offered by different instructors under various titles.

429 COMPARATIVE MARXIST THEORY 3 prereq 12 credits in Political Science or c/i. Analysis of relevant writings of major Marxist thinkers in selected countries.

433 (333) INTERNATIONAL LAW 3 prereq 332. The law of nations in relation to peace, war, and collective security.

471-472 THE AMERICAN CONSTITUTIONAL SYSTEM 3 prereq 201. (471) The courts, judicial review and the federal system. (472) Judicial protection of civil rights.

474 PUBLIC LAW OF MONTANA 3 prereq 471 or 381. The Montana Constitution as an instrument of government, and selected problems in its judicial interpretation.

491 (391) INDEPENDENT STUDY IN POLITICAL SCIENCE V 2-4 R-9 prereq 12 credits in Political Science courses numbered above 300 and c/i. Research in fields appropriate to the needs and objectives of the individual student.

495 METHODS AND MATERIALS 3 open to departmental majors only. A survey of the discipline of political science, emphasizing traditional and contemporary methods of research as illustrated by the works of major recent and contemporary political scientists.

FOR GRADUATES

587-588-589 SEMINAR IN URBAN STUDIES 3. Selected topics in urban affairs. (Also listed as Soc. 587-588-589.)

591 INDEPENDENT STUDY IN POLITICAL SCIENCE V 2-4 R-9. Research in fields appropriate to the needs and objectives of the individual student.

592 SEMINAR IN COMPARATIVE GOVERNMENT AND POLITICS 3.

593 SEMINAR IN INTERNATIONAL RELATIONS 3.

594 SEMINAR IN POLITICAL BEHAVIOR 3.

595 SEMINAR IN POLITICAL THEORY 3.

596 SEMINAR IN PUBLIC ADMINISTRATION 3.

597 SEMINAR IN PUBLIC LAW 3.

598 SEMINAR IN STATE AND LOCAL GOVERNMENT 3.

699 THESIS V R-15.

Aptitude Test. Superior scholarship is of importance since medical and dental schools have more applicants than they can accept for admission.

HIGH SCHOOL PREPARATION. High school students who are contemplating a career in the Pre-medical Sciences curriculum at the University should plan on a program of high school studies which will include 3-4 years of mathematics, some Latin or several years of a modern foreign language, experience in Chemistry and Physics, and considerable background in literature and social science.

PRE-MEDICAL SCIENCES STUDENT. The majority of medical schools now expect a broad background of knowledge, experience, and training on the part of applicants. The field in which a student receives his Bachelor's degree is not important provided he has the minimal course requirements in the Pre-medical Sciences, demonstrates a high level of competency, and is relatively well balanced.

Applicants for entrance to Schools of Medicine exceed the number that are admitted so that only well motivated, well qualified, and competent students are admitted to Schools of Medicine. Well qualified students from the University are usually accepted into Medical Schools.

The Pre-medical Sciences student is advised to get a Bachelor's degree in a field of his own choice. However, he should make sure that he can satisfy within the time available (1) the University requirements for graduation, (2) the minimum pre-medical science requirements listed below, and (3) the major requirements in his chosen major field. The student should consult with the pre-medical sciences adviser during the freshman year, and consult with both the pre-medical sciences adviser and the major adviser beginning not later than the sophomore year in residence.

The Western Interstate Commission for Higher Education was designed to provide financial aid to Medical, Dental, Veterinary Medical, and other professional students attending Western professional schools.

MINIMUM COURSE REQUIREMENTS FOR THE PRE-MEDICAL SCIENCES STUDENT. English, Physical Education, Group, and other University requirements listed earlier in the catalog; Chemistry through Organic, Quantitative, and Survey of Physical; one year of college mathematics; one year of college physics; Zoology through Embryology and Genetics; a reading knowledge or 23 credits in French, German or Russian.

SPECIAL REQUIREMENTS FOR THE BACHELOR OF ARTS DEGREE WITH A MAJOR IN THE PRE-MEDICAL SCIENCES: In addition to the minimum course requirements listed immediately above the student must take Psychology 5-10 credits; 15 credits of an approved course of study in one field; and additional electives selected from the non-sciences to complete University credit requirements for graduation.

It is possible for the Pre-medical Sciences student who has satisfied course requirements specified above to earn a Bachelor's degree in some other field than Pre-medical Sciences. A degree in a related field such as Chemistry, Mathematics, Microbiology or Zoology may be earned by completing course work in the area selected as approved by the Chairman of the major department concerned. See Chemistry and Zoology for degrees in those areas with the Pre-med Option.

PRE-MEDICAL SCIENCES CURRICULUM

(Dentistry, Medicine, Veterinary Medicine)

Freshman Year

	A Cr.	W Cr.	S Cr.
Engl 150	3		
Math 116, 117, 118	5	5	5
Chem 121-122-123	5	5	5
(Math 251 elective)			5
Electives	4	3	
H&PE (see below)			

Sophomore Year

Engl 250		3	
Zool 111, 112, 113	5	5	5
Chem 261, 262	5	5	
Psych 110			5
For Lang 101 or elective	5		5
Group requirements		3	
H&PE see below)			

Junior Year

Engl 350			3
Chem 245, 370		5	5
Physics 221, 222, 223 or 111, 112, 113	5	5	5
Zool 304	5		
For Lang or elective	5	5	4

Senior Year

Zool 404, 485	5	5	
For Lang or elective	5	5	5
Science sequence, Chem 481 recommended	5	5	5
Elective			5

H&PE (6 quarters) 183
6

PRE-MEDICAL SCIENCES

The Pre-medical Sciences curriculum is designed to provide the basic training required of students who plan careers in Dentistry, Medicine, Veterinary Medicine, and medically related fields. It is a four year program leading to a Bachelor of Arts degree with a major in the Pre-medical Sciences. The Pre-medical Science student should normally, however, major in an ancillary field and simultaneously satisfy the major department requirements and the Pre-medical Sciences curriculum requirements.



Requirements for admission to medical and dental schools have been standardized by the professional schools and their governing agencies in terms of the needs of the professions concerned and their licensing boards.

Students in Pre-veterinary Medicine and in Optometry are advised to plan their programs carefully at the University of Montana in order to ensure meeting the admission requirements to a School of Veterinary Medicine, or Optometry.

The successful pre-med student must do well in the basic sciences and other college work. He must master more than two years of college chemistry, and do well in college mathematics, physics, and zoology. To be considered by a School of Medicine the pre-med student must place high on the Medical College Aptitude Test which he ordinarily takes during his junior year. The same holds true for the pre-dent student who must do well in the American Dental

PRE-NURSING

The School of Nursing at Montana State University, Bozeman, accepts transfer students from the University of Montana who have completed one of two Pre-Nursing programs listed below. (The three-quarter sequence is intensive and is recommended for only the best students.) Students with sophomore standing who desire admission to the School of Nursing, Montana State University, Bozeman, must plan to enter during Summer Quarter after completion of their freshman year. Students with sophomore standing wishing admission to a school of nursing other than that of Montana State University should consult the catalog of the school of their choice for the selection of a freshman program.

	Su Cr.	A Cr.	W Cr.	S Cr.
Four-quarter sequence:				
Chem 101-102—General Chemistry		4	4	
Engl 150—Freshman Composition	3			
Home Ec 146, 366—Elementary Nutrition, Child Development			4,3	
H&PE 100—Physical Education		1	1	1
H&PE 290—Human Anatomy			5	
Math 116—College Algebra		5		
Micro 100—Elementary Microbiology				3
Psych 110, 220—Introduction to Psychology, Psychology Statistics		5		5
Soc 101—Introductory Sociology	5			
Speech 111—Introduction to Public Speaking	3			
Zool 202—Human Physiology				5
	11	15	17	14

	Su Cr.	A Cr.	W Cr.	S Cr.
Three-quarter Sequence:				
Chem 101-102—General Chemistry		4	4	
Engl 150—Freshman Composition	3			
H&PE 100—Physical Education		1	1	1
H&PE 290—Human Anatomy			5	
Home Ec 146, 366—Elementary Nutrition, Child Development			4,3	
Micro 100—Elementary Microbiology		3		
Psych 110—Introduction to Psychology		5		
Soc 101—Introductory Sociology				5
Speech 111—Introduction to Public Speaking				3
Zool 202—Human Physiology				5
		16	17	14

RECOMMENDED COURSE SEQUENCE

Freshman Year

	A Cr.	W Cr.	S Cr.
Psych 110	5		
For Lang 101-102-103	5	5	5
Zool 111-112-113	5	5	5
Soc 101		5	
Engl 150			3
Psych 190 or electives			3
H&PE	1	1	1
	16	16	17

Sophomore Year

	A Cr.	W Cr.	S Cr.
Psych 220		5	
Psych 206, 212, 230, 240 (take 2)	5		5
For Lang 211-212	5	5	
Speech 111			3
Philosophy 110	5		
Engl 250		3	
Anthro 153			5
Electives		2	3
H&PE	1	1	1
	16	16	17

Junior Year

	A Cr.	W Cr.	S Cr.
Psych 310, 311	5	5	
Psychology electives (206, 212, 230, 240, 312, 361, 390)	0-5	5-8	5-8
Math 116, 302, 303 (or electives)	5	5	5
Philosophy 210			5
Engl 350	3		
	15-17	15-18	15-18

Senior Year

	A Cr.	W Cr.	S Cr.
Psych 411	5		
Psych 390		3	3
Psychology Electives (400 level)	0-5	0-5	0-5
Electives	5-8	7-10	7-10
	10-18	10-18	10-18

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For explanation see Course Descriptions (Index)

110 INTRODUCTION TO PSYCHOLOGY 5 (5-0). Introduction to the scientific study of behavior in man and animals, with emphasis on psychological processes such as sensation, perception, learning, motivation, etc.

111 INTRODUCTION TO EXPERIMENTAL PSYCHOLOGY 5 (4-2) prereq 110. Advanced general psychology. Experimental and quantitative methods employed in laboratory approaches to the scientific study of behavior.

190 PSYCHOLOGICAL INVESTIGATION V 1-3 R-5 prereq 110 and c/i. Supervised investigation of psychological problems.

206 COMPARATIVE PSYCHOLOGY 5 (4-2) prereq 111. The origins and significance of the behavior of present life forms.

212 (412) PHYSIOLOGICAL PSYCHOLOGY 5 (4-2) prereq 111. Survey of basic chemical and nervous regulatory mechanisms underlying behavior.

220 PSYCHOLOGICAL STATISTICS 5 (4-2) prereq 110 and Math 125. Application of statistical techniques to psychological data.

230 CHILD AND ADOLESCENT PSYCHOLOGY 5 (5-0) prereq 110. Behavioral development through adolescence, with emphasis on the research literature.

240 SOCIAL PSYCHOLOGY 5 (4-2) prereq 111. Effects of social environment upon human behavior.

390 (490) PROBLEMS IN PSYCHOLOGY V R-9 prereq 15 credits in Psychology and c/i.

FOR UNDERGRADUATES AND GRADUATES

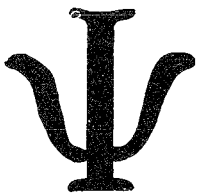
310 SENSORY PROCESSES AND PERCEPTION 5 (4-2) prereq 111. Concepts, principles and methods of sensory function and perceptual phenomenon.

311 LEARNING 5 (4-2) prereq 111. Principles involved in modifying behavior.

312 MOTIVATION 5 (4-2) prereq 111. Conditions which influence basic drives, incentives, and the development of complex motives.

PSYCHOLOGY

is the science concerned with principles of behavior of living organisms. It deals with such processes as learning, motivation, emotion, perception, problem solving, personality, intelligence and group behavior.



The Bachelor of Arts, Master of Arts, and Doctor of Philosophy degrees are offered.

Minimum preparation for professional work in psychology requires an M.A. degree, and full professional competence requires the Ph.D. degree. The fully trained student may select from a variety of positions in laboratories, clinics, hospitals, schools and

colleges, business and industry, and governmental agencies. At present and in the foreseeable future, the number of jobs far exceeds the number of trained psychologists who can fill them.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN PSYCHOLOGY. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts degree with a major in psychology: at least 45 credits in psychology, including Psychology 110, 220, 310, 311 and 411, with at least 25 credits in psychology courses numbered above 299, including at least 2 credits of 390 in the senior year. Mathematics 125; Zoology 111-112-113, or 111 and 202; and a reading knowledge or five quarters (23 to 25 credits) in one modern language, preferably Russian, German or French. Other courses recommended for psychology majors include Philosophy 110 and 210. Mathematics 116, 344 and 345, Speech 111, Anthropology 153 and at least one course in Sociology. For majors preparing for graduate work in psychology, the following departmental courses are recommended in addition to those which are required: Psychology 206, 212, 230, 240, 312, 361. With appropriate background, such students may take a restricted number of graduate level courses in their senior year.

342 PERSONNEL PSYCHOLOGY 3 (3-0) prereq 110. Selection, classification, and training; worker efficiency and adjustment problems.

343 INDUSTRIAL PSYCHOLOGY 5 (5-0) prereq 110. Applications of psychology in industry.

361 ABNORMAL PSYCHOLOGY 5 (5-0) prereq 110. Description and classification of psychopathological reaction patterns, with emphasis on their psychological dynamics.

411 SYSTEMATIC PSYCHOLOGY 5 (5-0) prereq 310-311. Evaluation of the major psychological systems: Structuralism, Functionalism, Behaviorism, Gestalt, Psychoanalysis.

420 (360) PERSONALITY DYNAMICS 4 (4-0) prereq graduate standing or senior with c/i. Principles of motivation, frustration, conflict, and the mechanisms for defense. Major emphasis on psychoanalytic dynamics.

451 INDIVIDUAL DIFFERENCES 3 (3-0) prereq 110. Nature and extent of individual and group differences.

480 MATHEMATICAL MODELS IN PSYCHOLOGY 4 (4-0) prereq 220 and 311 or c/i. Derivation and evaluation of some of the less complex models of learning, choice behavior, and signal detection.

491 TOPICAL SEMINAR V R-6 prereq 15 credits in psychology and c/i. Topics of current interest with critical examination of the literature.

FOR GRADUATES

501-502-503 PROSEMINAR 3 prereq graduate standing in psychology. The basic science fields of psychology, designed as a foundation for advanced training in specialized areas of general and applied psychology. Required of all graduate students in psychology. (501) Learning, motivation, and thought processes. (502) Perception, physiological psychology, comparative psychology. (503) Personality, psychopathology, social psychology.

505 (505-506-507) PROFESSIONAL PROBLEMS IN PSYCHOLOGY 2 (2-0). Open only to graduate majors in psychology. Bibliographic problems and the literature search; forms and problems of scientific communication; professional associations, relations with other professions and the public; legal and ethical problems of the psychologist.

510 (410) HISTORY AND SYSTEMS OF PSYCHOLOGY 4 (4-0) Development of concepts, systems, and theories in psychology.

512 THEORIES OF LEARNING 4 (4-0). Critical review of current learning theories based on analysis of fundamental concepts, experimental data, and theoretical implications.

513 ADVANCED LEARNING 4 (4-0). Principles and methods pertaining to the acquisition and retention of new behaviors.

514 (414) THOUGHT PROCESSES 4 (4-0) prereq 10 credits from 310, 311, 312 and 220. Experimental and theoretical analysis of problem solving, concept formation, and other complex symbolic behavior.

515 ADVANCED MOTIVATION 4 (4-0). Drive, incentive and other affect variables as they influence performance.

516 ADVANCED COMPARATIVE 4 (4-0) Directed towards a synthesis of existing data from various life forms into universal principles of behavior.

518 LABORATORY INSTRUMENTATION 4 (2-4). Discussion and experience in the design, construction, and use of instrumentation in psychology.

521-522 (511) ADVANCED PSYCHOLOGICAL STATISTICS 4 (4-0). Application of statistical procedures to the design of experiments; assumptions underlying techniques of sampling and measures of association and significance.

530 ADVANCED CHILD PSYCHOLOGY 4 (4-0). Selected topics in learning and motivation of children with emphasis on analysis of experiments and theoretical interpretations.

540 INTERVIEW AND CASE HISTORY TECHNIQUES 2 (1-2). Interpersonal dynamics in the gathering of personal data from individuals. Organization and presentation of case history reports in educational, industrial and clinical situations.

544 (444) ADVANCED SOCIAL PSYCHOLOGY 4 (4-0). Theory and experiment in the analysis of individual behavior in relation to social stimuli.

550-551-552 (571-572, 576-577) PSYCHOLOGICAL EVALUATION 4 (3-2) prereq c/i. Administration, scoring, and interpretation of standard tests, with supervised practice. (550) Individual and group tests of aptitudes and intellectual abilities. (551) Objective measures of personality functioning; introduction to projective techniques, TAT and related tests. (552) Rorschach and other projective approaches.

560 (460) THEORIES OF PERSONALITY 4 (4-0). Current theories of personality and the experimental evidence on which they are based.

561 ADVANCED PSYCHOPATHOLOGY 4 (4-0). Symptoms, etiology, diagnostic criteria and treatment of the major functional and organic disorders; research literature.

562 ADVANCED PERCEPTION 4 (4-0). Current literature and theoretical models of perception.

563 ADVANCED PHYSIOLOGICAL PSYCHOLOGY 4 (4-0). Brain mechanisms and behavior; electrophysiological correlates of behavior.

570 CLINICAL PSYCHOLOGY 4 (4-0). A general survey of the field; types of cases handled by the clinician; techniques in evaluation and therapy; contributions in consultation and research.

586 PRINCIPLES OF PSYCHOTHERAPY 4 (4-0) prereq 561. Major theoretical and technical approaches to psychotherapy.

590 INDEPENDENT RESEARCH V R.

599 THESIS V R-10.

600 TOPICAL SEMINAR V 1-3 R. Advanced treatment of highly specialized topics of current interest.

601 SEMINAR IN MEASUREMENT V 1-3 R. Selected topics from the field of measurement and quantitative methods in psychological research.

602 SEMINAR IN EXPERIMENTAL V 1-3 R. Survey of current literature dealing with selected aspects in learning motivation, sensory processes, and perception.

603 SEMINAR IN SYSTEMATIC V 1-3 R. Topics in history, systems, and theories in psychology, including theory construction.

604 SEMINAR IN CLINICAL V 1-3 R. The study of significant research investigations in psychopathology, diagnosis, psychotherapy and other related aspects of clinical psychology.

605 SEMINAR IN PHYSIOLOGICAL AND COMPARATIVE V 1-3 R. Selected topics in physiological and comparative psychology from the recent literature. Extensive work in the original literature.

606 SEMINAR IN PERSONALITY AND SOCIAL V 1-3 R. Selected topics in personality or social psychology.

671 CLINICAL PRACTICUM, DIAGNOSTIC 2 (0-4) R-6 prereq c/i. To be taken in conjunction with or subsequent to 550-551-552. Supervised practice of diagnostic techniques in a clinical setting.

672 CLINICAL PRACTICUM, THERAPEUTIC 2 (0-4) R-6 prereq c/i. To be taken in conjunction with 686. Supervised practice of psychotherapeutic techniques in a clinical setting.

673 CLINICAL PRACTICUM, RESEARCH 2 (0-4) R-6 prereq c/i. Supervised participation in research projects in a clinical setting.

685 (689) CLINICAL INTERNSHIP 0 prereq acceptable proficiency in clinical techniques. Clinical internship offered by the psychology staff of a hospital, clinic, or other approved agency.

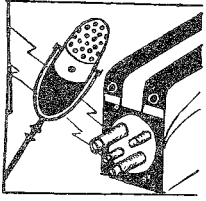
686 ADVANCED PSYCHOTHERAPY 2 (2-0) R-6 prereq 420, 586, 685; coreq 672. A continuous and intensive study of the psychotherapeutic relationship and the various therapeutic techniques including supportive, client-centered, analytic, hypnotherapeutic.

699 DISSERTATION V R-30.



RADIO AND TELEVISION

courses are designed to prepare students for occupations in the broadcast media, for effective use of radio and television in connection with occupations in other fields, or for greater appreciation of the media as audience members. Graduates in radio-television have many vocational opportunities as announcers, performers, writers, newsmen, program directors, managers, and executives of radio and television stations, or as radio-television specialists in advertising agencies, and other businesses.



Students work toward either a Bachelor of Arts degree in Journalism with specialization in radio and television, or a Bachelor of Arts degree in Radio and Television. In either case, emphasis is placed on a strong liberal arts background, and approximately three-fourths of the courses for either degree will be taken in the College of Arts and Sciences. Production of programs for broadcast from the University's radio station, KUFM, and closed circuit television studio is included in the course of study.

NOTE: Students wishing to major primarily in radio or television journalism should take the radio-television sequence in Journalism.

The College of Arts and Sciences and the School of Journalism offer the following curriculum leading to a Bachelor of Arts degree in Radio-Television.

University Requirements	Credits	
English Composition 150, 250, 350	9	
Physical Education 100 (6 quarters)	6	
Groups I and II	15	
Group III	12	
Group IV	12	
	54	54
Additional Requirements:		
Group III	13	
Group IV	13	
Foreign Language	23-25	
English 450	3	
	52-54	52-54
Major Requirements:		
32 credits from Radio-Television 140, 341-342-343, 346, 348, 440, 441-442-443, 494; Drama 329 (342); Speech 241	32	
Drama 121, 131	7	
Journalism 270, 397	6	
	45	45
Free Electives		35-33
		186

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

140 INTRODUCTION TO RADIO AND TELEVISION 3. Open to non-majors. History, organization, economics, social and legal responsibilities, and basic electronic theory of radio and television as media of mass communication.

341-342-343 (240, 242, 345) RADIO PRODUCTION 2 prereq 140 for 341; prereq 341 and Journ 270 for 342; prereq 342 for 343. Lectures and staff work on faculty-directed University radio station. (341) Operation of broadcasting equipment, F.C.C. regulations and writing for radio. (342) Planning and production of news and special affairs. (343) Advanced training in areas of broadcasting.

346 RADIO-TELEVISION PUBLIC AFFAIRS (see Journalism).

348 RADIO-TELEVISION ADVERTISING AND MANAGEMENT 3 prereq 140. Planning and broadcasting of advertising campaigns. Station management and sales principles.

FOR UNDERGRADUATES AND GRADUATES

440 CINEMATOGRAPHY (see Journalism).

441-442-443 TELEVISION PRODUCTION AND DIRECTION 3 prereq 12 hours in radio-television courses. Advanced course in preparing, producing and directing television programs. Preparation of news and special affairs programming for television.

494 RADIO-TELEVISION SEMINAR 3 prereq or coreq 441. Radio and television and their effect on society with emphasis on responsibilities of the broadcasting industry.

RELIGION

courses of a non-sectarian nature are offered for general education purposes. Although no degree is offered in Religion, up to 15 credits in religion courses may be counted toward graduation. The instruction covers ancient and contemporary thought and scholarship of most of the major religions of the world, including the study of the Bible and the Church. No attempt is made to indoctrinate the student in beliefs or creeds.



In addition to a director (who is not sponsored by any one group), there are three Chairs of Religion. The Judaica Lectureship, chaired on a part-time basis by a Jewish professor, is sponsored by the Jewish Chautauqua Society, the Jewish community of Montana and its neighboring states. The second Chair on a full-time basis is sponsored by the Helena Diocese of the Roman Catholic Church. The third Chair also on a full-time basis is sponsored by the National Lutheran Campus Ministry (supported by the American Lutheran Church and the Pacific Northwest Synod of the Lutheran Church in America). Financial support of the program is voluntary.

The Montana School of Religion was organized and incorporated as an independent organization in 1924 for the purpose of making courses in religion available to students, and of teaching religion as an academic discipline. It is affiliated with the University, under a director who is responsible to the University and to a Board of Trustees comprised of faculty, administration, laymen, and ministers, who represent the various supporting groups and the University.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

118 INTRODUCTORY STUDY OF RELIGION 2. Comparative analysis of truths of various disciplines, expressions of religious truths, criteria of truth, and basic problems a student must face. (Open only to freshmen and sophomores.)

123 LIFE AND TEACHINGS OF JESUS 3. The origins, background, problems, occasions, and messages of the four gospels with an attempt to relate the teaching for today.

142 RELIGION IN AMERICA 3. The teachings and practices of Judaism, Protestantism, Roman Catholicism, and other representative sects found in America.

219 SURVEY OF THE BIBLE 3. The origins, background, problems, occasions and messages of the Old and New Testaments.

224 LIFE AND TEACHINGS OF PAUL 3. The origins, background, problems, occasions and messages of ten epistles of Paul the apostle and of the book of Acts, and their application for today.

241 HISTORY OF CHRISTIANITY TO 900 3. An historical-cultural approach to the major movements of the Church from the Apostolic period through the Carolingian Renaissance; reciprocal influences of politics, economics, social mores, and the arts with the Church.

242 HISTORY OF CHRISTIANITY FROM 900 TO 1700 3. The growth and role of Christianity in the West; the causes and establishment of the Reformation; the influences of monasticism, rising nationalism, and humanism upon the Church.

250 BASIC CHRISTIAN CONVICTIONS 3. The backgrounds and thoughts concerning God, man, sin, Jesus Christ, and redemption interpreted in meaningful terms for our day.

251 CHRISTIAN THINKERS BEFORE 1800. 2. The contributions of Augustine, Aquinas, Luther, and Calvin through study of their writings.

252 MODERN RELIGIOUS THINKERS 2. The contributions of Kierkegaard, Buber, Marcel, Berdyaev, and Tillich through study of their writings.

320 THE PROPHETS AND THEIR TIMES 3. The Hebrew prophets Isaiah, Jeremiah, Ezekiel, and twelve others from the biblical writer's point of view and related to today.

330 PRINCIPLES OF RELIGIOUS EDUCATION 2. The objectives and curricula of the religious education of a person in relationship to home, school, university, and place of worship, according to his particular religious culture.

350 ARCHAEOLOGY AND THE BIBLE 3. The Dead Sea Scrolls of 1947, 1959 (Bar-Kochba Letters), and 1964-65 (Masada Scrolls), the Negev Explorations, Bet Shearim necrology, and others.

FOR UNDERGRADUATES AND GRADUATES

304 COMPARATIVE WORLD RELIGIONS 5. Seven to eight living religions of the world, their historical sequence and philosophical and theological affirmations.

RESERVE OFFICERS TRAINING CORPS

The ROTC program is conducted by career Army and Air Force personnel. Both departments offer a two-year or a four-year program. The satisfactory completion of either



AIR FORCE ROTC

program and being awarded a degree from the University results in a Reserve Commission in the Army or Air Force. Pursuance of either program is on an elective basis. Students interested in careers in the Air Force or Army should consult the Professor of Aerospace Studies or the Professor of Military Science.

The Department of Aerospace Studies offers a two-year or four-year program leading to a Reserve Commission in the U. S. Air Force. These programs are designed to provide education that will develop skills and attitudes vital to the career professional Air Force officer. Their purpose is to qualify for commissions those college men who desire to serve in the United States Air Force. The commission is tendered upon satisfactory completion of either program and being awarded a degree from the University.

The four-year program requires completion of aerospace studies, during four years of attendance at the University. Also a four-week Training Unit is required upon completion of the junior or third year of AFROTC. The two-year program encompasses Aerospace Studies during the junior and senior or last two years at the University. In addition a six-week Field Training Course is required during the summer immediately prior to enrollment in the two-year program. Completion of the appropriate summer training is a prerequisite for receiving a Reserve Commission in the United States Air Force. A monthly retainer fee (currently \$50) is paid to cadets formally enrolled in Aerospace Studies 300 and 400 series. A number of Financial Assistance Grants are available at colleges and universities within the United States for students enrolled in the four-year program. Further information may be obtained from the Professor of Aerospace Studies.

FOUR-YEAR PROGRAM

BASIC COURSE: GENERAL MILITARY EDUCATION PROGRAM

The academic requirements of the basic courses autumn and spring quarters of the freshman year and winter quarter of the sophomore year will be met through enrollment in any group requirement with the exceptions of Art, Drama, Music or Religion courses.

101-102-103 WORLD MILITARY SYSTEMS 2. The U.S. Department of Defense and the doctrine, mission and functions of the U.S. Air Force. Nature and principles of war; factors of national power; organization of the Department of Defense. Background and organization of the U.S. Air Force; strategic offensive and defensive forces. One hour classroom and one hour Corps Training each week.

201-202-203 WORLD MILITARY SYSTEMS 2. Department of Defense general purpose forces. Employment of the U.S. Air Force in coordination with forces of the U.S. Army and Navy. Tactical Air forces and operations; special warfare and counterinsurgency; Aerospace support forces. Collective security organizations. Trends and implications of world military power; the search for peace. One hour classroom and one hour Corps Training each week.

ADVANCED COURSE: PROFESSIONAL OFFICER COURSE

In the four year program, completion of the Basic Course is a prerequisite for admission into the advanced course. In addition the cadet must enlist in the Air Force Reserve (this enlistment may be canceled if student withdraws from the University or for other specific reasons), pass a physical examination and the Air Force Officer Qualifying Test.

301-302-303 GROWTH AND DEVELOPMENT OF AEROSPACE POWER 3. (301) The development of airpower from the beginnings of manned flight to 1961. (302) Aerospace Power today, the future of manned aircraft, and history of astronautics and space operations. (303) Vehicle systems and operations. The future of astronautics and space operations. Attention is devoted to developing the communicative skills needed by officers. Corps training includes experience as junior officers in the Cadet Corps.

304 SUMMER TRAINING UNIT No Credit. Four weeks at an Air Force Base after completion of Aerospace studies 301-302-303. Organization and functions of an Air Force Base, air crew and aircraft indoctrination, officer orientation, military fundamentals, physical training and individual weapons.

401-402-403 THE PROFESSIONAL OFFICER 3. (401) Foundations and responsibilities of the military profession and the military justice system. Practical work as Cadet officers in staff and command positions, with primary responsibility for the preparation and conduct of cadet Corps training program. Three class hours and one hour of Corps Training per week. (402) Leadership and management in the Air Force emphasizing theories of leadership, human relations and principles and functions of management. Three class hours and one hour Corps Training per week. (403) Leadership and management in the Air Force emphasizing communicative skills, problem solving and preparation for active duty with the United States Air Force. Practical work as Cadet officers in staff and command positions, with primary responsibility for the preparation and

conduct of cadet Corps Training program. Three classroom hours and one hour of Corps Training per week. Flight Training is offered to qualified students concurrent with 401-402-403. Successful completion leads to FAA Private Pilots License and entry into the U.S. Air Force Pilot Training program.

TWO YEAR PROGRAM

The two year program requires attendance at one summer training session and the two years of the advanced Course, AFROTC. Admission into the Advanced Course under this program does not require the two basic years of AFROTC as a prerequisite. In lieu of that, a six week summer training session at an Air Force Base is required during the summer immediately prior to entering the Advanced Course. Following that initial summer training period, the Advanced Course is identical to the four year program except field training between Junior and Senior year is not required. Students interested in acquiring a commission in the United States Air Force Reserve through the two year program should consult the Professor of Aerospace Studies not later than fall quarter of their sophomore year.

250 FIELD TRAINING COURSE No Credit. Prerequisite for entry into Advanced Course. Six weeks at an Air Force Base. Stressing drill, military fundamentals, physical training and Air Force orientation.

301-302-303 GROWTH AND DEVELOPMENT OF AEROSPACE POWER 3. (Same as for the four year program.)

401-402-403 THE PROFESSIONAL OFFICER 3. (Same as for the four year program.)

MILITARY SCIENCE

The Department of Military Science offers a two and a four year program leading to a commission in the United States Army Reserve. The commission is tendered upon satisfactory completion of either program and university requirements for a baccalaureate degree.

The four year program requires completion of Military Science courses during four years of attendance at the University. In addition, a six-week summer camp is required upon completion of the third year of ROTC. The two year program is a competitive program and encompasses the on-campus portion of the last two years of the four year program, and the six-week summer camp upon completion of the junior year of ROTC. However, as a prerequisite to beginning this course, the student must attend a six-week summer camp following the sophomore year. A monthly retainer (currently \$50) is paid to cadets enrolled in Military Science 300 and 400 series. An option flight training program for qualified cadets is offered during the last year of ROTC training. A limited number of scholarships are available for students enrolled in the four year program. Further information may be obtained from the Professor of Military Science.

FOUR YEAR PROGRAM

BASIC COURSE: GENERAL MILITARY EDUCATION

101-102-103 INTRODUCTION TO THE ARMY 2. (101) An introduction to the organization of the Army and an evaluation of Military Weapons Systems. Leadership, drill and command, basic and progressive training in leadership through practical exercise in drill, ceremonies and military customs and courtesies. (102) National Security and the United States Army with emphasis on the Army's role as part of the National Defense Team. Continuation of leadership, drill, and command. (103) Continuation of National Security and the United States Army. Introduction to Military First Aid. Continuation of leadership, drill and command.

201-202-203 ADVANCED INDIVIDUAL TECHNIQUES 2 prereq 101-102-103. (201) A survey of American Military History from the origins of the American Army to the present with emphasis on the factors which lead to organizational, tactical, logistical, operational, strategic and social patterns found in our present-day Army. Leadership, drill and command with emphasis on the duties and responsibilities of the junior leaders. (202) Topographical recording techniques with emphasis on the use of military maps. Continuation of leadership, drill and command. (203) Principles of tactics and operations of the U. S. Army with emphasis on small unit activities. Continuation of leadership, drill and command.

ADVANCED COURSE: OFFICER TRAINING

In the four year program, completion of the Basic Course is a prerequisite for admission to the Advanced Course. An applicant must pass a physical examination and the mental screening test prescribed by Department of the Army. Further, he must be recommended by both the President of the University and the Professor of Military Science. In addition, the student is required to enlist in the U. S. Army Reserve. This enlistment may be canceled if the student withdraws from the University or for other specific reasons.

301-302-303 PRINCIPLES AND TECHNIQUES OF THE MILITARY LEADER 3. (301) Principles and techniques of the military leader with emphasis on problems of leadership and military teaching methods. Leadership, drill and command to include practical work in instructing and directing military drill of individuals and small units. (302) Army Communications Systems and its application in small unit operations. Continuation of leadership, drill and command. (303) Principles and techniques of tactical operations with emphasis on small unit operations. Continuation of leadership, drill and command.

304 SUMMER CAMP. No credit. Six weeks at an Army Training Center taken after completion of 303. Practical military training and tactical exercises with emphasis on the development of discipline and leadership. Student is reimbursed to and from camp for travel performed at a rate of 6¢ per mile, and receives pay of \$227.80.

401-402-403 MILITARY MANAGEMENT 3 prereq 301-302-303. (401) Military administration and logistics with emphasis on duties and functions of staff officers. Leadership, drill and command with practical application and exercises designed to develop the junior officer. (402) Military Tactical Operations and introduction to Military Law. Continuation of leadership, drill and command. (403) A survey of the United States in World Affairs. Continuation of leadership, drill and command.

404 FLIGHT TRAINING. No credit. This elective is offered to selected qualified students concurrent with 401, 402, and 403. Successful completion of course leads to FAA private license and assignment to Army Aviation duty upon graduation.

TWO-YEAR PROGRAM

The two year program requires attendance at two summer camps and the two years of the Army ROTC Advanced Course. Admission into the Advanced Course under this program does not require the two years of Basic ROTC as a prerequisite. In lieu of that, it is required that a student complete a six-week summer camp at a U. S. Army training facility during the summer immediately prior to entering the Advanced Course. Following this initial summer camp, the Advanced Course is identical to the four year program. Students interested in acquiring a commission in the U. S. Army through the two year program should consult the Professor of Military Science no later than winter quarter of their sophomore year.

250 SUMMER CAMP No credit. Prerequisite for entry into Advanced Course. Six weeks at a U. S. Army facility. Training consists of leadership and military fundamentals, physical training, and U. S. Army orientation. Student is paid at the monthly rate of \$90 during the camp period.

301-302-303 PRINCIPLES AND TECHNIQUES OF THE MILITARY LEADER 3. (Same as for the four year program.)

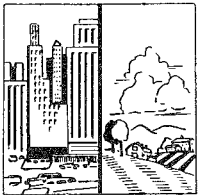
304 SUMMER CAMP. (Same as for the four year program.)

401-402-403 MILITARY MANAGEMENT 3. (Same as for the four year program.)

404 FLIGHT TRAINING.: (Same as for the four year program.)

SOCIAL WELFARE

explores the ways in which social problems affect people; the agencies which help people deal with these problems; and the methods used in such endeavor. Social Welfare courses involve case records and some field work or observation in addition to regular class work. Broad studies in other social sciences are required.



Those seriously considering a career in the field should plan on the two years of graduate professional training for which the course is preparatory. Social workers are employed in such positions as case-workers, group workers, supervisors and administrators in public and private social agencies, courts, hospitals, mental-health clinics and youth serving organizations.

The undergraduate major in social welfare is available for those wishing a practical orientation toward social problems. Both theory and practice are emphasized to achieve the effectiveness needed on the job. Those wishing to enter graduate schools of social work will find the program designed for this purpose as well as for effective citizen participation. Courses are selected from the several social sciences to serve as a foundation for a limited number of courses which present social welfare content and method. Group methods are freely used.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. In addition to the general requirements for graduation listed earlier in the catalog, 40 credits in departmental courses are required for the Bachelor of Arts degree with a major in social welfare. The following courses must be taken: SW 181, 371, 372, 375, and at least eight credits in SW 483, Social Work Laboratory. In addition, Soc. 101, 201, 205, and 314 must be taken.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

181 THE FIELD OF SOCIAL WELFARE 5. Social welfare functions. Development of modern social welfare and the distinctive features of the profession.

200 INTRODUCTION TO SOCIAL WORK PRACTICE 4 prereq 181. Social work as a professional practice concerned with helping individuals, groups, and communities; its goals, guiding philosophy,

and basic assumptions. A review of the four major processes in social work practice: casework, group work, community organization, and social work administration.

FOR UNDERGRADUATES AND GRADUATES

371 (201) GROUP METHODS 4 prereq 200. Purposes, principles and methods of group functioning. The role of the group worker and the group member. The problem of leadership in the group, the agency and the community.

372 (482) COMMUNITY RELATIONS 4, Su 3 a/y prereq 200. The place of the professional person in community life, his responsibilities as a citizen, his philosophy and ethics, especially as they relate to the community, his contributions to community welfare and his concern for human needs and problems.

373 CASEWORK PROCESS 4 prereq 200. The purpose, philosophy, and method of social casework. Its practice as one of the major social work processes. Directed toward developing an understanding of the client, establishing and using the professional relationship, and basic interviewing and recording methods.

374 THE ADMINISTRATIVE PROCESS IN SOCIAL WORK PRACTICE 4 prereq 200. Responsibilities of staff, executive, and board in defining and carrying out agency or department purpose and function. The roles of the administrator, supervisor, and worker in the administrative process in relation to the social, cultural, psychological, and political forces operating in social welfare administration. The relation of administration to policy making, community planning, and social action. Personnel methods and standards.

375 (488) THE HISTORY OF SOCIAL WELFARE 5 a/y prereq 181. The growth and development of social services in the United States with special attention given to policy questions: poverty, handicaps, sickness, emotional disorders, family breakdown, delinquency and crime, mental illness, wars, civil rights, and community development.

471-472-473 SOCIAL WORK PRACTICE IN SPECIAL SETTINGS V R-10 prereq 181 and 10 credits in social welfare. Topic varies. The practice of social work in a specialized setting such as child welfare, corrections, family welfare services, working with people with particular handicaps, and school social work, including, in each case, examination of requisite specialized skills and knowledge, value systems, and principles of interprofessional collaboration.

483 SOCIAL WORK LABORATORY V 2-4 R-12 prereq 181. A program of self-help project experiences in dealing with community needs and resources. Theoretical analysis of experienced situations. Learning by means of the laboratory method.

485 ADVANCED PROBLEMS V 1-2 R-6 prereq c/i.

486 COMMUNITY DEVELOPMENT 3 a/y prereq 181. Community and area self help as procedures in achieving a vital balance between community needs and services. Effective use of community resources.

487 INTERNATIONAL SOCIAL WORK 4 a/y prereq 181. Voluntary and public programs serving people in distressed and underdeveloped areas of the world.

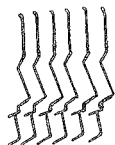
489 SEMINAR V R-9 a/y prereq 15 credits in social welfare.

499 FIELD WORK PRACTICUM V R-12 prereq 15 credits in sociology and social welfare and consent of department chairman. Field work or internship, under supervision, in public and private agencies and institutions.



SOCIOLOGY

is a social science concerned with relationships which link man with his institutions and his society. Sociology is also a profession which offers various services to business, governmental, and other agencies seeking help in developing desired relationships among their members. The degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy are offered in sociology.



SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. In addition to the general requirements for graduation listed earlier in the catalog, 50 credits in sociology courses are required for the Bachelor of Arts degree. A foreign language is required. (See foreign language requirement in the general section of the catalog.) The 50 credits in sociology must include the following courses: Soc 101, 201, 205, 310, 314, 401 and 402. In addition, the following courses in anthropology must be taken: Anth 153 and 372. Students must take Math 001 or be exempt through examination.

the general section of the catalog.) The 50 credits in sociology must include the following courses: Soc 101, 201, 205, 310, 314, 401 and 402. In addition, the following courses in anthropology must be taken: Anth 153 and 372. Students must take Math 001 or be exempt through examination.

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

- 101 **INTRODUCTORY SOCIOLOGY 5.** A general study of interhuman relations.
- 102 **SOCIAL PROBLEMS 5** prereq 101. A general study of social and personal disorganization.
- 200 **AMERICAN SOCIETY 5** prereq 101. Structure and function of contemporary American society.
- 201 (303) **SOCIAL SCIENCE METHODS 3** prereq 10 credits in social sciences. The methodology, techniques and instruments of measurement used in the social sciences.
- 204 **COURTSHIP AND MARRIAGE 2.** A general consideration of factors in courtship and marriage.
- 205 **ELEMENTARY SOCIAL STATISTICS 5** prereq Math 001 or exemption by examination. Simple statistics and graphic techniques commonly used in the social sciences.
- 207 **INTRODUCTION TO SOCIAL CHANGE 5** prereq 101. Analysis of creation and development of social organizations and relationships.
- 208 (301) **INDIVIDUAL AND SOCIETY 5** prereq 101. Human development through interaction of social structure, heredity, and culture.
- 390-391-392 **PRO-SEMINAR V R-9.**

FOR UNDERGRADUATES AND GRADUATES

- 302 **SOCIAL STRATIFICATION 3 a/y** prereq 101. The class system in contemporary society in terms of social class theory, class behavior, and current research in social stratification in American society.
- 304 **POPULATION 4** prereq 101 A quantitative and qualitative analysis of world population; vital statistics and population change; migration and immigration.
- 305 (402) **THE FAMILY 5** prereq 101. Comparative, historical and analytical study of the family.
- 306 **CRIMINOLOGY 5** prereq 101 or 102. The causes, prevention, detection, and correction of crimes.
- 307 **SOCIALIZATION 3** prereq 208. Processes and products of social learning.
- 308 **RACE AND ETHNIC RELATIONS 3 a/y** prereq 101 and Anth 154. Racial and ethnic differentiation and its social consequences. (Credit not given for both Soc 308 and Anth 308.)
- 309 **INTRODUCTION TO COMPLEX ORGANIZATIONS 4** prereq 101 or Psych 110. Bureaucracies and bureaucratization in modern society.
- 310 **DEVELOPMENT OF SOCIAL THOUGHT 4** prereq 101. Social thought from earliest times to the establishment of sociology.
- 311 (S W 381) **JUVENILE DELINQUENCY 3.** Nature and extent of the problem. The role of courts, social agencies, and schools in its prevention and treatment.
- 312 (206) **URBAN SOCIOLOGY 4 a/y** prereq 101. The rise and development of cities; social organization of the city; problems of urban communities.
- 313 **RURAL SOCIOLOGY 4 Su 3 a/y** prereq 101. Organization and social relationships of rural life; the rural community, problems of rural life. Special emphasis on Montana and the Northwest.
- 314 **FIELD OBSERVATION 3** prereq 101 and 201 or 205. Interviewing procedures and social science research; guided experiences in interviewing related to actual research programs.
- 261, 362, 363 (see Health and Physical Education).
- 371 **CULTURE AND PERSONALITY** (See Anthropology)

400 **PROBLEMS IN SOCIAL ORGANIZATION V R-15** prereq 12 credits in sociology. Topics of current interest in sociology.

401 **FOUNDATIONS OF MODERN SOCIOLOGY 4** prereq 101. Selected sociological problems arising from the theories of Durkheim, Weber, and contemporary writers.

402 **INSTITUTIONAL DYNAMICS 3** prereq 207. Interrelationships of institutions in process of change.

403 **ADVANCED PROBLEMS V 1-2 R-6** prereq c/i.

404 (202) **COLLECTIVE BEHAVIOR 3 a/y** prereq 208. Theories relating to mass behavior. The characteristics of such social aggregates as crowds, mobs, and social movements.

405 **SOCIOLOGY OF WORK 5** prereq 101. Structure and function of occupations and professions. Problems of organization and relationships of work groups.

407-408-409 **SEMINAR V 2-5 R-10** prereq 10 credits in sociology. Enter any quarter.

410 **PENOLOGY 3 a/y** prereq 306. Theory and practice of penal methods in correctional institutions. Probation and parole.

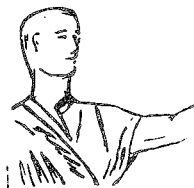
499 **FIELD WORK PRACTICUM** (See Social Welfare)

FOR GRADUATES

- 501 **GRADUATE RESEARCH V R-10.**
- 502 **ADVANCED METHODS 5** prereq 201 or =. Required of all graduate students in sociology.
- 503 **ADVANCED SOCIOLOGICAL STATISTICS 5** prereq Math 125 or Soc 205. Sampling; measures of association and significance; statistical methods in the design of experiments; sociometrics.
- 504 **SOCIAL CHANGE V 2-5** prereq 101 and 10 upper division credits in sociology. Processes and consequences of social change in urban industrial society.
- 506 (411) **ADVANCED GENERAL SOCIOLOGY 4** prereq 101, 10 upper division credits in sociology. Review and analysis of major sociological theory and research.
- 507-508-509 **SEMINAR V R-15.**
- 587-588-589 **SEMINAR IN URBAN STUDIES 3.** Selected topics in urban affairs. (Also listed as Pol. Sci. 587-588-589.)
- 599 **FIELD WORK PRACTICUM V R-12** prereq 15 credits in sociology and consent of department chairman. Supervised internship.
- 607-608-609 **SEMINAR V R-15.**
- 699 **THESIS OR DISSERTATION V R-9** for M.A.; R-15 for Ph.D.

SPEECH-COMMUNICATION

represents a discipline directly concerned with the nature and practice of communication. Study in the field is directed toward achieving a deeper understanding of the way in which people communicate with one another, and the personal, social and cultural factors that influence the process.



Three related programs of study are offered cooperatively by the Department of Speech Communication and the Department of Speech Pathology and Audiology. The student may select the particular program or combination of programs which is most relevant to his educational interests and professional goals.

The program in Foundations of Communication treats theoretical conceptions of the communicative process and their basic determinants. Research methods and procedures are emphasized. The program in Systems of Communication provides opportunity for study with emphasis on socially significant communication systems. Study and practice in Rhetoric, Public Address, Debate and Discussion exemplify the work offered in this area. The program in Disorders of Communication emphasizes the causes and remedial procedures relating particularly to disorders of speech, hearing, and language. Academic study is supplemented by extensive practicum experience in the Speech and Hearing Clinic. A more detailed description of each program, including vocational and professional opportunities will be found under each program heading below.

The Bachelor of Arts in Speech-Communication with an emphasis in either Speech Communication or Speech Path-

ology and Audiology, the Master of Arts with a major in Speech Communication or in Speech Pathology and Audiology, and the Master of Speech Pathology and Audiology degrees are offered (See Graduate School).

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREES. In addition to the general requirements for graduation listed earlier in the catalog, the student must complete a minimum of 45 credits and not more than 70 credits in Speech-Communication. All students majoring in the Speech-Communication program are required to complete a core curriculum as follows: Speech-Communication 111, 232, 233, 234, and 353; Psychology 110; Sociology 101; Sociology 205 or Psychology 220; Anthropology 152; and Philosophy 100. The foreign language requirement listed earlier in the catalog must be satisfied. Additional requirements for the special programs in Speech-Communication are listed in the following sections.

FOUNDATIONS OF COMMUNICATION

This program is directed to the study of signs, symbols, and signals as they function in a context of human interaction. Theory and data derived from a wide variety of scientific fields are integrated to form the basis of study in human communication. Students interested in communication theory and language development are required to supplement the core curriculum with the following program: Speech-Communication 110, 330, 9 credits from the Foundations curriculum, and 15 credits in courses approved by the department chairmen.

This program is designed to contribute to the student's general education and to prepare him for graduate study in the field of communication theory and research. The undergraduate program is not intended to prepare a student for employment in the communication field. Appropriate graduate study qualifies the student for employment in education, business, industrial and governmental teaching, research, and other professional programs.

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

119 **PHONETICS 2.** Transcription (International Phonetic Alphabet) and standards of pronunciation and dialect.

232-233-234 **INTRODUCTION TO COMMUNICATION 5** (4-2)-232-233, (5-0)-234. Major concepts and principles, focusing on the physiological, psychological, sociological, and cultural determinants of the production and reception of signs in human communication. (232 Phonology: the production of language. (233) Audiology: the reception and perception of language and other acoustic stimuli. (234) Process: the nature and use of signs and symbols in the total process of communication, with particular reference to meaning.

301 **HISTORICAL DEVELOPMENT OF THE FIELD OF COMMUNICATION 3.** The major lines of influence leading to present theories, concepts and methods in the field of oral communication.

351 **DEVELOPMENTAL SEMIOLOGY 3** prereq 234 and Psych 230. Characteristics and determinants of the sign process associated with the main stages in human development through the life span.

353 **GENERAL SEMANTICS 3.** The influence of language and language habits on perception, evaluation and decision; particular attention to the concepts of structure and meaning.

FOR UNDERGRADUATES AND GRADUATES

451 **PSYCHOLINGUISTICS 3** a/y prereq 234 and Gen 360. Recent theories and evidence concerned with the empirical analysis of linguistic behavior.

471 **COMPARATIVE SEMIOLOGY 3** a/y prereq Zool 111-112-113. The sign process based on evidence and observation at selected levels of the phyletic scale.

490 **PROBLEMS V R-6** prereq 25 credits in Speech-Communication and c/i

497 **INTRODUCTION TO GRADUATE AND PROFESSIONAL PROGRAMS 2** prereq 15 credits of junior and senior level Speech-Communication or c/i. The basic approaches to graduate and professional activities.

FOR GRADUATES

511 **THEORIES OF COMMUNICATION 3** prereq c/i. A critical evaluation of recent behavioral theories and research data in the field of communication; emphasis is placed on the role of theory in the study of speech communication.

513 **PSYCHOACOUSTICS 3** a/y prereq c/i. A critical evaluation of current research relating to the basic physical variables of speech and hearing and to the processes of speech analysis and synthesis.

515 **SEMINAR: LABORATORY AND CLINICAL INSTRUMENTATION 3** prereq c/i.

519 **SEMINAR: FOUNDATIONS OF MEASUREMENT 3** prereq Psych 220 or Soc 205 or =.

521 **THEORIES OF INFORMATION 3** a/y prereq c/i. Current theory and research dealing with the process by which information is transmitted. Examination of source, message, channel and receiver variables.

541 **PERSUASION 3** prereq c/i. An examination of theories and research concerned with the processes by which behavioral and attitudinal change are produced primarily by communication.

597. **RESEARCH METHODS AND MATERIALS 5** prereq Soc 205 or Psych 220 or =. Principles and techniques of quantification and design in communication research. Practice in the techniques of professional writing.

599 **TOPICAL SEMINAR V R-9** prereq c/i.

600 **RESEARCH V R-10** prereq c/i.

699 **THESIS V R-12.**

SYSTEMS OF COMMUNICATION

(Speech Communication)

Few processes are more fundamental to an understanding of the dynamic patterns of human existence and social organizations than the systems by which men communicate. Students who are interested primarily in systems of communication as critical factors in human relationships are required to supplement the core curriculum with the following courses: Speech-Communication 112, 314, 330, 355, 444, 445 or 446; and 11 approved electives in Speech-Communication. Students planning to teach in a speech program at the high school level are referred to the requirements listed under Education.

Study in this area provides an historical background, together with a knowledge of rhetorical and communication principles and practical experience which contributes to competence in professional speech and teaching in secondary schools, preparation for professional study at the graduate level, and for employment in business and industry in communication-oriented occupations. An emphasis in Systems of Communication at the graduate level leads to a Master of Arts degree with specializations in speech education, public address and rhetoric, or interpersonal and organizational communication.

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

110 **INTRODUCTION TO SYSTEMS OF COMMUNICATION 3.** Theory and evidence relevant to interpersonal and intrapersonal systems of communication. The role of language in human interaction.

111 **INTRODUCTION TO PUBLIC SPEAKING 3.** The theories and principles of public speaking. Practice speech composition, delivery and criticism.

112 **ARGUMENTATION 5.** The principles by which belief and conduct are influenced through appeals to logical reasoning. Evidence, analysis, logic, fallacies, refutation, rebuttal and their application to current economic, social and political problems.

115 **PERSUASIVE COMMUNICATION 4.** Principles and practice of attitude and behavior modification primarily by oral communication.

118 **PRACTICUM IN ORAL EXPRESSION 3** (2-3). Principles of vocal expression, articulation and diction, with practical application through recording and evaluation.



82—SPEECH COMMUNICATION

223 (123) PUBLIC SPEAKING PRACTICUM 2 (0-4) prereq 111. Practice in speech composition, delivery and criticism beyond that introduced in Speech-Communication 111.

265 FORENSICS 1 R-6. Preparation of debates, orations, extemporaneous and impromptu speeches, and other types of public address.

313 (113) PARLIAMENTARY PROCEDURES 2. Theory and practice relating to the rules of parliamentary procedures.

314 (214) DISCUSSION AND SMALL GROUPS 3. Study and practice in the processes involved in informal small-group interaction. Includes theory and evidence related to concepts of leadership, communication patterns, group cohesion and social pressure.

316 COMMUNICATION IN ORGANIZATIONS 4. Emphasis on intra-organizational problems. Consideration of theory and research on questions of informational and directive communication as related to such factors as channels, structures, status, involvement, morale, etc.

355 SPEECH COMPOSITION 3 prereq 111. Factors related to materials, organization and support in the development of the speech.

356 SPEECH CRITICISM 2 prereq 355. The bases upon which the various forms of public speaking are evaluated.

361 (261) PERFORMANCE OF LITERATURE 3 (2-3) prereq 118. The analysis and oral presentation of literature.

371 SOCIODRAMA 3. Principles and practice of role-playing as a technique of communication; the development of the spontaneous-creative and the extemporaneous types of sociodrama.

FOR UNDERGRADUATES AND GRADUATES

422 (421) TEACHING SPEECH IN THE SECONDARY SCHOOL 3 prereq 15 credits in Speech-Communication. Planning the speech curriculum and its relationship to other school subjects; instructional materials and methods of teaching speech.

430 BUSINESS AND PROFESSIONAL INTERVIEWING 3. Theory and practice of communication behavior in dyadic situations as confronted in business, education, and professions. Experience in informational, employment, and decision-making interviews.

443 (343) ADVANCED PUBLIC SPEAKING 3 prereq 111 and 355 or c/i. Principles and practice in public speaking beyond that considered at the beginning levels; emphasis on informative and persuasive speaking.

444 (344) HISTORY OF RHETORICAL THEORY 3 prereq 15 credits in Speech-Communication. Rhetorical theory from Corax to the present.

445 HISTORY OF AMERICAN PUBLIC ADDRESS 3 prereq 356 or c/i. Biographies and critical analyses of speeches of historically prominent American speakers and issues with which they were identified.

446 HISTORY OF BRITISH AND EUROPEAN PUBLIC ADDRESS 3 prereq 356 or c/i. Biographies and critical analysis of speeches of historically prominent British and European speakers and the issues with which they were identified.

462 DIRECTING THE FORENSIC PROGRAM 3. Philosophy, organization, and administration of competitive speech activities. Prereq Speech 422 or c/i.

469 (369) THE INTERPRETIVE ARTS 3 prereq 361 or c/i. The theories and relationships of the interpretative arts.

490 PROBLEMS V R-6 prereq c/i.

FOR GRADUATES

512 SEMINAR: ORGANIZATIONAL COMMUNICATION 3 a/y prereq 316 or c/i.

514 SEMINAR: SMALL GROUP COMMUNICATION 3 a/y prereq 314 or c/i.

545 SEMINAR: SPEECH CRITICISM 3 a/y prereq 356 or c/i.

551 CONTEMPORARY PUBLIC ADDRESS 3 a/y prereq 444 or 445 or c/i.

553 SEMINAR: HISTORY OF RHETORIC AND PUBLIC ADDRESS 3 a/y prereq 444 or 445 or c/i.

571 SEMINAR: SOCIODRAMA 3 a/y prereq 371.

599 TOPICAL SEMINAR V R-9 prereq c/i.

600 RESEARCH V R-10 prereq c/i.

699 THESIS V R-12.

DISORDERS OF COMMUNICATION

(Speech Pathology and Audiology)

Individuals with speech and hearing disorders constitute our largest group of exceptional persons. Students interested in these problems, their causes and remedial procedures should supplement the core curriculum with the following courses: Speech-Communication 110, 119, 335, 336, 338, 340, 341, 342, 351 and 471; Psychology 230 and 420; and Zoology 202.

Although students take the Bachelor of Arts degree in Speech-Communication, with an emphasis in Disorders of Communication, this is a pre-professional degree and is not intended to prepare a student for employment in the field of Speech Pathology and Audiology. With appropriate graduate preparation, the student can meet the requirements for the Master of Arts degree in Speech Pathology and Audiology and qualify for a Certificate of Clinical Competence which is issued by the American Speech and Hearing Association. Persons thus certified are employed in a variety of settings, such as: clinical service centers, hospitals, public schools, health departments, colleges and universities, industrial programs, research centers and private practice.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

330 INTRODUCTION TO SPEECH PATHOLOGY 3. For non-majors. A survey of speech and language problems commonly encountered in the classroom. (Non-majors may take for graduate credit.)

335 COMMUNICATION DISORDERS I 5 prereq 119, 232, 233, and 234. An introduction to communication disorders as an educational and clinical field. Theories, research and selected remedial procedures relating to disorders of articulation, voice and language reception.

336 COMMUNICATION DISORDERS II 5 prereq 335. Theories, research and selected remedial procedures relating to disorders of language production, rhythm and fluency.

337 COMMUNICATION DISORDERS III 3. Theories, research and selected remedial procedures relating to logical, semantic and process disorders.

338 (337) CLINICAL PROCEDURES FOR COMMUNICATION DISORDERS 3 prereq 336 or c/i. Principles and methods of habilitation and rehabilitation for children and adults with communication disorders.

341 (331) DIAGNOSIS AND APPRAISAL OF COMMUNICATION DISORDERS I 3 prereq or coreq 335. Clinical experiences with tools and techniques needed to assess and diagnose speech and hearing problems of the adult and child.

342 (332) DIAGNOSIS AND APPRAISAL OF COMMUNICATION DISORDERS II 2 prereq 341. Supervised clinical practice in the out-patient clinic.

380 (340) CLINICAL AUDIOLOGY 3 prereq 233. Fundamental principles related to the measurement of hearing. Psychosocial problems and clinical techniques employed with the acoustically handicapped.

FOR UNDERGRADUATES AND GRADUATES

423 (333) CLINICAL PRACTICUM 1-3 R-4 prereq 338 and 341. Thirty clock hours per credit of supervised clinical practice in the Speech and Hearing Clinic.

431 (531) STUTTERING 3 prereq 336. Stuttering as learned behavior; emphasis on prevention and habilitation.

432 (532) ORGANIC DISORDERS OF COMMUNICATION I 3 prereq 336 and 341. Theories, research and therapeutic procedures for problems of communication associated with anomalies in anatomical structure.

433 (533) ORGANIC DISORDERS OF COMMUNICATION II 3 prereq 336 and 341. Theories, research and therapeutic procedures for problems of communication associated with neurological disorders.

435 METHODS OF SPEECH AND HEARING THERAPY IN THE SCHOOL 2 prereq 338. Methods and policies related to establishing and conducting a speech and hearing program in a school system with emphasis at the elementary level.

441 DIAGNOSTIC AUDIOLOGY 3, prereq 380. Special audiometric procedures used in otological diagnosis, pediatric audiology, hearing conservation in schools, professional issues in audiology.

442 REHABILITATION OF THE HEARING HANDICAPPED 3 prereq 380. Speech reading, auditory training, hearing aid fitting and evaluation, speech habilitation and conservation in children and adults; relationships with education and vocational counselling.

490 PROBLEMS V R-6 prereq c/i.

FOR GRADUATES

523 (433) ADVANCED CLINICAL PRACTICUM IN COMMUNICATION DISORDERS V R-6 prereq 4 credits of 423.

536 (436) PRACTICUM IN SCHOOL SPEECH AND HEARING THERAPY V R-9 prereq 435.

537 SEMINAR: STUTTERING RESEARCH AND THEORIES 3 prereq c/i.

538 SEMINAR: ANATOMICAL DEFECTS OF SPEECH 3 prereq c/i.

539 SEMINAR: NEUROMUSCULAR DEFECTS OF SPEECH 3 prereq c/i.

547 SEMINAR: LANGUAGE DISORDERS 3 prereq c/i.

583 ADVANCED CLINICAL AUDIOLOGY 3 prereq 481. Noise measurement exposure and control; hearing conservation in industry architectural acoustics survey; experimental clinical procedures, administrative aspects of audiological services.

584 INSTRUMENTATION FOR AUDITORY REHABILITATION 3 prereq 482. Recent research relating to experimental uses of amplification. Theory and practice in the design, construction, and application of hearing aids, portable amplifiers, auditory training units, and institutional audiovisual instrumentation.

585 (540) SEMINAR: MEASUREMENT OF HEARING 3 prereq c/i.

586 (542) SEMINAR: REHABILITATION OF THE ACOUSTICALLY HANDICAPPED 3 prereq c/i.

587 (544) SEMINAR: HEARING CONSERVATION PROGRAMS 3 prereq c/i.

599 TOPICAL SEMINAR V R-9 prereq c/i.

600 RESEARCH V R-10 prereq c/i.

699 THESIS V R-12.

Terrestrial Option

Junior Year

Zoology 309, 308—Mammalogy, Ornithology	5		5
Zoology 340, 341—Mammalian Physiology	5	5	
Botany 366, Agrostology		5	
Forestry 360—General Range Management	4		
English 350—Advanced Composition			3
Botany 355—Plant Ecology			5
Group requirements and electives	3-4	6-8	3-5
	17-18	16-18	16-18

Senior Year

	A	W	S
	Cr.	Cr.	Cr.
Forestry 470, 471, 472—Advanced Wildlife Management, Big Game Management, Habitat Management	5	3	5
Forestry 460, 352—Range Techniques, Aerial Photogrammetry	4	3	
Zoology 410—Advanced Animal Ecology			5
Zoology 405—Animal Behavior		5	
Group requirements and electives	5-8	3-5	5-8
Group requirements and Zoology—Botany—Forestry 491, 492, 493—Senior Wildlife Seminar	1	1	1
	15-18	15-17	16-19

Suggested electives: Any courses in Aquatic Option not required in Terrestrial Option, any courses from list of appropriate additional courses shown below.

Aquatic Option

Junior Year

Zoology 310, 206—Ichthyology, Field Zoology	5		3
Zoology 340, 341—Mammalian Physiology	5	5	
Zoology 365—Entomology			5
Botany 355—Plant Ecology			5
English 350—Advanced Composition		3	
Group requirements and electives	5-8	7-9	3-6
	15-18	15-17	16-19

Senior Year

Zoology 307, 413, 428—Aquatic Biology, Fisheries Science, Invertebrate Ecology	5	3	5
Forestry 450—Hydrology		2	
Botany 441—Phycology	5		
Zoology 405—Animal Behavior		5	
Group requirements or electives	5-8	5-7	10-12
Zoology—Botany—Forestry 491, 492, 493—Senior Wildlife Seminar	1	1	1
	16-19	16-18	16-18

One summer at the University of Montana Biological Station (or other Biological Station) enrolled in Zoology 461, Limnology, and one of the following three courses: Zoology 366, Aquatic Insects, Zoology 433, Problems in Vertebrate Ecology, or Botany 368, Aquatic Flowering Plants. This summer could be taken either after the junior year or the senior year. Suggested electives: Any courses in Terrestrial Option not required in the Aquatic Option, any course from list of appropriate additional courses shown below:

Wildlife Science Option

Junior Year

	A	W	S
	Cr.	Cr.	Cr.
Zoology 485—Genetics	5		
English 350—Advanced Composition		3	
Foreign Language 101, 102, 103—French, German or Russian	5	5	5
Math 125, 151—Statistics, Analytical Geometry and Calculus		5	5
Advanced courses from selected list	4-5	7-8	7-8
	17-18	17-18	17-18

Senior Year

Foreign Language 211-212—French, German or Russian	4	4	
Advanced courses from selected list	10-12	10-14	14-15
Senior seminar	1	1	1
	15-17	15-17	15-16

An approved series of courses from either option to be worked out with adviser. Minimum courses for students interested in Aquatic Wildlife: Zoology 206, 307, 310, 413 and for the students interested in Terrestrial Wildlife: Zoology 308, 309, Forestry 470, 471, 472.

Appropriate additional courses for Wildlife students to select in any option aside from those shown above include: Chemistry 261, 262, Botany 333, 334, 335, 361, 370, 386, 465, Economics 201, 202, Forestry 311, 330, 361, 380, 385, 480, 481, 482, 484, Geography 370, Geology 110, 130, 200, 451, Microbiology 200, 302, Math 344, 345, Political Science 362, Speech 111, Zoology 303, 304, 404.

WILDLIFE BIOLOGY

is the study of wild vertebrate animals and their conservation. It is based on the natural sciences, with particular emphasis in the biological sciences. It constitutes a preparation for professional work in fish and game conservation.



Within the broad designation of Wildlife Biology, there are three optional curricula: Terrestrial Wildlife Biology, Aquatic Wildlife Biology, and Wildlife Science. As indicated below: each has the same schedule of courses for the first two years and a different curriculum for the last two years. Each leads to the Bachelor of Science in Wildlife Biology. Many graduates will continue their education through the Master's degree.

The Wildlife Science curriculum is designed particularly for students with strong academic records who intend ultimately to work toward a doctorate.

This university is particularly well suited for instruction in this area of learning because of the excellent opportunities for field instruction and research, and the presence of such facilities as the Biological Station, the Montana Forest and Conservation Experimental Station, and the Montana Cooperative Wildlife Research Unit.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University the student should elect four years of mathematics in high school.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN WILDLIFE BIOLOGY. In addition to the general requirements for graduation listed earlier in the catalog the student must complete the requirements as listed for one of the three options indicated below. Note that a study of foreign language is required only in the Wildlife Science option.

CURRICULA IN WILDLIFE BIOLOGY

Freshman Year

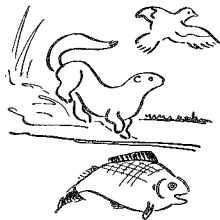
	A	W	S
	Cr.	Cr.	Cr.
Botany-Zoology 111—General Biology	5		
Botany 112, 113—General Botany		5	5
Chemistry 101, 102, 160—General, Survey, Organic or Chemistry 121, 122, 123—College Chemistry	4	4	5
English 150—Freshman Composition	5	5	5
Math 116, 117—College Algebra, Trigonometry	3		
Group Requirements	3-5	0-3	0-3
H&PE—Physical Education	1	1	1
	16-19	15-19	16-19

Sophomore Year

Zoology 112, 113—General Zoology		5	5
Botany 325, 265—Plant Physiology, Systematic Botany	5		4
Math 125—Statistics			5
English 250—Intermediate Composition		3	
Zoology 250—Principles of Animal Ecology	3		
Forestry 210—Elementary Soils	4		
Physics 111; 112 or 113—General Physics	5	0-5	0-5
Group requirements	0	3-8	0-5
H&PE—Physical Education	1	1	1
	18	17	15-20

ZOOLOGY

is the study of animals—how they are put together, how their bodies work, and how they adjust to their surroundings. It is a basic science for many professional fields such as medicine, pharmacy, wildlife, and physical education.



In addition to the Bachelor's degree, the Master of Arts (or Master of Science) and the Doctor of Philosophy degrees are offered.

Undergraduate courses involve much laboratory work as well as opportunities for field work. During the summer extensive field experience is available at the Biological Station maintained on Flathead Lake for qualified upperclass and graduate students.

Graduates become high school teachers or, after advanced studies, instructors in colleges and universities. Others enter state or federal government service in health and conservation agencies. Many, with further training, enter medicine or related fields. A few establish themselves as fish culturists, fur farmers, pest control experts, and so on.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN ZOOLOGY. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts degree with a major in Zoology: Zool 111, 112, 113, 429, and at least one course from each of the following 6 groups: (1) Morphology, 304, 305, 313, 404; (2) Invertebrate Zoology, 206, 321, 322, 323, 324, 364, 365, 366; (3) Vertebrate Zoology, 306, 308, 309, 310; (4) Physiology, 330, 340, 341; (5) Ecology, 250, 307, 410, 428, 461; (6) Genetics, 485.

Students may substitute Chem 261, 262 for either group 3 or 4. The following must also be completed: Botany 112, 113; Chemistry 121-122-123; Mathematics 116, 117, 118; Physics 111-112-113 or 121-122-123.

The foreign language requirement listed earlier in the catalog must be satisfied. Normally Zoology majors take 5 quarters of French, German or Russian. Other languages or combinations must be approved by the department.

The Pre-medical Sciences student may earn a degree in Zoology by completing requirements in that curriculum and presenting a total of 35 credits in Zoology or related fields as follows: Zool 111, 112, 113, 404, 485; any one course from Zool 206, 308, 309, 310, 321, 364, 365, 366, 428, 461; any one course from Microbiology or from Botany or one course from Zool 304, 305, 313, 322, 323, 324, 340, 341.

Senior examinations are given only to candidates for honors.

GRADUATE WORK. See Graduate School.



SUGGESTED CURRICULUM IN ZOOLOGY

Freshman Year

	A Cr.	W Cr.	S Cr.
English 150—Freshman Composition	3		
Math 116, 117, 118—College Algebra, Trig, and Introduction to Calculus	5	5	5
Zoology 111, 112, 113—Introduction to Biology, General Zoology	5	5	5
Group requirements	4	4-6	6
H&PE 100—Physical Education	1	1	1
	18	15-17	17

Sophomore Year

Chem 121-122-123—College Chemistry	5	5	5
English 250—Intermediate Composition		3	
Foreign Language 101-102-103—Elementary French, German, or Russian	5	5	5
Group requirements	5-7	2-4	5-7
H&PE 100 Physical Education	1	1	1
	16-18	16-18	16-18

Junior Year

English 350—Advanced Composition			3
Foreign Language 211-212—French, German, or Russian Readings	4	4	
Physics 111-112-113 or 221-222-223—General Physics	5	5	5
Zoology Advanced Courses	5	5	5
Group requirements	0-3	0-3	2-4
	14-17	14-17	15-17

Senior Year

Botany 112, 113—General Botany		5	5
Zoology 429—Biological Literature		1	
Zoology Advanced Courses or Chem 261, 262	5	5	5
Electives	9-10	5-6	7-8
	14-15	16-17	17-18

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

Courses also offered at Biological Station (*Courses only at Biological Station): 308, 309, *364, 365, *366, 431, 433, 434, 436, *461, *521, *551, *561, 600, 699.

111 INTRODUCTION TO BIOLOGY 5 (3-4). Introduction to the basic principles of biology, including aspects of cell structure and metabolism, genetics, origin of life, and mechanics of evolution and adaptation. (Credit not allowed for both Bot 111 and Zool 111.)

112-113 GENERAL ZOOLOGY 5 (3-4) prereq 111 or Bot 111 or =. A comparison of structure, function, and life histories of selected invertebrates and vertebrates. (Generally taken as a sequence including 111, 112-113.)

202 HUMAN PHYSIOLOGY 5 (3-4) prereq sophomore standing with at least one science course or two quarters of college zoology. The normal physiology of blood circulation, respiration, digestion, excretion, irritability, locomotion, coordination, and reproduction.

206 FIELD ZOOLOGY 3 (2-5) prereq 113. Collection, identification and preservation of animals. Field work.

250 (350) BASIC CONCEPTS OF ECOLOGY 3 (3-0) prereq one year of college biology. Introduction to ecological principles with emphasis on the ecosystem. (Credit not allowed for this course and Bot 250.)

251 ELEMENTARY ECOLOGY LABORATORY 2 (0-4) prereq or coreq 250. Population and community composition, distribution and interrelationships with environmental factors. Field work included. (Credit not allowed for this course and Bot 251.)

FOR UNDERGRADUATES AND GRADUATES

301 GENERAL COMPARATIVE EMBRYOLOGY 5 (3-4) a/y prereq 311-312. The early stages of development of the invertebrates and vertebrates, including meiosis, fertilization, cleavage, formation of the germ layers and early organogenesis.

304 COMPARATIVE VERTEBRATE ANATOMY 5 (3-4) prereq 113. The comparative morphology of the vertebrates.

305 ANIMAL MICROTÉCHNIQUE 5 (2-6) prereq 113. Preparation of smears and squashes, clearing and staining whole mounts, paraffin sectioning, frozen sections with clinical microtome and cryostat microtome, polyester embedding and histochemical methods. A brief introduction to tissue types will be given at the start of the course. May be taken concurrently with 313.

306 HERPETOLOGY 3 (2-2) o/y prereq 113. The taxonomy, distribution, and life histories of amphibians and reptiles.

307 AQUATIC BIOLOGY 5 (3-7) prereq 206 or 365 and Bot 265. The biota of fresh water with emphasis upon the flora and invertebrate fauna, with some consideration of their relationship to the food chains and habitats of aquatic vertebrates. Ecology, identification and taxonomic position of aquatic organisms below vertebrates.

308 ORNITHOLOGY 5 (3-6), Su 6 at Biological Station, prereq 113. The structure, classification and life histories of birds. Weekly field trips. Students are expected to provide themselves with binoculars.

309 MAMMALOLOGY 5 (3-4), Su 6 at Biological Station, prereq 113. The classification, identification and life histories of mammals. Saturday field trips.

310 ICHTHYOLOGY 5 (3-4) prereq 113. The systematics and distribution of the more important orders of fish, their collection and identification. Life histories and certain fundamentals of the physiology of fish are considered. Field trips.

313 (305) VERTEBRATE HISTOLOGY 5 (3-4) prereq 113. Basic animal cytology, tissue types and organology are studied. May be taken concurrently with 305.

321 PROTOZOOLOGY 5 (3-4) prereq 113. Taxonomy, structure, natural history, physiology, and ecology of protozoans.

322 LOWER METAZOANS 5 (3-4) prereq 113. Structural ecological and phylogenetic relationships among sponges, coelenterates, acelomates and nematodes.

323 MIDDLE METAZOANS 5 (3-4) prereq 113. Structural, ecological and phylogenetic relationships among the mollusks and annelids and certain smaller invertebrate phyla.

324 ARTHROPODS 5 (3-4) prereq 113. Structural, ecological and phylogenetic relationships among the arthropods exclusive of insects.

330 CELLULAR PHYSIOLOGY 5 (3-4) o/y prereq two courses in Physics, Chem 262 or 160, one course in Botany, Microbiology or Zoology. The life processes at the cellular level emphasizing the methods of the physical sciences. Jointly listed as Botany 330.

331 COMPARATIVE PHYSIOLOGY 5 (3-4) prereq 330. The physiology of the major animal phyla. Special attention is paid to those functions related to the environment.

340-341 MAMMALIAN PHYSIOLOGY 5 (3-4) prereq 113 and three quarters of college chemistry. (340) General physiological properties of protoplasm; blood, body fluids, and circulation; respiration and excretion. (341) Digestion, nutrition and intermediary metabolism; excitation, conduction, responses, senses; endocrines and reproduction.

364 INVERTEBRATES OF THE INTERMOUNTAIN REGION 3 (5-12) prereq 113. The ecology, taxonomy and distribution of the invertebrates of the Rocky Mountain area, exclusive of parasites and insects.

365 ENTOMOLOGY 5 (3-4) Su 6 at Biological Station, prereq 113. The structure, classification, life histories, distribution and ecology of insects.

366 AQUATIC INSECTS 3 (3-12) prereq 113. The insect fauna, both immature and adult, in aquatic habitats of Western Montana.

403 BIOLOGICAL ILLUSTRATIONS 2 (0-4) prereq 1 year of biology and c/i. Introduction to the basic principles and skills of producing illustrative materials relevant to the biological sciences. (\$25 special supplies fee. Credit not allowed for this course and Bot 403.)

404 (302) VERTEBRATE EMBRYOLOGY 5 (3-4) prereq 304. The early stages of development of the vertebrates including organogenesis, with emphasis on birds (chick) and mammals (pig).

405 ANIMAL BEHAVIOR 5 (3-4) prereq 25 credits in Zoology or c/i. Normal behavior of animals under natural conditions, description, adaptiveness, and evolution. Observation and recording of animal behavior.

410 (510) ADVANCED ANIMAL ECOLOGY 5 (2-8) prereq Math 125, and 4 courses in Zoology, including 250. The influence of physical and biotic factors on population structure, density, and productivity and on community organization. Theoretical as well as practical aspects are considered. Weekend field trips.

413 FISHERY SCIENCE 3 (3-6) prereq 307, 310. The problems involved in investigations on fisheries biology with an analysis of, and some actual field experience in, methods employed in attacking these problems. Field trips.

428 (328) INVERTEBRATE ECOLOGY 5 (2-8) e/y prereq 206, Bot 265 or —. Zool 307 or 311, 312 recommended. The relationships between animals and their environment with special emphasis on the invertebrates. Saturday field trips.

429 BIOLOGICAL LITERATURE 1 (2-0) prereq 20 credits in botany or zoology. Student reports of literature of the trend of investigation and experimentation in biological fields.

431 PROBLEMS IN VERTEBRATE MORPHOLOGY AND TAXONOMY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Primarily a problems type course involving semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

432 PROBLEMS IN VERTEBRATE PHYSIOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

433 PROBLEMS IN VERTEBRATE ECOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Primarily a problems type course, involving semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

434 PROBLEMS IN INVERTEBRATE MORPHOLOGY AND TAXONOMY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

435 PROBLEMS IN INVERTEBRATE PHYSIOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

436 PROBLEMS IN INVERTEBRATE ECOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

442 BIOLOGY OF FOREST INSECTS 3 (2-3) prereq 113, 365. Insect biology, ecology, physiology, and genetics as they relate to forest insects and forest insect problems; the ecological position of insects in the forest ecosystem; introduction to population dynamics. Jointly listed as Forestry 432.

443 FOREST INSECT ECOLOGY 3 (2-3) prereq 442 or For 432. Factors which regulate the distribution and abundance of insects; characteristics of outbreaks; the biometeorological and behavioral components of insect population changes; the rational basis of control. Jointly listed as Forestry 433.

450 MARINE INVERTEBRATES 3 (1-2) prereq 436, a problem in marine biology. The systematics and ecology of marine invertebrates with particular reference to habitat niche of the animals of the Pacific Coast. (A 3-day trip to coast of Oregon or Washington required.)

461 LIMNOLOGY 6 (5-25) prereq 113 and Chem 123. Ecology of lakes, streams and ponds, with emphasis on the physical, chemical and biotic factors which determine their biological productivity.

485 (385) GENETICS 5 (3-4) prereq 113 or Bot 225. The mechanism of heredity, involving consideration of Mendelian inheritance, linkage systems, chromosomal aberrations, extra-chromosomal inheritance, and their relationship to structure and function. Credit not given for both Zool 485 and Bot 485.

486 (386) EVOLUTION. (See Botany.)

490 SEMINAR IN BIOLOGY 1 (2-0). Special problems in Biology. Credit not allowed for this course and Bot 490.

491-492-493 SENIOR WILDLIFE SEMINAR 1 prereq senior standing in Wildlife Biology or Forestry. Reports and discussion by students, faculty, and guests speakers on current topics in Wildlife Biology. (Double-listed as Forestry 491-492-493.)

FOR GRADUATES

500 SEMINAR 1 prereq graduate standing in a biological science.

501 AREAS AND CONCEPTS OF ZOOLOGY 1 prereq graduate standing in Zoology or in Wildlife Biology. An orientation course for all new graduate students in zoology.

502 HISTORY AND DEVELOPMENT OF BIOLOGICAL CONCEPTS 3 (3-0) prereq graduate standing in a biological science. Credit not allowed for this course and Bot 502.

503 EXPERIMENTAL EMBRYOLOGY 5 (1-8) prereq Zool 404 and c/i. Basic concepts of embryology elucidated by means of experimentation of amphibian, chick, or other vertebrate embryos. Report preparation.

504 ADVANCED ANIMAL BEHAVIOR 5 (2-6) prereq 405 or c/i. The causation and function of normal behavior with emphasis on the experimental approach to the study of behavior. Ecological aspects of behavior.

505 ACAROLGY 5 (3-4) o/y prereq 324 or 365 or c/i. Comparative adaptive morphology, bionomics and current taxonomic concepts.

515 ZOOGEOGRAPHY 4 (3-1) prereq 2 courses in advanced vertebrate zoology. Past and present distribution of animals, with special emphasis on vertebrates. Influence of climate, place of origin, dispersal routes, and faunal composition. Geological and botanical evidences considered.

516 CONCEPTS AND PRINCIPLES OF SYSTEMATIC ZOOLOGY 3 (3-0) o/y prereq 25 hours in zoology including 250 and 485. Selected topics relating to evolution, speciation and the various philosophies influencing systematic zoology.

523 PHOTOBIOLOGY 4 (2-4) prereq 330. The interaction between non-ionizing radiation and biological systems including photosynthesis, vision, photoperiodism, bioluminescence; methods for studying effects of light on plants, animals and microorganisms. (Credit not allowed for this course and Bot 523.)

524 RADIOBIOLOGY 4 (2-4) prereq 330. The influence of ionizing radiation (x-rays, gamma rays, and accelerated particles) on biological systems and the use of radio-isotopes in biology. (Credit not allowed for this course and Bot 524.)

531 (402) COMPARATIVE PHYSIOLOGY-INVERTEBRATE 5 (3-4) prereq Physics 113 or 223, Chem 262 and one animal physiology course. Physiological process of the organ systems of the major invertebrate phyla in relation to environment.

532 (402) COMPARATIVE PHYSIOLOGY-VERTEBRATE 5 (3-4) prereq Physics 113 or 223, Chem 262 and one animal physiology course. Physiological processes of the organ systems of the five vertebrate classes in relation to environment.

533 (333) ENDOCRINOLOGY 5 (3-4) prereq Zool 113 and one animal physiology course. The physiology of the glands of internal secretion of the vertebrates with a survey of those of the invertebrates.

551 GENERAL ECOLOGY Su 5 (6-15) prereq Bachelor's degree; major preparation in Botany, Biology or Zoology. Community concepts including succession, stratification, periodicity and energy relationships; introduction to population problems.

561 LIMNOLOGICAL METHODS 3 (3-12) prereq 461, Chem 123. Practice in standard procedures employed. Field work.

600 ADVANCED ZOOLOGICAL PROBLEMS V 1-5. Students with sufficient preparation and ability pursue original investigations.

699 THESIS V R-15.

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