

**843. Traffic Engineering
Characteristics**

Winter. 3(3-0) 346, STT 421.

Safety analyses, flow and capacity characteristics, statistical properties of traffic, queuing characteristics at intersections, delay characteristics and analyses.

**844. Traffic Engineering Theory
and Control**

Spring. 3(3-0) 843.

Application of the theory of traffic flow to the design and control of traffic streams. Dispatching, scheduling and network analysis. Application to highways, airport operation and urban transportation modes.

846. Highway Planning

Fall. 3(3-0) 346 or approval of department.

Highway inventory, road use studies and programming, analysis of highway costs, economic considerations in location and design.

847. Geometric Design of Highways

Winter. 3(3-0) 346 or approval of department.

Design of streets and highways including intersections, parking facilities, capacity, channelization and roadway appurtenances.

848. Transportation Models

Spring. 3(3-0) 448.

Analysis of transportation modeling process, including error propagation and parameter sensitivity analysis. Comparative attributes of zonal size and model sequence decisions on the evaluation of system alternatives.

**880. Special Problems in Civil
Engineering**

Fall, Winter, Spring, Summer. Variable credit. Approval of department.

Research problems of limited scope not pertaining to thesis accomplished under 899 or 999.

899. Research

(EGR 899.) Fall, Winter, Spring, Summer. Variable credit. Approval of department.

904. Advanced Structural Theory II

Spring. 4(4-0) 804 or approval of department.

Energy (variational) approach to formulation and solution of problems in structural mechanics: stresses, displacements and stability of continuum and structural elements. Approximation methods including Rayleigh-Ritz and finite element.

**905. Advanced Theory and Design of
Reinforced Concrete II**

Spring. 3(3-0) 805.

Continuation of 805 with application of theory to analysis and design of tanks, rigid frames, and shells.

**906. Advanced Structural Steel
Design**

Spring. 3(3-0) 406.

Analysis and design of multiple-story building frames, continuous trusses and rigid-frame girder bridges in structural steel. Plastic design.

**908. Numerical Methods in Structural
Engineering**

Winter. 3(2-3) Approval of department.

Solution of mathematical equations by means of successive numerical approximations and the application of these numerical methods to structural problems.

909. Elastic Thin Shells

Spring. 4(4-0) 804 or MMM 815 or approval of department; MTH 421. Inter-departmental with the Metallurgy, Mechanics and Materials Science Department.

Elements of differential geometry, membrane theory of shells, Pucher's stress function, deformation and bending of shells of revolution and shallow shells.

912. Theory of Plates

Winter. 4(4-0) 804 or MMM 815 or approval of department; MTH 422. Inter-departmental with and administered by the Metallurgy, Mechanics and Materials Science Department.

Bending of thin elastic plates with various shapes and boundary conditions; application of energy principles and approximate methods of solution; thick plates; large deflection theory; sandwich plates.

915. Advanced Soil Mechanics II

Spring. 3(3-0) 817 recommended.

Earth structures including natural and cut slopes, embankments and earth dams; mechanisms of flow slides, slope stability analysis and design problems, seepage applications including confined and unconfined flow of water through soils.

916. Advanced Soil Mechanics III

Summer. 3(3-0) 817.

Soil dynamics including design of foundations for machinery; effects of ground motion on earth slopes and earth dams; stress-strain behavior of soil during transient and repeated loadings; and relation of soil properties to wave velocity.

999. Research

(EGR 999.) Fall, Winter, Spring, Summer. Variable credit. Approval of department.

Sanitary Engineering

S E

803. Treatment of Industrial Wastes

Spring. 3(3-0) C E 483.

Physical, chemical and biological treatment methods for industrial wastes.

805. Water Treatment Principles

Winter. 3(3-0) C E 483.

Chemical and physical principles of water treatment.

**806. Sewage Collection and
Treatment**

Spring. 3(3-0) C E 483.

Chemical, physical and biological principles of sewage collection and treatment.

899. Research

(EGR 899.) Fall, Winter, Spring, Summer. Variable credit. Approval of department.

**905. Biological Principles of Sanitary
Engineering I**

Fall. 3(2-3) C E 483.

Fundamental physical, chemical, and biological principles relating to the field of sanitary engineering.

**906. Biological Principles of Sanitary
Engineering II**

Winter. 3(2-3) 905.

Fundamental physical, chemical, and biological principles relating to the field of sanitary engineering.

999. Research

(EGR 999.) Fall, Winter, Spring, Summer. Variable credit. Approval of department.

CLASSICAL STUDIES

See Romance Languages

COMMUNICATION COM

College of Communication Arts

100. Human Communication I

Fall, Winter, Spring, Summer. 3(3-0)

Process and functions of communication. Principles underlying communication behavior. Practice in analyzing communication situations and in speaking and writing.

101. Human Communication II

Fall, Winter, Spring, Summer. 3(3-0)

Continuation of 100, with greater emphasis on speaking and writing, and on analyzing increasingly complex communication situations.

199. Methods of Inquiry

Fall, Winter, Spring, Summer. 3(3-0) Majors and minors only. 101.

Major theoretic orientations toward communication. Primary tools of scholarly inquiry.

205. Persuasion

(305, S T 305.) Fall, Winter, Spring. 4(4-0) 101.

Process of influencing human behavior through persuasive communication. Experience in creating persuasive messages and in evaluating the acceptability of persuasive attempts.

210. Leadership

(116, S T 116.) Fall, Winter. 4(4-0)

Principles and practice in the utilization of communication for effective leadership.

299. Individual Projects

Fall, Winter, Spring, Summer. Variable credit. May re-enroll for a maximum of 15 credits. 199, approval of project proposal by department.

Independent research, experience in communication laboratories, or tutorial work in communication skills.

300. Effects of Communication I

Fall, Winter, Spring, Summer. 4(4-0)

100; majors must enroll in 300R concurrently. Examination of the dimensions of communication effects.

300R. Effects of Communication II

Fall, Winter, Spring, Summer. 1 credit. Majors. 300 concurrently.

In-depth consideration of effects of communication.

315. Organizational Communication

(311, S T 311.) Spring. 4(4-0) 101.

Principles and practice in the management of communication systems, with emphases on conflict resolution, information exchange, innovativeness, and information management.

350. Signs and Sign-Behavior I

Fall, Winter, Spring, Summer. 4(4-0)

100; majors must enroll in 350R concurrently. Theories of man's symbolic behaviors. Semiotics and general semantics.

350R. Signs and Sign-Behavior II
Fall, Winter, Spring, Summer. 1 credit.
Majors. 350 concurrently.
In-depth consideration of signs and sign behavior.

351. Message Analysis
(440.) Winter. 4(4-0) 350.
Methods of describing messages and message codes, with emphasis on the concept of information.

352. Non-Verbal Communication
(320.) Spring. 4(4-0) 350.
Continuation of 351, with emphasis on non-verbal codes: gesture, expression, time and space, light.

360. Critical Perspectives on Communication
Fall, Winter, Spring. 4(3-0) 100.
Interdependence of communication and other societal factors, emphasizing criteria for ethical and social appropriateness.

399. Seminar
(400.) Fall, Winter, Spring, Summer. 4(4-0) Majors only. 360.
Contemporary issues in communication.

405. Research in Communication Strategies and Styles
Fall, Spring, Summer. 5(5-0) Seniors. 300.
Research literature in communication strategies and styles.

413. Seminar in Communication Education
Fall, Winter, Spring, Summer. 4(4-0) ED 436.
Philosophies of curricular and co-curricular programs in communication education. Internship experience in those programs.

420. Message Design
Winter. 4(4-0) 101.
Principles and practice in message-media construction and selection.

499. Special Projects
Fall, Winter, Spring, Summer. Variable credit. May re-enroll for a maximum of 15 credits. Approval of project proposal by department.
Independent research, group research, student-directed group projects.

805. Communication Research
Fall. 5(4-2) Majors.
Communication research strategy and methodology. Scientific process, bases for derivation and verification of hypotheses, and basic methods of designing research in communication.

806. Communication Research
Winter. 5(4-0) 805.
Continuation of 805.

815. Organizational Communication
Winter, Spring. 4(4-0)
Structure and function of communication in organizations, with emphasis on concepts and principles needed for effective management of organizational communication processes.

820. Communication Theory and Process
Fall, Summer. 3(3-0)
Theoretic models of communication, with emphasis on the applications of communication

theory to various professional communication areas.

821. Behavioral Research in Mass Communication
(921.) Fall, Spring. 4(4-0)
Current behavioral science theories and research, e.g., media institutions, decision-making, mass media exposure patterns, diffusion of news and influence, effective message strategies, political communication, and mass media in socialization.

822. Interpersonal Communication
(920.) Winter, Summer. 4(3-0)
Current theories and research in interpersonal communication with emphasis on persuasion. The role of interpersonal communication in such processes as conflict resolution and information exchange will be considered.

828. Cross-Cultural Communication
(428.) Winter, Spring, Summer. 4(4-0)
Role of communication in the economic, social and political development of less developed countries. Problems in communicating across cultural boundaries.

830. Nonverbal Communication
Fall. 4(4-0)
A review of theory and empirical research on nonverbal communication with implications for application.

850. Seminar in Research Utilization
(950.) Winter, Summer. 4(3-0) May re-enroll for a maximum of 8 credits. Approval of department.
Applications of communication research to professional practice in such areas as teaching, change agencies, information system management, etc.

870. Communication and Change: The Diffusion of Ideas and Information
(470.) Fall, Spring. 4(4-0)
Research traditions underlying the diffusion of ideas and information, and acceptance of innovation and change. Strategic principles for introduction of change through the use of communication.

890. Special Problems
Fall, Winter, Spring, Summer. 1 to 6 credits. Approval of department.
Special problems as arranged with instructor.

899. Research
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

905. Communication Research Design
Fall, Winter, Spring. 4(4-0) May re-enroll for a maximum of 12 credits. 806.
Methods of data collection and analysis in communication research. Designing exploratory studies of the communication process. Interviewer training and bias. Content analysis of the mass media. Writing and critiquing research reports.

940. Seminar in Communication Theory and Research
Fall, Winter, Spring, Summer. Variable credit. May re-enroll for a maximum of 45 credits. Approval of department.
Theoretic and research issues in communication.

990. Special Problems
Fall, Winter, Spring, Summer. 1 to 6 credits. Approval of department.

COMMUNICATION ARTS CAC (COLLEGE OF)

999. Research
(COM 999) Fall, Winter, Spring, Summer. Variable credit. Approval of department.

COMMUNITY MEDICINE* C M College of Osteopathic Medicine

510. Health Behavioral Science I
Fall. 2(1-3)
Relationship of the basic concepts of the social behavioral and behavioral sciences that influence health and medical care. Consideration is given to the impact of social and cultural factors on health behavior.

511. Health Behavioral Science II
Winter. 2(1-3) 510 or approval of department.
Continuation of 510. The mental health issues of today in relation to the dynamics of change and resistance. Concepts of personality development, equilibrium, reaction to stress, reaction to authority, and dependency Communication and patient education; the art of communication and interviewing; physician-patient relationships; integration of patient education with medical care services.

512. Health Behavioral Science III
Spring. 2(1-3) 511 or approval of department.
The diagnosis and treatment of various forms of deviant behavior, i.e. alcoholism, neuroses, character disorders, sexual deviations, schizophrenia, affective psychoses, organic and psychosomatic conditions, and mental subnormality. Preceptorship in community mental health.

513. Health Behavioral Science IV
Summer. 2(1-3) 512 or approval of department.
Community-based health surveys. Continuation of preceptorship in community mental health.

514. Health, Medical Care, and Society I
Fall. 2(1-3) 510, 511, 512, 513 or approval of department.
A historical review of medical care programs in the United States. Introduction to health care organization and delivery; health care facilities and financing of medical care; comparative health care systems. Manpower development and utilization; politics of health care; elements of community health planning. Practica on health care agencies and programs.

515. Health, Medical Care, and Society II
Winter. 2(1-3) 514 or approval of department.
Continuation of 514. Medical economics and finance for the general practitioner. Principles of medical management. Field placements with health care agencies and programs.

516. Health, Medical Care, and Society III
Spring. 2(1-3) 515 or approval of department.
Clerkship in community medicine. Consideration is also given to patient care issues. Practical problems of health care delivery are analyzed which occur in clerkship. Some issues are explored directly with the principal parties involved.

*Established July 1, 1972.