

**Descriptions—Civil Engineering
of
Courses**

- 829. Fluid Transients**
Spring of even-numbered years. 3(3-0)
Application of unsteady flow concepts and wave mechanics to hydraulic engineering; method of characteristics, surges and water hammer in piping systems, resonance phenomena.
QP: CE 321 QA: CE 829
- 831. Pavement Design and Analysis II**
Spring. 3(3-0)
Theoretical models for analysis of pavement systems. Evaluation and application of current design practices related to elastic and plastic theory. Formulation of improved design procedures.
QP: CE 494 QA: CE 840
- 835. Engineering Management of Pavement Networks**
Spring of odd-numbered years. 3(3-0)
Theoretical and statistical analysis of pavement networks. Engineering monitoring. Determination of distress mechanisms and engineering solutions. Assignment of priorities to the engineering actions.
QA: CE 890
- 837. Transportation Materials Engineering**
Fall of even-numbered years. 3(3-0)
Engineering characteristics of soils and materials commonly used in transportation facilities. Relationships of material engineering properties to pavement design and performance. Material behavior under cyclic loading.
QP: CE 418 QA: CE 815
- 838. Selected Topics in Highway and Airfield Engineering**
Fall of odd-numbered years. 1 to 4 credits.
A student may earn a maximum of 6 credits in all enrollments for this course.
Topics in pavement engineering such as nondestructive deflection testing and back calculation of layer moduli, advanced application of finite element theory in slab design, or fracture mechanics analyses of joint and crack performance.
QP: CE 494
- 839. Stabilizing Unbound Granular Materials**
Fall of even-numbered years. 3(3-0)
P: CE 431.
Improving performance and engineering properties of various granular materials through the use of mechanical processes, and chemical or mineralogical additives. Characterization of engineering properties of stabilized materials.
QP: CE 418 QA: CE 819
- 841. Traffic Flow Theory**
Spring. 3(3-0)
Microscopic and macroscopic traffic flow models, queueing theory. Gap acceptance. Simulation models for network analysis. Intelligent vehicle highway systems.
QP: STT 351 QA: CE 843
- 842. Advanced Airport Systems Design**
Fall of odd-numbered years. 3(3-0)
Analysis and design of airport systems using computer models. Design parameters, demand analysis. Runway orientation and capacity, airside delay, vehicle processing. Passenger processing.
QP: CE 442
- 843. Simulation and Optimization of Urban Traffic Flow**
Fall of even-numbered years. 3(3-0)
P: CE 841.
Statistical analysis of highway geometric designs and operational-control strategies with respect to the optimal flow of traffic: intersection, arterial, network design and control models. Traffic simulation. System management and optimization.
QP: CE 441, CE 449 QA: CE 841
- 844. Highway and Traffic Safety**
Fall of odd-numbered years. 3(3-0)
Analysis of highway geometric design alternatives and operational-control strategies with respect to accident probabilities. Statistical methods of pattern identification. Countermeasure selection and evaluation methodology. Risk management.
QP: CE 843, STT 423 QA: CE 844
- 845. Public Transportation System Planning**
Fall of odd-numbered years. 3(3-0)
Planning and operating urban and rural transportation systems. System technology and management. Budgeting and programming of transportation services. Environmental impact statements. Paratransit and demand-responsive systems.
QP: CE 346 QA: CE 845, CE 941
- 846. Statewide Transportation Network Evaluation**
Spring of even-numbered years. 3(3-0)
Transportation system measures, needs studies, sufficiency ratings. Cost allocation models, programming and budget constraints. Corridor analysis, transportation economics, demand elasticity.
QP: CE 346 QA: CE 846
- 848. Travel Demand Analysis**
Fall of even-numbered years. 3(3-0)
Advanced topics in travel demand modeling. Disaggregate and behavioral models, error analysis, and model sensitivity. Economic investment and analysis in demand context. Activity modeling.
QP: CE 448 QA: CE 848
- 849. Transportation Research Methods**
Spring. 3(3-0)
Application and interpretation of quantitative methods and design of experiments for transportation research; ANOVA, non-parametric, discriminant analysis, factor analysis, multivariate regression, SPSS.
QP: CE 351 QA: CE 849
- 890. Independent Study in Civil Engineering**
Fall, Spring, Summer. 1 to 4 credits.
A student may earn a maximum of 9 credits in all enrollments for this course.
R: Approval of department.
Research problems of limited scope not pertaining to thesis accomplished under CE 899 or CE 999.
QA: CE 880
- 891. Selected Topics in Civil Engineering**
Fall, Spring, Summer. 2 to 4 credits.
A student may earn a maximum of 9 credits in all enrollments for this course.
Selected topics in new or developing areas of civil engineering.
QA: CE 890
- 899. Master's Thesis Research**
Fall, Spring, Summer. 1 to 8 credits.
A student may earn a maximum of 24 credits in all enrollments for this course.
QA: CE 899
- 902. Random Vibration of Structural and Mechanical Systems**
Spring of even-numbered years. 3(3-0)
Interdepartmental with Mechanical Engineering and Materials Science and Mechanics.
P: CE 802 or ME 860, CE 810 or STT 351.
Probabilistic modeling of random excitations (e.g., earthquake, aerodynamic, and ocean wave loadings). Response of single and multiple degree-of-freedom systems to random excitation. Designing against failure. Nonstationary and nonlinear problems.
QP: CE 802, ME 823, STT 351, STT 441 QA: CE 807
- 904. Advanced Structural Mechanics II**
Spring. 3(3-0)
P: CE 804.
Complementary energy, hybrid finite element, applications of plasticity theory. Nonlinear analysis of frames. Nonlinear finite elements. Computer implementation.
QP: CE 804 QA: CE 890
- 906. Advanced Theory of Concrete Composites and Structures**
Spring of odd-numbered years. 3(3-0)
P: CE 806.
Applications of fracture mechanics and plastic theories to modeling the mechanical behavior of concrete composites and structures. Fiber reinforced concrete.
QP: CE 406 QA: CE 905, CE 803
- 915. Earth Structures**
Fall of odd-numbered years. 3(3-0)
P: CE 812.
Design of earth dams and embankments. Natural and cut slopes, slope stability analysis. Embankments on soft foundations, seepage analysis, earth reinforcement. Instrumentation.
QP: CE 817 QA: CE 915
- 916. Soil Dynamics**
Spring. 3(3-0)
P: CE 812.
Vibration fundamentals and wave propagation in soil media. Dynamic soil properties. Theory and design of foundations for vibratory loads. Characteristics of ground motion during earthquakes. Soil liquefaction. Settlement under transient and repeated load
QP: CE 817 QA: CE 916
- 921. Advanced Topics in Groundwater**
Spring of even-numbered years. 3(3-0)
P: CE 821.
Formulation and use of numerical simulation to model the physics of flow and contaminant transport in complex settings or the mechanics of immiscible fluids in porous media.
QP: CE 821 QA: CE 921
- 929. Selected Topics in Hydraulics**
Fall of odd-numbered years. 1 to 3 credits.
A student may earn a maximum of 6 credits in all enrollments for this course.
P: CE 826 or CE 828 or CE 829.
Advanced fluid mechanics and hydraulics related to civil and environmental engineering.
- 999. Doctoral Dissertation Research**
Fall, Spring, Summer. 1 to 24 credits.
A student may earn a maximum of 72 credits in all enrollments for this course.
QA: CE 999

CLASSICAL STUDIES CLA

**Department of Romance and
Classical Languages
College of Arts and Letters**

- 120. English from Latin and Greek Roots**
Fall of odd-numbered years. 3(3-0)
Prefixes, suffixes, and roots of English vocabulary from Greek and Latin word elements.
QA: CLA 220
- 121. Medical Terminology**
Spring of odd-numbered years. 3(3-0)
Basic Greek and Latin word elements used in the formation of prefixes, suffixes, and roots.
QA: CLA 221
- 300. Greek Civilization**
Fall. 3(3-0)
R: Not open to freshmen.
Political, social, religious, and intellectual life of ancient Greece from the Mycenaean period to the death of Alexander the Great, through such authors as Homer, Herodotus, Aeschylus, Euripides, Aristophanes, Thucydides, and Plato.
QA: CLA 326
- 310. Roman Civilization**
Spring. 3(3-0)
R: Not open to freshmen.
Enduring features of Roman civilization to Justinian. Political institutions, religion, architecture, literary forms, creative arts, and gender roles.
QA: CLA 327
- 350. Greek and Roman Literature in English Translation**
Fall. 3(3-0)
R: Not open to freshmen.
Representative works of major Greek and Roman authors.
QA: CLA 304, CLA 305

400. Women in Classical Greek Society
Fall. 3(3-0) Interdepartmental with Women's Studies.
R: Not open to freshmen and sophomores.
Images, roles, and statuses of women in Greek society as seen through literary sources.
QA: CLA 330

410. Greek Mythology
Spring. 3(3-0)
R: Not open to freshmen and sophomores.
Myths as social discourse defining order in Greek culture, as source of inspiration for poets and thinkers, as well as legacy for modern Western culture.
QA: CLA 319, CLA 320

420. Greek and Roman Religions
Fall of odd-numbered years. 3(3-0)
R: Not open to freshmen and sophomores.
Religious life of the Greeks and Romans. Cults, priesthoods, festivals, rites, and the ecstatic and mystic movements.
QA: CLA 325

499. Senior Thesis
Fall, Spring. 3(3-0)
P: LTN 402. R: Approval of department.
Scholarly research and writing with a focus on specific problems, under faculty supervision.
QP: LTN 490

COMMUNICATION ARTS AND SCIENCES CAS

College of Communication Arts and Sciences

492. Special Topics
Fall, Spring, Summer. 1 to 8 credits. A student may earn a maximum of 16 credits in all enrollments for this course.
R: Approval of department.
Varied topics pertaining to the study of communication processes.
QA: CAS 492

892. Special Topics
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 16 credits in all enrollments for this course.
R: Open only to graduate students in the College of Communication Arts and Sciences or approval of college.
Varied topics pertaining to advanced study of communication processes.
QA: CAS 892

992. Doctoral Seminar
Fall, Spring, Summer. 3(3-0) A student may earn a maximum of 15 credits in all enrollments for this course.
R: Open only to Ph.D. students in Mass Media and Communication or approval of college.
Topics on theoretical and research issues in communication and mass media.
QA: COM 940

993. Research Internship
Fall, Spring, Summer. 1 credit. A student may earn a maximum of 6 credits in all enrollments for this course.
R: Open only to Ph.D. students in Mass Media.
Participation in faculty research projects.
QA: CAS 990

999. Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 99 credits in all enrollments for this course.
R: Open only to Ph.D. students in Mass Media.
QA: CAS 999

COMMUNICATION COM

Department of Communication College of Communication Arts and Sciences

100. Human Communication
Fall, Spring, Summer. 3(3-0)
Process and functions of communication. Principles underlying communication behavior. Practice in analyzing communication situations and in speaking and writing.
QA: COM 100

200. Methods of Communication Inquiry
Fall, Spring, Summer. 4(3-2)
P: MTH 110 or MTH 116 or designated score on mathematics placement test.
Nature and conduct of communication inquiry. Significant questions about communication and finding systematic answers.
QP: MTH 108, MTH 110 QA: COM 199

225. An Introduction to Interpersonal Communication
Fall, Spring, Summer. 3(3-0)
Principles and practices of interpersonal communication. Emphasis on effective and responsible interpersonal communication.
QA: COM 125

240. Introduction to Organizational Communication
Fall, Spring, Summer. 4(4-0)
Theories, systems, structures and processes of organizational communication. organizational cultures. Communication in multinational organizations and in individual, leadership, supervisor-subordinate and small group situations.

315. Information Gathering and Interviewing Theories
Fall of odd-numbered years. 3(3-0)
R: Open only to juniors and seniors.
Information gathering as a relational process. Interaction through the asking and answering of questions.
QP: COM 125, COM 199

325. Interpersonal Communication Theory and Research
Fall, Spring. 3(3-0)
R: Open only to juniors and seniors.
Theories, processes and models of interpersonal communication. Topics include conflict resolution, deception, consensus, and uncertainty reduction in communication.
QP: COM 125, COM 199

340. Dyadic and Group Processes in Organizations
Spring. 3(3-0)
R: Open only to juniors and seniors.
Theory and research on dyadic and group relations within organizations. Topics include leadership, motivation, networks, decision making, and organizational taxonomy.
QP: COM 199

375. Audience Response to Mediated Communication
Spring. 3(3-0)
R: Open only to juniors and seniors.
Theory and research on audience responses to mediated communication including entertainment.
QP: COM 199, TC 300

391. Topics in Verbal or Intercultural Communication
Fall. 4(4-0) A student may earn a maximum of 8 credits in all enrollments for this course.
P: One 200 level course in Communication. R: Not open to freshmen and sophomores.
Topics in cultural diversity and verbal interaction.
QP: COM 199, COM 125

399. Special Topics in Communication
Spring. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course.
P: One 200 level COM course. R: Not open to freshmen and sophomores.
Contemporary issues in communication.

425. Communication in Close Relationships
Fall, Spring. 4(4-0)
P: COM 225 or COM 325. R: Open only to junior, senior or graduate student Communication majors.
In-depth treatment of current research and of theoretical and methodological issues.

440. Organizational Communication Structure
Fall. 4(4-0)
P: COM 340. R: Open only to junior, senior or graduate student Communication majors.
Systems approaches to information processing and communication structures in organizations.
QP: COM 315

460. Critical Perspectives in Communication
Spring. 4(4-0)
P: One 200 level course in Communication. R: Not open to freshmen and sophomores.
Evaluation of efficacy of messages. Interdependence of communication and other societal factors, emphasizing criteria for ethical and social appropriateness.
QP: COM 100 QA: COM 460

475. Communication Campaign Design and Analysis
Fall. 4(4-0)
R: Open only to junior, senior or graduate student Communication majors.
Design and analysis of campaigns presented through mediated channels including electronic and print media.
QP: TC 300 QA: COM 425

490. Independent Study
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 3 credits in all enrollments for this course.
P: One 200 level COM course. R: Not open to freshmen and sophomores. Approval of department; application required.
Directed study under faculty supervision.

493. Internship
Fall, Spring, Summer. 1 to 7 credits. A student may earn a maximum of 7 credits in all enrollments for this course.
R: Open only to Communication majors. Approval of department; application required.
Supervised practical experience in a professional environment.

494. Practicum in Communication Research and Instruction
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 6 credits in all enrollments for this course.
R: Open only to Communication majors. Approval of department; application required.
Structured participation in departmental research teams and applied practice in the community.

800. Communication Programs and Evaluation
Fall. 3(3-0)
Communication audits, training and development, and focus groups as they apply to the evaluation of communication programs and institutions. Related topics include interviewing, questionnaire design and formative evaluation.
QA: COM 870, COM 840

801. Communication Research I
Fall. 4(4-0)
Communication research strategy and methodology. Scientific process. Derivation and test of hypotheses. Methods of research design.
QA: COM 804, COM 805

802. Communication Research II
Spring. 4(4-0)
P: COM 801.
Further consideration of communication research strategy and methodology. Topics include systems theory, cybernetics, and transactional approach.
QP: COM 804, COM 805 QA: COM 806