463. Economics of Urban Education
Spring. 3(3-0) EC 201 or 210. Inter-departmental with the Department of Economics. Political economy of urban schools. Education as a commodity: efficient production and distribution, supply and demand for education, financing education, planning education to meet job needs and social mobility.

480. Independent Study
Fall, Winter, Spring, Summer. 2 to 4 credits. May re-enroll for a maximum of 10 credits. Juniors; approval of department.

485. Selected Topics in Urban and Metropolitan Studies
Fall, Winter, Spring, Summer. 4(4-0) May re-enroll for a maximum of 8 credits. Juniors, or U D 200, 231.
Contemporary issues and problems in the urban areas.

URBAN DEVELOPMENT U D
(COLLEGE OF)

200. Human Perspectives on Urbanization
Fall, Winter, Spring. 4(4-0)
The changing role of the city in contemporary urban societies. The human problems in urban centers as well as strategies for solving these problems.

201. Historical Roots of Racism and Ethnocentrism
Fall, Winter, Spring. 4(4-0)
Theories of racism and ethnocentrism, emphasizing a problem-solving approach in applying these theories to pluralism as it relates to Blacks, Spanish-Speaking and Indian Americans.

202. Minorities in American Cities
Fall, Winter, Spring. 4(4-0) 200 and 201.
Changing socio-economic and political conditions of minority groups in American cities associated with urbanization. Special emphasis will be given to Blacks, Spanish-Speaking and Indian Americans.

498. Prefield Experience Seminar
Fall, Winter, Spring, Summer. 1 credit. Approval of college.
Prepares students for the required College of Urban Development field experience. Students develop field experience proposal including rationale and objectives.

499. Field Experience
Fall, Winter, Spring, Summer. 6 to 12 credits. May re-enroll for a maximum of 24 credits. 498 and approval of college.
The development of field research and analytical skills and the provision of experiential learning via students participating in field work settings and public service projects.
### Urban Planning and Landscape Architecture — Descriptions of Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.</td>
<td>Special Problems</td>
<td>Fall, Winter, Spring, Summer. 2 to 6 credits. May re-enroll for a maximum of 9 credits. Approval of school.</td>
</tr>
<tr>
<td>606.</td>
<td>Planning for Man and the Environment</td>
<td>Fall. 3(3-0) Multi-dimensional environments of human settlements, normative characteristics, relationships to man, functional and dysfunctional situations, problems of comprehension, description, normative design criteria, contemporary issues, and relationships to planning.</td>
</tr>
<tr>
<td>508.</td>
<td>Background of Urban Development Planning</td>
<td>Fall. 3(3-0) American urban development from 1620 to the present, including shifts in technology and social forces that influenced development patterns. Problems faced by the professional planner are emphasized.</td>
</tr>
<tr>
<td>514.</td>
<td>Research Methods in Urban Planning: Basic Quantitative Techniques</td>
<td>Winter. 3(3-0) S2T 201 or 401 or approval of school. Basic quantitative techniques used in planning, including statistical, linear methods, and network methods. Introduction to use of the computer. Intended for students with limited background in mathematics.</td>
</tr>
<tr>
<td>516.</td>
<td>The Planning Process</td>
<td>Fall. 3(3-0) Basic research and survey methods, and procedures used by the professional planner in developing a comprehensive plan.</td>
</tr>
<tr>
<td>519.</td>
<td>Planning Theory: Theories of Urban Forms and Structure</td>
<td>Spring. 3(3-0) S14. Approval of school. Idealized urban forms, theories and models in urban form as it relates to function and location of urban activities.</td>
</tr>
<tr>
<td>524.</td>
<td>Legal Bases for Planning</td>
<td>Winter. 3(3-0) S14. Approval of school. Analysis of legislation pertinent to planning, emphasizing: local, county, city and regional planning bodies and creation of special authorities with general planning responsibilities.</td>
</tr>
<tr>
<td>526.</td>
<td>Planning Program Implementation</td>
<td>Fall. 3(3-0) Completion of the first year MUP Core Program or approval of school. An analysis of various techniques utilized by professional planners in effectuating plans and programs. Governmental roles in land use control, fiscal matters, taxation policies, and federal and state programs are stressed.</td>
</tr>
<tr>
<td>528.</td>
<td>Planning Presentation Techniques</td>
<td>Fall. 2(1-2) or 3(1-4) Students with basic graphic skills should enroll for 2 credits. Approval of school. Communication skills utilized by planners to present proposals to decision-makers and citizens. Speaking, writing, and small group leadership is integrated with essential planning graphic skills.</td>
</tr>
<tr>
<td>534.</td>
<td>Planning Practicum I</td>
<td>Winter. 3(3-0) S14. Field experience in the collection, analysis, and synthesis of information by individual students or student groups, to develop solutions to specific urban problems.</td>
</tr>
<tr>
<td>535.</td>
<td>Planning Practicum II</td>
<td>Winter. 3(3-0) S14. Continuation of 534.</td>
</tr>
<tr>
<td>536.</td>
<td>Introduction to Design</td>
<td>Winter. 3(3-0) S14. Approval of school. Studio course emphasizing the role of planning in shaping the process of urban growth and development, and the role of physical form and structure in influencing man's cultural patterns.</td>
</tr>
<tr>
<td>540.</td>
<td>Administration and Professional Practice</td>
<td>Winter. 3(3-0) S14. Major or approval of school. Expanding scope of urban planning and implications for administration; organizations for administration; relationship to governmental operations, to other professions, to public; Staff functions and responsibilities; administrative instruments; practice of the consultant; professional ethics.</td>
</tr>
<tr>
<td>542.</td>
<td>An International Comparative Study of Urban Planning</td>
<td>Winter. 3(3-0) S14. Urban growth patterns; types, roles and design theory of new cities; techniques and organization for urban growth; selection of subject areas will be made according to the class composition.</td>
</tr>
<tr>
<td>544.</td>
<td>Environmental Perception</td>
<td>Fall, Winter, Spring. 3(3-0) Approval of school. Analysis of elements and spatial image of a city or urban area. Urban growth patterns; types, roles and design theory of new cities; techniques and organization for urban growth; selection of subject areas will be made according to the class composition.</td>
</tr>
<tr>
<td>545.</td>
<td>Seminar in Housing and Urban Renewal</td>
<td>Spring. 3(3-0) S14. Approval of school. Regulation, stimulation, salvage, and replacement of housing through public policy and administrative procedures. Increasing role of private initiative as partner to public action through conservation, rehabilitation, and redevelopment practices. Evaluation of trends and needs; analysis of case studies.</td>
</tr>
<tr>
<td>548.</td>
<td>Urban Circulation</td>
<td>Spring. 3(3-0) S14. Approval of school. Functional requirements and interrelationships of all means for the movement of people and goods in urban areas as they affect the physical pattern of the community.</td>
</tr>
<tr>
<td>552.</td>
<td>Urban Land Regulations</td>
<td>Spring. 3(3-0) S14. Approval of school. Ordinance structure and planning theory as expressed in texts of ordinances. Selected court cases.</td>
</tr>
<tr>
<td>558.</td>
<td>Development Planning and Administration</td>
<td>Fall. 3(3-0) S14. Approval of school. Measurement of urban obsolescence and deterioration with accompanying analysis of symptoms and causes for a selected community. Comprehensive plan for urban renewal and development objectives will be developed and one or more project areas will be studied and processed in accordance with most effective techniques and administrative procedures. Emphasis to be placed on the objective of unified, revitalized community development.</td>
</tr>
<tr>
<td>562.</td>
<td>Urban Spatial Design</td>
<td>Fall. 3(3-0) S14. Approval of school. Design projects for functions relating to selected community activities. Commercial, industrial, residential, institutional, and transportation land uses will be utilized for design study in appropriate dimensions.</td>
</tr>
<tr>
<td>566.</td>
<td>Regional and State Planning</td>
<td>Fall. 3(3-0) S14. Approval of school. Selected problems of metropolitan functions of present and future significance. Intra and interregional relationships of primary functional importance; such as, open spaces, economic development, community patterns, transportation, and associated land uses.</td>
</tr>
<tr>
<td>599.</td>
<td>Research</td>
<td>Fall, Winter, Spring, Summer. Variable credit. May re-enroll for a maximum of 15 credits. Individual student research on a topic of critical importance to urban planning that will demonstrate student's competence and make a contribution to the knowledge of the field.</td>
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</tbody>
</table>

### Landscape Architecture

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<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>100.</td>
<td>Environmental Perception</td>
<td>Fall, Winter, Spring. 3(3-0)</td>
</tr>
<tr>
<td>110.</td>
<td>Fundamentals of Design</td>
<td>Fall. 4(2-4)</td>
</tr>
<tr>
<td>120.</td>
<td>Graphic Communication</td>
<td>Spring. 4(1-4)</td>
</tr>
<tr>
<td>201.</td>
<td>Site Planning Theory</td>
<td>Winter. 3(3-0)</td>
</tr>
</tbody>
</table>
230. Landform Design
Winter. 4(2-4) 120 and provisional majors.
Elements and principles of site grading, relief visualization, contour interpretation, land form units, surface drainage, slope calculations, and earthwork quality determinations.

240. Landscape Design Methods
Winter. 4(1-6) 120 and provisional majors.
Considerations and techniques of landscape design, including natural, cultural and perceptual inventories, site and program analyses, development of design concepts, with verbal and graphic expressions. Field trips required.

241. Site Planning Studio
Spring. 3(0-6) 201, 240.
Applications of site planning theory and landscape design methods to representative site development projects involving urban areas, land, water and plant forms, with verbal and graphic expressions. Field trips required.

250. Introductory Planting Design
Spring. 2(2-0) 240.
Principles of and procedures for arrangement of plant compositions, emphasizing the perceptual characteristics of plants by means of models, sketches and plans, and potential applications to landscape developments. Field trips required.

253. Community Design Theory
Winter. 2(2-0)
Ecological and cultural elements and concepts of community development, including data surveys, legal controls, design standards and site planning requirements for community facilities.

254. Housing Design Theory
Fall. 2(2-0)
Concepts, principles and regulations for the development of housing areas, including ecological considerations, cultural implications, housing forms, types of site improvements, legal controls, and site planning requirements and procedures.

255. Recreation Design Theory
Spring. 2(3-0)
Ecological and cultural considerations for development of open space and recreation areas, resource characteristics and limitations, activity requirements, recreation systems, site design standards, and recreational land use programs and policies.

321. Advanced Graphic Communication
Fall. 4(1-6) Junior majors.
Development of proficiency in landscape design and rendering, including specialized media and formats for visual presentation of design concepts, analyses and perceptions.

333. Site Construction
Spring. 4(2-4) Junior majors.
Materials and methods for construction of landscape developments, including details, layouts, construction drawings, specifications and cost estimating procedures.

343. Design of Community Facilities
Spring. 3(0-6) Majors and 363.
Applications of community design theory and landscape design methods to representative community developments, such as institutions, commercial, civic and industrial site design projects, with written, oral and graphic representations. Field trips required.

344. Design of Housing Developments
Winter. 3(0-6) Majors and 304.
Applications of housing design theory and site planning principles and methods to representative housing developments, such as residential land subdivisions, multi-family complexes and planned unit developments, with written, oral and graphic representations. Field trips required.

345. Design of Recreation Areas
Fall. 3(0-6) Majors and 305.
Applications of recreation design theory, site planning principles and procedures to representative recreational land developments, parks, special recreation use areas, with verbal and graphic expressions. Field trips required.

353. Functional Planting Design
Winter. 4(2-4) Junior majors.
Principles and procedures for selection and arrangement of plant materials for specific uses, including climate modification, spatial definition, circulation control, soil and water conservation, etc., as expressed by planting plans and specifications.

360. Architectural Design Theory
Spring. 2(2-0)
Physical and visual properties of materials, structural elements and systems, sitting of buildings, form-space relationships and related principles of architectural design.

362. Architectural Design Studio
Spring. 3(0-6) Majors or approval of school.
Application of architectural design theory to represent buildings and types and situations, with emphasis on structural and spatial form and site relationships of simple buildings. Field trips required.

370. History of Environmental Development
Winter. 3(2-3)
Significant natural conditions and cultural events which have influenced man’s attempts to organize and design his physical environment, as expressed in historic landscape development styles and movements.

390. Landscape Architecture Field Studies
Fall, Spring. 2(1-5). May re-enroll for a maximum of 4 credits. Approval of school.
A 3 to 5 day field trip to visit contemporary and historical developments and various regional zones. Prior and post study required.

401. Regional Design Theory
Winter. 2(2-0)
Concepts and policies affecting natural resource conservation, selection and location of significant human use areas, landscape development considerations and their environmental implications.

403. Urban Design Theory
Fall. 2(2-6)
Concepts and procedures for the organization, design and development of public and private urban forms and spaces, including survey of urban elements, cultural, ecological and aesthetic considerations, and interdisciplinary collaboration.

423. Professional Graphics
Winter. 4(1-6) 321.
Applications of graphic-technique, perspective and rendering techniques for typical professional presentations, including plans, reproductions, photography and multi-media audio-visual communications.

432. Site Engineering
Fall. 4(2-4) Senior majors and 301.
Principles and procedures for design of site development systems, horizontal and vertical road alignments, storm and sanitary sewers, site utilities and computer applications for preparation of site construction drawings.

441. Regional Landscape Design
Winter. 3(0-6) Senior majors and 401 concurrently.
Applications of regional design theory and landscape design methods to representative large scale land use and development projects, resource conservation, environmental restoration, and accommodation of various human activities. Field trips required.

443. Urban Landscape Design
Fall. 3(0-6) Senior majors and 403 concurrently.
Applications of urban design theory and landscape design methods to representative urban development projects, public plazas, pedestrian malls, civic and cultural complexes, etc., with written, oral and graphic representations. Field trips required.

451. Ecological Planting Design
Fall. 4(2-4) 250. 353 and HRT 311, 212.
Selection, utilization and arrangement of natural materials for various site development purposes, with emphasis on consideration of natural environmental factors which affect plant growth and location for distinctive sites and uses. Field trips required.

463. Architectural Design II
Winter. 4(1-6) 360, 362.
Design of buildings and their groupings in relation to the landscape, including structural systems, form-space compositions, and applications to representative landscape development projects. Field trips required.

471. History of Landscape Architecture
Spring. 2(2-2)
Environmental design concepts and projects from 1850 to the present time, with emphasis on the development of the profession and practice of landscape architecture in the United States.

480. Professional Practice
Spring. 3(2-2) Senior majors.
Principles and procedures of professional landscape architectural practice, including ethics, client relations, registration, inter-professional collaboration and organization of operations for design implementation. Field trips required.

483. Landscape Architecture Seminar
Winter. 3(2-2) Senior majors.
Research presentation and discussion of significant current issues, trends, events and opportunities relating to contemporary theories and practices of landscape architecture.

490. Special Problems
Fall, Winter, Spring, Summer. 2 to 5 credits. May re-enroll for a maximum of 12 credits. Approval of school.
Investigation for advanced undergraduate students in landscape architecture, developed from special interest areas.
499. Landscape Architecture Design
Thesis
Spring, Summer. 5(1-8) Senior majors.
Demonstration of analytical, creative and technical competencies in the development of methods and/or concepts leading to design solutions for contemporary landscape architecture problems.

VETERINARY MEDICINE VM
(COLLEGE OF)

500A. Introduction to Veterinary Medicine I
(SSM 501.) Summer. 2(2-0) Admission to professional veterinary program.
Species and breed identification, predisposition for specific diseases, basic care and feeding, restraint and handling of small domestic animals, unusual pets, and laboratory animals.

500B. Introduction to Veterinary Medicine II
Fall, 3(2-0) Second-term Veterinary Medicine students.

500C. Introduction to Veterinary Medicine III
(LSM 503.) Winter. 4(3-3) Third-term Veterinary Medicine students.
Physical and systemic examination of the various domestic and laboratory species. Common restraint procedures, clinical skills, diagnostics and an approach to clients are included.

500D. Introduction to Veterinary Medicine IV
(SSM 502.) Spring. 4(3-0) Fourth-term Veterinary Medicine students.
Anesthetic principles, agents and techniques. Basic surgical principles, including aseptic technique, hemostasis, wound healing, suturing and suturing materials. Fundamentals of radiology.

500E. Introduction to Veterinary Medicine V
Spring, 3(3-0) Fourth-term Veterinary Medicine students.
Emphasis on behavior of animals relating to disease prevention and treatment. Lectures, discussions and demonstrations on veterinary ethology including animal communications, reproduction, restraint, handling, housing and feeding habits.

501. Client Communication
(G99.) Spring. 1(0-2) Fourth-term Veterinary Medicine students.
Communication and interviewing skills as the basis for establishing and maintaining effective client relationships.

502. Metabolic Diseases, Endocrinology and Epidemiology
Summer. 4(4-0) Fifth-term Veterinary Medicine students.
Biochemical and physiological basis of metabolic and endocrine diseases of animals including diagnosis, treatment and management. Principles of epidemiology and their application in the study of diseases in animal populations.

504. Urinary and Hematopoietic Systems
Summer, 6(4-8) Fifth-term Veterinary Medicine students.
Integrative approach to the understanding of the urinary system in health and disease of animals. Pathogenesis, diagnosis, and clinical management of diseases of the hematopoietic and lymphoid organs and tissues.

510. Survey of Infectious Agents
Fall, 4(4-0) Sixth-term Veterinary Medicine students.
Host-parasite relationships in diseases of animals; laboratory diagnosis, treatment, control, and public health significance will be emphasized.

512. Nervous System
Fall, 3(2-1) Sixth-term Veterinary Medicine students.
Normal and abnormal neural structure and function in animals with emphasis on clinical neurology and neuropathology.

514. Cardiovascular and Respiratory Systems
Fall, 7(5-6) Sixth-term Veterinary Medicine students.
Pathogenetic, diagnosis, and management of cardiovascular and respiratory diseases of animals; anatomical, physiological, and pharmacological principles applicable for medical therapy and surgical treatment will be emphasized.

516. Reproductive System
Fall, 3(4-3) Sixth-term Veterinary Medicine students.
Reproductive diseases of animals with emphasis on genital structure and function, endocrine interrelationships, methods for examination of mammary gland and reproductive tract, diagnosis, and treatment.

518. Diagnostic and Surgical Procedures
Fall, 2(0-6) Sixth-term Veterinary Medicine student.
Demonstration and performance of some procedures applicable to nervous, reproductive, and respiratory systems.

520. Veterinary Public Health
Winter, 3(3-0) Seventh-term Veterinary Medicine students.
Public health aspects of veterinary medicine; the nature of laws, ordinances, and regulations; and veterinary medicine's role in the protection of the environment, ecology, and assurance of food hygiene.

522. Digestive System and Nutrition
Winter, 9(6-9) Seventh-term Veterinary Medicine student.
Pathogenesis, diagnosis, and treatment of diseases of the alimentary tract and digestive organs of animals. Recognition and rational therapy of nutritional diseases in animals.

524. Integumentary System
Winter, 4(3-3) Seventh-term Veterinary Medicine students.
Diseases of the integumentary system of animals with emphasis on laboratory examinations, interpretations of pathological features, diagnosis, and treatment.

526. Musculoskeletal System I
Winter. 4(2-8) Seventh-term Veterinary Medicine students.
Diagnosis and treatment of musculoskeletal diseases of animals with emphasis on pathological changes, radiological techniques, and interpretation of radiographs. Surgical procedures applicable to small animals will be demonstrated.

530. Veterinary Toxicoology
Spring. 4(4-0) Eighth-term Veterinary Medicine students.
Pharmacological basis and pathological features of diseases of animals caused by common toxic chemicals with emphasis on clinical manifestations, diagnosis, prevention, and treatment.

532. Visual and Auditory Systems
Spring, 3(2-3) Eighth-term Veterinary Medicine students.
Methods of examination, diagnosis, and treatment of diseases involving the eye or ears of animals with emphasis on the anatomical, physiological, and pathological features.

534. Musculoskeletal System II
Spring, 3(2-9) Eighth-term Veterinary Medicine student.
Diagnostic, prophylactic, and management of musculoskeletal diseases of the equine with emphasis on anatomical relationships to normal and abnormal function. Surgical procedures applicable to equine and ruminant will be performed.

536. Orthopedic Surgery
Spring. 6(4-6) Eighth-term Veterinary Medicine students.
Principles of orthopedic surgery and anatomical relations of the musculoskeletal systems in the canine and feline.

538. Veterinary Medical History, Ethics, Jurisprudence, and Epidemiology
Spring, 6(2-8) Eighth-term Veterinary Medicine students.
Historical background, ethical principles, and legal responsibilities of the veterinary medical profession. Epidemiological problems will be resolved and discussed.

ZOOLOGY ZOL
College of Human Medicine
College of Natural Science
College of Osteopathic Medicine

IDC. Resource Ecology and Man
For course description, see interdisciplinary Courses.

301. Nature and Man
Spring, 4(2-6) Three terms of natural science; not open to zoology majors. Relates man to his natural environment. Chief emphasis on identifying characteristic animal life in broad areas of nature and how man fits or misfits into these. Lectures, laboratory and field trips illustrate this relationship.