School of Architecture

Donald D. Hanson, Dean
William J. Lauer, Assistant Dean

The School of Architecture presents a comprehensive program of undergraduate courses, offering opportunities for both general studies and professional specialization.

The intent of the School's program is to complement the University's learning opportunities by providing curricula and course offerings in the art and science of design. Accordingly, the program is composed of informational, analytical, and integrative studies related to the human role in shaping and changing the built environment. The welfare of this environment, which is a vital factor in the well-being of people everywhere, depends upon the knowledge and skill which those educated in the design sciences can contribute to continuing processes of developmental change.

A goal of this revised program is to provide undergraduate studies in scholarly and professional areas related to the knowledge base and methodologies for working with the built environment, while at the same time utilizing the School's resources, faculty, and facilities to their maximum effectiveness.

Facilities

The design laboratories, classrooms, computer room, library, and administrative offices of the School are located in three buildings—Estabrook Hall, Meilrose Annex, and Alumni Gym. It is entirely appropriate that one of the newest schools, and particularly architecture, should be temporarily housed in venerable Estabrook Hall constructed in 1898. Other disciplines that share direct interests with the School—Engineering, Fine Arts, and Industrial Arts—are also located in the building. The Meilrose Annex provides additional space for upperclass research and design activities.

The principal library holdings of the School are contained in the James D. Hoskins Library. Extensive general collections and reference volumes in architecture and the fine arts are housed there. These sources are augmented by the branch library of the School where students have access to all the reference books in current use.

Student Sponsorship

A number of $500 sponsorships are made available each year by architectural firms of Tennessee. These grants cover tuition and fees, travel expenses to a designated U.S. city for study purposes, subscription to a foreign architectural journal, purchase of special drafting equipment, and purchase of special reference books for the student recipients' personal libraries. Honor students in all the upper four years are eligible for this aid, but it is primarily awarded to students of third and fourth year standing.

Lecture Program

ROBERT B. CHURCH MEMORIAL LECTURESHIP

The income from the endowment is used to sponsor outstanding speakers from the profession.

General Information

Students are advised to consult the University's general requirements as stated in the front section of this catalog as well as the requirements for the School of Architecture. Self-advising will not be permitted in the School of Architecture. Students must plan their schedule by consulting with an assigned advisor in the student's area of concentration. Electives will be chosen with the concurrence of the advisor and with full consideration of the necessary prerequisites.

Requirements for Admission to Second Year Architecture

1) satisfactory completion of first year architectural program with grade point average at least 2.3; exceptions by petition only.
2) a personal interview and evaluation of applicant's work by a designated member of the School of Architecture.
3) application to the School of Architecture no later than June 15 preceding the start of the second year.

Students must maintain an overall 2.3 grade point average by the end of 48 hours (attempted) in order to maintain "full status" in the program. Delinquent students will be put on "temporary status" for one quarter. These students will have one quarter to raise overall GPA to a 2.3 or have minimum 2.3 on each quarter's work until overall average is raised to a 2.3. If GPA is not brought up to a 2.3, student will be dropped from the architecture program.

Minor

An undergraduate minor in architecture is offered in order to enable students in other colleges to pursue studies in architecture which are relevant to their major areas of concentration. The minor will consist of not less than 18 hours. Persons interested must obtain the consent of the Admissions Committee of Architecture and Dean of the School of Architecture, who will approve specific programs of study proposed by students.

Course Load

The average course load in any quarter is 17-18 credit hours. The minimum which may be taken by full-
time students is 12 hours; the maximum which may be taken without approval of the Dean is 20 hours.

Program Description
The undergraduate curriculum has two major components: a core of general and professional studies, and a range of concentrations for in-depth study. Within the scope of a professional degree program, it thus provides a number of study areas from which students may select according to their individual interests and aptitudes. Four areas of concentration - Administration, Design, History/Humanities, and Technology - each with a subset of paths, are offered; they share a common core which provides the basic prerequisites for entry into one of the study concentrations.

GENERAL CORE
The general core is an introduction to the knowledge base of the School’s professional program. The courses are neither highly specialized nor overly technical; thus they are open and accessible to other disciplines within or outside the University. Although it is recommended that the series of core courses be taken in sequence, it is so constituted as to permit flexibility in scheduling, particularly to accommodate transfer students seeking elective credits.

Courses in the general core, in addition to English, Math, and Physics, are from the following five divisions:
- Basic Design and Visual Studies
- Analytical Studies
- Man-Environment Systems
- Physical Systems
- Historical Studies

PROFESSIONAL CORE
Courses in the professional core represent subjects fundamental to professional competence in architecture. The following five divisions constitute this core:
- Structural Analysis and Materials
- Environments Control Systems
- Professional Practice
- Architectural Design Practice
- Through controlled electives, required in this core, students can intensify and extend their professional skills and technical knowledge.

ACCELERATED CORE
Students demonstrating an exceptional proficiency in any of the professional core subjects may be approved for selected accelerated studies, thereby reducing the time needed to complete core requirements and allowing more time for concentration in the student's chosen area. Formal review and approval by the School are required of all accelerated core candidates.

Curricula for Architecture
All students studying for a Bachelor of Architecture Degree will include the following requirements in their first three years of study. During the fourth and fifth years, the student's work will be concentrated in one of the following Tracts: Design, History, Criticism,

Program for Architecture
Degree: Bachelor of Architecture

Major: Architecture

Concentrations:
- Design
- History/Humanities
- Administration
- Technology

Tracts:
- 1. Architectural Design
- 2. Architecture History
- 3. Restoration/Preservation
- 1. Management
- 2. Environmental Controls
- 3. Systems Building

Restoration/Preservation,
Management, Production, Development, Structures, Systems Building, or Environmental Controls. Refer to numbers in the 4300 sequence for Architecture Design Lab Electives. Any exceptions to the curriculum outline have been footnoted. For any additional specialized requirements, the student should inquire at the School of Architecture.

First Year
- Architecture 1001, 1002... 4 - 4
- Architecture 1004, 1005, 1006... 4 - 4
- English 1510-20...
- Physics 2204-50...
- Math 1550-60 (For Design & Hist/Humanities Concentrations)...

Second Year
- Architecture 2000, 2014...
- Architecture 2001-02-03...
- Architecture 2006, 2005...
- Architecture 2011-12-13...
- Architecture 2015-16...

Third Year
- Architecture 3111-12...
- Architecture 3133-14...

Control elective or "Tract" course...

Fourth Year
- Architecture Design Lab...
- Electives...
- Electives...

Fifth Year
- Architecture Design Lab...
- Electives...

Total: 144 hours

Design Concentration

ARCHITECTURAL DESIGN TRACT

CRITICISM TRACT

Total: 240 hours

Fourth Year
- Architecture Design Lab Electives...
- Architecture 4311...
- Architecture 4110, 4115...
- History 4150-20...
- Control Electives...

Fifth Year
- Architecture Design Lab Electives...
- Architecture 4110, 4115...
- Control Electives...

Total: 240 hours

HISTORY/HUMANITIES CONCENTRATION

HISTORY TRACT

Fourth Year
- Architecture Design...
- Architecture 4311...
- Architecture 3101-02, 3130...
- History 4150-20...
- Control Electives...

Fifth Year
- Architecture Design Lab Electives...
- Architecture 4110, 4115...
- Control Electives...

Total: 240 hours

Production/Preservation
Management, Production, Development, Structures, Systems Building, or Environmental Controls. Refer to numbers in the 4300 sequence for Architecture Design Lab Electives. Any exceptions to the curriculum outline have been footnoted. For any additional specialized requirements, the student should inquire at the School of Architecture.

First Year
- Architecture 1001, 1002... 4 - 4
- Architecture 1004, 1005, 1006... 4 - 4
- English 1510-20...
- Physics 2204-50...
- Math 1550-60 (For Design & Hist/Humanities Concentrations)...

Second Year
- Architecture 2000, 2014...
- Architecture 2001-02-03...
- Architecture 2006, 2005...
- Architecture 2011-12-13...
- Architecture 2015-16...

Third Year
- Architecture 3111-12...
- Architecture 3133-14...

Control elective or "Tract" course...

Fourth Year
- Architecture Design Lab...
- Electives...
- Electives...

Fifth Year
- Architecture Design Lab...
- Electives...

Total: 240 hours

Management Concentration

MANAGEMENT TRACT

Fourth Year
- Architecture 4501-02, 4531...
- Industrial Engr. 4155...
- Architecture 3701, 4525...
- Architecture 4510-15, 4531...

Fifth Year
- Architecture 4503-04, 4530...
- Control Electives...
- Electives...

Total: 240 hours

Production Tract

PRODUCTION TRACT

Fourth Year
- Architecture 4501-02, 4531...
- Industrial Engr. 4155...
- Architecture 3701, 4555...
- Architecture 4545, 4550, 4560...

Fifth Year
- Architecture 4503-04, 4530...
- Control Electives...
- Electives...

Total: 240 hours

Development Tract

DEVELOPMENT TRACT

Fourth Year
- Architecture 4501-02, 4531...
- Architecture 4520, 4550...
- Control Electives...
- Electives...

Fifth Year
- Architecture 4503-04, 4530...
- Control Electives...
- Electives...

Total: 240 hours
Fourth Year
Architecture 4701, 3015, 4702
Control Electives
Electives
Total: 124 hours

Fifth Year
Architecture Design Lab Elective
Control Electives
Electives
Total: 240 hours

SYSTEMS BUILDING TRACT

Fourth Year
Architecture 4761-62
Architecture Design Lab Elective
Architecture 4741-42-43
Control Electives
Electives
Total: 124 hours

Fifth Year
Architecture 4751
Architecture 4752-53
Control Electives
Electives
Architecture 4786
Total: 240 hours

Controlled Electives Lists

DESIGN CONCENTRATION
Accounting 2110-20; Anthropology 2510, 2530, 3410; Audiology and Speech Pathology 4750; Architecture 2101, 2102, 3113, 3712, 3910, 4110, 4137, 4610, 4710, 4720, 4721-22, 4725-26-27, 4734, 4735, 4736-37, 4739, 4771-72-73, 4775, 4780, 4875, 4900, 4910; Art 3735, 3736, 3745, 3746, 3765; Botany 1110-20, 3030, 3090; Broadcasting 3650, 4020, 4030; Business Law 4110; Child and Family Studies 3510, 3550, 3560, 4260, 4430, 4830; Chemistry 110-20-20; Civil Engineering 4430; Crafts, Interior Design and Housing 3266, 4155, 4156, 3125, 4310, 4310; Communications 1110; Computer Science 3410, 3410; Educational Curriculum and Instruction 3310; Economics 2110-20-30, 3110, 3340, 4150; Electrical Engineering 4850; Environmental Engineering 3000, 4700; Finance 3110, 3120-30, 4350-60, 4370; Food Systems Administration 3310; Geography 2400, 3000, 3430, 3520, 3530, 4720, 4740; Geology 3510, 3520; History 4670, 4740; Industrial Engineering 4510; Journalism 3710; Law 8490, Marketing 3110, 3120, 3210; Mechanical Engineering 4220; Office Administration 2750; Philosophy 1510-20; Political Science 3310; Psychology 2500, 2530, 3150, 3210, 3430, 4230; Real Estate 2610, 3610, 4120, 4130; Sociology 3010, 3310, 4330, 3410; Statistics 2100, 3220, 3310, 3410; Zoology 3010-20-30.

HISTORY/HUMANITIES CONCENTRATION
Anthropology 2520, 3610, 4800, 4650, 4740; Architecture 3110, 3113, 3115, 3120, 3125-26, 3130, 3135, 4110, 4110, 4120, 4125, 4130, 4135, 4137, 4140, 4150, 4160, 4170, 4175, 4185, 4185; Art 3710, 3711, 3720, 3730, 3750-55-56-57, 3765, 3775-76-77, 4875-76-77, 5855-56-57, 5770; Classics 4220; History 4670, 4740; Journalism 2210, 3120, 2220; Planning 4100; (Other electives may be accepted upon approval by the History/Humanities Area Committee.)

ADMINISTRATION CONCENTRATION
Accounting 2110-20, 2210; Architecture 4510, 4515, 4520, 4525, 4530, 4531, 4532, 4535, 4540, 4545, 4550, 4555, 4560, 4565; Business Administration 1110; Business Law 4110, 4120, 4130; Civil Engineering 4230, 4430; Economics 2110-20-30, 3210, 3211, 3340, 3410, 4210, 4130; Finance 3110, 3120-30, 3640; Industrial Engineering 4510, 5250, 5260, 5600; Insurance 3020; Industrial Management 3010, 3110, 3120, 4330, 4630; Journalism 3710; Marketing 3110, 3120, 3610, 4140, 4150; Office Administration 4510, 4540; Real Estate 2610, 3610, 3630, 4110, 4120, 4130; Statistics 2100; Transportation 3115, 4720.

Third Year
Architecture Design Lab Elective
Controlled Elective
Architecture 4029

Fourth Year
Architecture 4710, 3015, 4702
Control Electives
Electives
Fourth Year
Architecture Design Lab Elective
Control Electives
Electives
Electives


2005 Historical Studies II (4) Concentrated examination of development of twentieth-century design architectural buildings and products as a creative or constructive force towards modern design. Emergence of post-industrial era and contemporary design.


2014 Analytical Studies II (4) Introduction to basic research methods and to environmental problem-solving: information and skills necessary for conducting original research, manipulating and displaying (communicating) a wealth of diverse data for research and evaluation purposes. Course objective is to equip students with concepts and techniques to utilize electronic data processing technologies as a research tool.


2101 Pre-modern Survey I (4) Classical Tradition in architecture: Greek and Roman Architecture. Renaissance and Neo-classical revivals.

2102 Pre-modern Survey II (4) Medieval and Byzantine Architecture.

3011 Architectural Design Lab I (8) Controlled exercises designed to demonstrate integration and application of design theory and methodologies into design practice. Exercises directed to specified architectural issues such as site analysis, and integration of multiple complex architectural systems into comprehensive architectural resolutions.

3012 Architectural Design Lab II (8) Experimental exercises designed to demonstrate integration and application of design theory and methodologies into a creative design process. Exercises directed to aspects of architectural issues such as site analysis and planning, facility programming and program analysis. Understanding of multiple complex architectural systems into comprehensive architectural resolutions.

3013 Professional Practice I (4) Survey of legal responsibilities of architect in servicing contractual arrangements; contract documents, contract administration, codes and zoning regulations, liability and insurance forms in building delivery. Prereq: Third-year standing.

3014 Professional Practice II (4) Principles and methods of economics and management; project production and management, costs and analysis, budgeting, programming and construction management. Prereq: 3013.

3015 Service Practicum (16) Employment for one quarter in office of a registered architect or other projects approved by the school. Prereq: 3011 and 3012.

3016 American Architecture (4) Architecture in United States since 1607; medieval, Neo-classical, and Greek Revival traditions; eclecticism.

3017 History of the City (4) Evolution of town planning theories, modern theory, city of today and tomorrow.

3101 Oriental Survey (4) Architecture of non-Western tradition.

3113 Contemporary Architecture (4) Styles and theories from 1865 to present; design and technology; definition of architecture.

3115 Latin American Survey (4) Native and colonial architecture in Central and South America.

3120 Indigenous Traditions (4) Vernacular building traditions in non-European civilizations.

3125-26 History of Architectural Technology I, II (4, 4) History of construction techniques, hardware, materials and systems; I: before 1850, II: 1850 to present.

3130 History of Architectural Theory (4) Philosophies of science, the emergence of technology, and theories of design since 1500.

3135 Tennessee Architecture (4) Immigrant traditions, regional developments, national styles, contemporary architecture.

3137 Architecture Since 1454 (4) New directions and views of the future.

3140 Studies of Architectural Writing (4) Survey of European architectural writers from Pugin to the present; the relation between literature and design. May be repeated. Maximum credit, 8 hours.

3701-02 Application of Computer in Architecture (4, 4) Survey of computer applications in the architectural profession. Computer graphics; use of commercial programs and systems; program planning and implementation. Prereq: 3701 for 3702.

3712 Mathematical Models in Architecture (4) Illustrates and develops application of mathematical methods in architectural science. Survey and classification of mathematical models of problems in architecture, including numerical methods and use of digital computer.

3910 Research Methods for Designers (4) General introduction to variety of research methods and techniques available to designer, and appropriate for uncovering basic user requirements during design process. Prereq: 2000.

3920 Environmental Design Education: Problems, Practice and Structures (4) Focus directed at suggesting existing models of learning, educational taxonomies, curricula goals, objectives and implementation formats, and methods of program evaluation. Role of existing architectural professional practice and its relation to design education explored. Required for teaching assistants in architecture. Prereq: Consent of instructor.

3930 Behavioral Approaches to Environmental Design: An Approach Of Designing for the Built Environment (4) Course focuses on the design and evolution of human behavior. Particular emphasis will be placed on the following issues: human development, learning, adaptation, stress and satisfaction, recreation behavior, and life-cycle functions. Studio projects will explore the design of environments for children and environmental support of various types of physical disabilities for people of all ages. Two credits for lecture and four credits for lab. Prereq: Consent of instructor.

3940 Behavioral Approaches to the Design of Prosthetic Environments (6) Many standard features of public buildings are unsuitable to the everyday functioning of individuals with various types of physical disability; study of architectural barriers in relation to the physically handicapped constitutes the course lecture content. Studio projects explore design of barrier-free environmental features and design of disability-specific environments and behavioral supports. Two credits for lecture and four credits for lab. Prereq: 3930 for non-architecture students.

4110 Aesthetics in Architecture (4) Architecture among the arts; theory and philosophy of space, imagination, design and materials.

4115 Advanced Research Methods in Architectural History (4)

4120 Treatises (4) Vitruvius; Renaissance and Neo-classical treatises.

4125 Eastern European Architecture (4) Twentieth-century architecture in Russia, Czechoslovakia, Poland, Hungary, East Germany, Rumania, Bulgaria, Yugoslavia.

4130 Seminar in Medieval Architecture (4)


4137 Forms of Utopia (4) Ideas, spaces, and places; proposals and programs which have formed Utopian tradition; successes and failures of its architectural forms.

4140 Criticism Seminar (4) Theories, function, and techniques of architectural criticism.

4150 Advanced Reading (4) Advanced studies in special topics of architectural history.

4160 Architects in Social Criticism (4) Writings which illustrate technological, political, and anthropological assumptions of some 19th and 20th-century architects.

4170 Introduction to Preservation and Restoration (4) History and theory of restoration and preservation.

4175 Technology of Preservation (4) History of technology and materials, methods analysis and dating, techniques of preservation.

4185 Recording Historic Buildings (4) Techniques for drawing and documenting historic architecture.

4185 Contemporary Preservation Practice (4) History and theory of contemporary practice, preservation law.

4311 Historic Preservation Laboratory (8) Directed studies for building of historic significance. Techniques of preservation; research of historic methods of construction; and studies of viable uses. Rehaibilitation, restoration, conservation and public uses. May be repeated. Maximum credit, 16 hours.

4312 Foreign Studies Laboratory (16) Travel, research and laboratory projects conducted in various locations abroad. The programs may include service to lesser developed countries; reseach and design project related to program locations; research elements and criteria by distinguished individuals in the host country. Programs will vary.
4313 Media Laboratory (8) Special projects related to journalism, film making, exhibitions, public relations and other media and media applications under the direction of faculty members. May be repeated. Maximum credit, 16 hours.

4320 Introduction to Site Planning (8) Analysis of site form and ecology, environmental assessment, social and psychological aspects of site location and development, study of movement systems, program development, site design, including location, arrangement of streets and utilities; nautical site management and development.

4321-22-23 Macro Studies Laboratory I, II, III (8, 8, 8) Design studies of a large scale and complex nature with emphasis on reinforcing application of architectural design process and introducing principles and techniques used in urban and regional design and planning process. Prereq: 4320.

4330 Architecture Research Lab (8) Research projects on specific architectural subjects under the direction of faculty members.

4331-32-33 Micro Studies Laboratory I, II, III (8, 8, 8, 8) Series of design exercises to demonstrate range of human response to varied composition of micro environmental elements and systems.

4340 Independent Studies Lab (1-8) Individual architectural related projects under direction of faculty members. Credit adjusted to number of problems of effort. May be repeated. Maximum credit, 24 hours.

4350 Visiting Lecturers Laboratory (8) Architectural or related projects under direction of visiting lecturers. Nature of project to be determined by visiting lecturer. May be repeated. Maximum credit, 16 hours.

4351 Building Laboratory (8) Design and construction under the direction of faculty member of small scale building project for a public service agency or organization. Work includes client program, design, cost and construction process and materials specification and construction.

4352 Architectural Service Laboratory (8) Off-campus studies conducted under direction of architect or related professional on the staff member of public service organization or agencies of government. Subject of study varies but is directly related to problem-solving process.

4353 Development Laboratory (8) Directed studies in development of real property. Studies of use feasibility, economics, finance and marketability, environmental impact, social considerations and consequences.

4360 Remote Centers Laboratory (6) Program extending to various remote locations in the country and under various tenants.

4370 Architecture-Engineering Laboratory (8) Directed research application in new structural concepts. Architectural projects of large scale and complex nature with emphasis on the engineering systems considering codes, economics, urban design, utility services, structural considerations and construction.

4390 Interdisciplinary Laboratory (8) Action-oriented joint studies laboratory in environmentally-related problems utilizing interdisciplinary resources and undertaken by students and faculty both in and out of the School of Architecture.

4501 Management Design I (8) Using the lab situation and project simulation, study aspects of project management and construction management, the process of making decisions and the understanding of their ramifications; the concept of decisions, design and the process of delivery is main theme.

4502 Administrative Design I (8) Lab simulation of office experience in project planning and control, programming and preparation of contract documents.

4503 Management Design II (8) Advanced work in lab situation of the management aspects of architecture. Use of computer simulation of an office situation is conducted in the lab. Prereq: 4501.

4504 Administrative Design II (8) Lab simulation of project with emphasis on production, specifications, estimating, materials, and codes. Prereq: 4502.

4510 Project Management (4) Principles, methods, and application of Project Management to the total building process. Project manager, his role, responsibility, studies of activities investigated through case studies, job history reviews, and project simulation.

4515 Construction Management (4) Principles, methods, and application of Construction Management to the total building process. Project manager, his function, responsibilities, and activities investigated through case studies, job history reviews, and project simulation.

4520 Professional Services (4) Marketing of architectural practice by study of cases, theories, public relations procedures and understanding sales of architectural services, both basic and comprehensive.

4525 Personnel Relations (4) History of practice of architecture emphasizing personnel policies, theories of personnel relations, benefits, and unionism.

4530 Contract Documents (4) Analysis and study of contract documents by application of production techniques and procedures.

4531 Architectural Practice I (4) Analysis, survey, and study of the practice of architecture. Organization of practices and financial arrangement of office structure.

4532 Architectural Practice II (4) Analysis and study of contracts, insurance, taxes, and the legal position and liabilities of architect.

4535 Advanced Contracts (4) Study of contractual problems relating to architect, owner, contractor and sub-contractor.

4540 Design Process, Decision Determination (4) Principles and theories of making decisions in relation to scheduling of architectural activities during building process.

4545 Programming (4) Theories and procedures for writing programs emphasizing computer application and research and development.

4550 Codes and Zoning (4) Theory, review, and research of city, county, state, regional, and national codes and zoning. History and development of fire safety and building codes; history and development of zoning emphasizing architect's responsibility as related to specific application.

4555 Cost Analysis (4) Methods and theories of estimating project cost and building cost with reference to present techniques. Research in new techniques of cost analysis.

4560 Specifications (4) Theory, analysis, and methods of specification for use in design and development of research of specifications.

4565 Supervision (4) Theories, methods and site study of job inspection during construction phase and construction administration.

4701-02 Contract Documents/Working Drawings (8, 8) Central role of contract documents in practice of architecture or engineering. Preparing and presentation of detailed working drawings, specifications and contract documents for typical project. Prereq: Consent of instructor.


4711-12 Structural Design I, II (4, 4) Provides understanding of behavior, analysis and design of basic building structures. Structural and constructional aspects of building, including the structural design of building in steel, concrete, masonry and timber to satisfy loading and building code requirements. Prereq: 2013 or equivalent.

4715 Construction Economics (4) Construction economics of small, medium and large projects. Interest, annuities, sinking funds; depreciation and replacement considerations; amortization; real estate investment and speculation; syndicate loans, purchasing power and liquidity.


4721-22 Advanced Architectural Structures (4, 4) Philosophy of structural design in relation to material purpose and form. Advance mathematical and experimental analysis of structures, including use of computer programs. Prereq: 3702 or equivalent.

4725-26-27 Structural Innovation and Design Research Lab (4-8, 4-8, 4-8) Theory and experimental testing of building design utilizing innovative structural configuration and techniques. Basic structural concepts, space and form properties, and economic factors such as systems costs, configurations, and materials and material optimization are emphasized. Students' work will involve prototyping of innovative systems. Offered for 4th and 5th-year students at the end of 3rd-year standing with permission of instructor.

4731-32 Earthquake Resistant Structures (4, 4) Analysis and design of structures to resist earthquake forces. Emphasis will be on investigation if single degree structural systems. Resonance and dampening. Introduction to dynamic analysis of structures. Instrumentation and structural response. Frame and shear wall behavior. Ground-Structure interaction. Prereq: Consent of instructor.


4735 Advanced Design of Concrete Buildings (4) Precast and on-site concrete construction and maintenance, foundations, floor and wall systems. Domes and shell roofs. Prereq: 3702 or equivalent.


4741 System Theory, History of Methodology (4) Investigation of general system theory and system research methodology. Overview and analysis of systems on an international historical basis.

4742 Types of Systems (4) Comprehensive examination of systems types, concepts and ap- proaches. Comparative analysis of unit assemblies, components, subassemblies, boxes and self-help systems. Exploration of all building types, housing, schools, garages, homes, dormitories, hospitals, etc., and their cultural ramifications. Prereq: 4741.


4751 Structural and Architectural Innovations (4) Exploration of new concepts, advances and inno- vative approaches to design, architecture and structural systems as they effect design drawings, detailing, contract documents, and specifications. Study
4752 Mechanical Innovations (4) New technological developments and techniques for heating, ventilating air conditioning, plumbing and electrical systems. Concepts of mechanical components at factory, and mechanical connections at the site, their application and use Coreq: 4751.

4753 Construction and Manufacturing Innovations (4) Comprehensive analysis of new technology and innovations in manufacturing and construction with emphasis on transportation, erection, distribution, precasting equipment, unions, codes, costs, regulatory agencies, estimates, shop drawings, factory assembly lines and site construction methods. Understanding of industrial engineering, construction management, computers, CPM, fast-tracking, prefabrication, and industrialization. Prereq: 4751 and 4752.

4761-62 Systems Design Laboratory I, II (8, 8) A vertical multi-disciplinary design and research system laboratory and studio, integrating simultaneously, undergraduates, graduates, professionals, intra-professionals, and extra-professionals. Total systems ("soft"") and "hard"ware" approach to individual and group problems. 4761: Defining, researching, probing and analyzing the problem and the system process. Application of new ideas, approaches and concepts to design and systems. 4762: Experimenting with new prototype forms, architecturally and with design systems, three dimensionally and in mock-ups, using new materials and techniques. Coordination of the total systems process.

4785 Thesis/Systems Laboratory (16) Independent problem undertaken by individual or groups which makes a significant contribution to the art and/or science of systems building, design and architecture. Prereq: Approval of the systems building coordinator and the completion of the systems building core.

4771-72-73 Advanced Mechanical and Electrical Systems (4, 4, 4) In-depth study of analysis and design of heating, ventilating air-conditioning systems; lighting systems, and electrical distribution in buildings. Prereq: 2010.


4780 Fire Protection in Structures (4) Fire protection aspects of buildings and their occupants. Characteristics of fires; fire codes; building evacuation. Sprinkler and other fire protection systems; emergency power and lighting; fire resistant materials and construction.

4785 Sound, Noise and Vibration Control in Building (4) Proven sound and vibration control techniques. Specific methods, procedures, and materials most effective in solving acoustic problems. Prereq: Audio & Speech Path. 4750 or Mechanical Engr. 4220.

4910 Architectural Photography (4) Use of photography as a design, research and presentation medium. Emphasis on architectural photography using black and white media.

4920 Advanced Architectural Photography (4) Application of architectural photography techniques with emphasis on color printing and processing. Prereq: Consent of instructor.