ARCH 510 Religious Space (3) - This course is intended to develop a student's ability to think critically about the role of materials in both the representation and construction of architectural ideas. It is intended to aid students in their approach to the making of architecture by providing them with the mental equipment necessary for projecting new material ideas about construction and representation. To do this, the course reflects upon the history and theory of the material imagination in architecture, from both an empirical, philosophical, and historical perspective.

ARCH 513A Game Design & Architecture (3) – The purpose or goals of the course are to introduce a user-centric field of design to architecture students and help them understand the parallels it holds with traditional architectural design. The assignments and projects in the course will allow them to design a project based solely on their architectural knowledge, then later allow them to re-design it according to psychological and experiential principles of game design. It will also allow them to explore a new and popular medium and teach them to create games of their own.

ARCH 514 Basic Digital Visualization (3) – This course will provide an introduction to the digital medium in architecture and its different tools. The focus of this course will be on why, how and what tools to use so students are able to explore the medium for future studio classes, presentations and portfolios. Also, there will be an emphasis on 3D modeling to introduce the 3D space and understand its potential. Digital architecture is aimed at students with beginner-to-intermediate computer skills.

ARCH 526A Low Rise Framing Systems (3) - This course will explore wood Stud Bearing & Non Bearing Wall Systems including Floor & Roof Systems, manufactured Structural Wood Products, and Metal Stud Bearing & Non Bearing Wall Systems including “C” Joist Floor & Roof Systems and Heavy Timber Framing.

ARCH 533 Material Matters (3) - This course will engage students in a rigorous investigation of emergent materials. Students will research a number of new and innovative materials in an attempt to develop new architectural implementations. Any given material can be pushed beyond its current limitations only through an understanding of its properties, and the process through which it is produced. Material investigations will be reinforced by required readings, guest lectures, and class discussions.

ARCH 535 Design-Build Practicum (3) – The course will be the preparation of a comprehensive Building Information Model (BIM) which will illustrate a virtual construction of the shelter and all of its systems.

ARCH 550 Spirit of Place (3) – A design/build project where students collaborate to develop and construct a project in a remote and inspiring site based on the spirit of the site, the users, and a metaphorical design intention. Projects have included work in the Canadian wilderness, the Amazon, and the mountains of Southern California.

ARCH 554 Oriental Landscape and Culture (3) - Investigates the unique dynamic characteristics of Chinese, Japanese, and Indian architecture, landscape, and urbanism in comparison with western design. Discovery of underlying aspects of space and spirit through the study of great architects and poets. Explores the roles of metaphor, religion, form, materials, light, proportion, and nature in culture and design. Limited to upper level students.

ARCH 566 Mixed Use Development (3) - Examines the concept of mixed use developments; reviews the special planning, design, economic, and social considerations that are involved; and analyzes critical aspects such as locational factors, traffic, parking, and pedestrian linkages.
ARCH 567 Hist. & Theory of Urban Form (3) - The development of urban design is viewed through both theories of planning and their development over time with emphasis placed on the role of contextual design in the development of the city. An examination of urban form and the city beginning with the Greek Polis to rise of the national state and the baroque capital cities, the industrial revolution and the impact of technology and transport in the creation of the great metropolises.

ARCH 570 - Drawing as Visualization (3) - This course is three fold, free hand sketching, mechanical drawing and portfolio layout with emphasis on freehand sketching. Upper division undergraduate students and graduate students.

ARCH 571 Advanced Visual Tools (3) – Design around spaces based on 3D modeling, mapping, rendering and animating through computers at an advanced level. This course emphasizes the presentation arrangement of the student's projects, offering the opportunity to learn how to produce interactive architectural compositions. Pre-requisite: Arch 261 and basic 3D modeling.

ARCH 573 Special Topic in Arch. Theory (3) - From Vitruvius to Brunelleschi, from Le Corbusier to Frank Gehry, this seminar explores the changing image to the architect and his/her perceived role in the society. After a thorough investigation of key architectural figures from the Classical Antiquity to the pre-modern era, the seminar focuses on some of the key shapers of twentieth-century architectural discourses, such as Le Corbusier, Walter Gropius, Frank Lloyd Wright, Hasan Fathy, Philip Johnson, Louis Kahn, Kevin Lynch, Jane Jacobs, Bernard Rudofsky, Robert Venturi, Frank Gehry, Peter Eisenman, Daniel Libeskind, Zaha Hadid and Samuel Mockbee. One of the central tasks of the seminar would be to investigate the crucial yet ambivalent relationship between the image of the architect and interpretive methodologies that we employ to understand buildings.

ARCH 585 Const. Management for Architecture (3) – Lecture - Overview of issues and practices in the field of professional construction management. This course examines the process of product delivery in the building industry from pre-design concerns through completion from the perspectives of Owner, A/E and GC. Develops skills and techniques in the use of construction logic diagrams (CPM critical path method) to examine and track the allocation of human, financial and material resources in a construction process.

ARCH 586 Public City, Private Bldg. (3) - This course deals with the roles that the public and private sectors play in developing, maintaining and advancing “urbis” and “polis” in today’s cultures. Special attention will be paid to the façade as the point where public and private realms come together. Course work will include lectures, selected readings and a number of design studies to be presented by students.

ARCH 587 Real Estate Development (3) – The practice of land development and architecture in the contemporary world of commercial and residential real estate development; understanding the role of the architect as part of the real estate development team, meet with developers and architects in the Washington, DC region who are on the cutting edge of real estate development. Learn market analysis methods and techniques to evaluate project feasibility, which determine a go/no go decision by developers on architectural projects.

ARCH 612 Introduction to Parametric Modeling (3) – This course will introduce students to Parametric Modeling using SolidWorks software. Parametric Modeling allows designers to make 3D virtual models which are associative and linked. Therefore is one change is made the entire model adjusts accordingly. Parametric modeling is becoming the preferred modeling technique for architects and industrial designers who work with digital fabrication technologies, such as Frank Ghery and Karim Rashid.
ARCH 617 Real Estate Finance (3) - This course provides an in-depth understanding of the financial aspects of real estate development. Topics covered include revenue projections and financial analysis to determine profitability, the operation of capital markets and analysis for real estate equity investment.

ARCH 620 Introduction to Shape Grammars (3) - This subject introduces a computational or generative approach to design using shape grammars. Shape grammars were one of the first, and remain one of the few, computational design systems that are wholly visual, rather than textural or numerical. They provide a powerful means for design analysis and synthesis, for design exploration, for generating novel design solutions, and understanding design language. Rules are developed to compose and describe architectural and other designs. The class covers topics such as shapes, shape arithmetic, symmetry, spatial relations, shape computations, and shape grammars. It focuses on the application of shape grammars in design language research, design analysis and creative design via computation. This class teaches shape grammars fundamentals through hands-on exercises and discusses issues related to practical applications of shape grammars. The basics of shape grammars will be introduced through lectures and through in-class, by hand exercises with simple abstract shape grammars. A range of applications from stylistic analysis to creative design will be explored. Computer programs for shape grammars will be presented. Readings will supplement lectures.

ARCH 626 Materials & Assemblies (3) – Explores the principal criteria that determine the nature of building materials and the degree to which they can be considered ‘sustainable’. The criteria considered will be: carbon dioxide emissions; primary energy consumption; global warming potential; weighted resource use; air and water pollution indices; life cycle analysis. Also addresses the assembly of building components using low impact materials and technologies.

ARCH 630 Arch. Principles in Development (3) – Principles of architecture in an Urban context from the perspective of private real estate development will be explored through lectures, site visits to projects in the area, reading and individual student analysis. New architectural typologies locally, in other US markets and abroad. Lectures and site visits will cover relevant topics such as overall architecture and planning principles, retail and site selection, traffic, market preferences, marketing, and case studies. Students will analyze and diagram the key ideas for selected developments, including sketches, diagrams, written outline of projects' key ideas, strengths and weaknesses. The goal is to demonstrate critical thinking through review of case study of developments.

ARCH 634 Ethics & Scales of Sustainable (3) – This course will examine concepts of sustainability as it relates to social structures as well as architecture and the built environment; instructors from three separate disciplines (sociology architecture & planning) will discuss how architecture and city planning can inform and be informed by social concerns as well as how architecture can accommodate and respect individual and collective needs.

ARCH 641 Planning Techniques I (3) – This course will provide students with an understanding of the various analytical tools of the planning profession. Topics will include probability statistics; methods that anticipate and envision future changes to society and the built environment, such as knowledge of forecasts, risk assessment, futures scenarios and other tools for creating plan alternatives; modeling and simulation; qualitative and quantitative research design; rational planning models; Geographic Information Systems (GIS); and other decision making tools.

ARCH 642 Integrated Coastal Management (3) – This course will explore planning principles and practices to address coastal growth and development using ICM. Thematic modules exploring and illustrating different aspects of coastal management will be explored through cross cutting domains of ecosystems services, resource use and governance. Through an examination of the coastal ecosystems services, students will examine the social, economic and governance frameworks that have been used to manage coastal resources. Policies and tools used to address growth management will form the basis of understanding the evolution of principles for
coastal sustainability. The course will place an emphasis on the application of best practice that promotes healthy coastal ecosystems.

**ARCH 643 Intro. to Geo Info Systems (3)** – Provides students with in-depth and hands-on training in GIS applications for city and regional planning.

**ARCH 737 Systems & Simulation II (3)** – The objective of this course is to investigate the full potential of employing active strategies and technologies in the design of low-rise as well as high-rise sustainable buildings; these strategies will be tested and evaluated using advanced software tools.

### Outside Courses

Students may request that courses in Schools other than Architecture & Planning be considered for program elective credit. This request is evaluated on a case-by-case basis and is extremely restrictive. Courses which have been accepted for program electives in the past have included:

**CE 587 Estimating and Bidding** – In-depth analysis of the procedures for developing a detailed estimate of the general contractor and sub-contractor for construction of the building projects. Examination of external sources that impact on the estimated costs. Determining monitoring procedures for control of costs by subcontractors, and suppliers. Estimating of budgets, internal cost control and tax liabilities. Study of federal regulations. Quantitative estimates included in class projects.

**CE 588 – Construction Operational Management** – Introduces mid-level administration and management techniques in the construction industry to maximize the understanding and participation of new managers in management procedures. Major managerial functions including planning, organizing, staffing, directing, and controlling. Specialized issues include leadership, motivation, communication, contract documents, construction schedules, change orders, claims, ethics, cost controls, interrelation within a corporate structure, working relationships with legal, accounting and other construction related professions.

**CLAS 533 Western Medieval Art and Architecture** – Surveys of art and architecture in the Middle Ages in Western Europe, from before the age of Charlemagne through the Gothic periods, and from England to the borders of the Byzantine and Islamic worlds. Slide lectures, readings, and discussions consider secular and vernacular art forms in addition to art created for the use and glory of the Christian church.