ARC - ARCHITECTURE

ARC 121 Architectural Graphics I
An introduction to the fundamentals of drafting for architectural construction, the course is primarily directed at developing construction documentation skills with a review of light frame construction materials and methods. The course begins with instruction in the application of basic hand sketching and computer-aided drafting skills and the fundamental principles of graphic delineation. It leads students through the development of a set of residential construction documents. Included is an overview of reprographic techniques for the use of related office equipment such as the Diazo whiteprinter and electrostatic copier.
Upon successful completion of this course, students should be able to:
Demonstrate familiarity with reprographic techniques for basic office equipment and processes used in construction documentation.
Select appropriate light frame, residential construction material and assemblies in response to a schematic architectural design.
Solve design development problems, given a preliminary design concept, involving issues of space function and layout, construction detail and aesthetics.
Prepare graphic documentation, using computer assisted drafting, to communicate a residential design concept to the contractor.
Prerequisite: TCS 100 and TCC 121* (*May be taken concurrently).
3 Credits2 Weekly Lecture Hours
2 Weekly Lab Hours

ARC 215 Architectural Design Concepts
This course presents fundamentals of the architectural design process and the graphic techniques, both manual sketching and CADD, for creating and presenting design ideas including a review of the types of problems and concerns that characterize design decisions. The course emphasizes the need to conceive and manipulate architecture as space. Architectural programming is introduced along with conceptual diagramming techniques and development of preliminary plans. Design projects develop the ability to organize space in two- and three-dimensional contexts. Selected technical topics such as stairway design, complex roof intersections and egress requirements may be introduced.
Upon successful completion of this course, students should be able to:
Select and manipulate, manually and with CADD, various drawing types that are used in analyzing and creating design solutions.
Recognize and characterize spatial elements and concepts.
Develop and utilize a set of space definitions and an architectural program.
Analyze and document site opportunities and constraints.
Develop a preliminary design concept from an organizational diagram.
Complete a design development from a preliminary concept.
Calculate or apply standard design performance measures.
Prerequisite: ARC 121.
3 Credits2 Weekly Lecture Hours
2 Weekly Lab Hours

ARC 221 Architectural Graphics II
An advanced-level course in the graphic documentation of construction concepts using manual sketching and CADD techniques. Emphasis is placed on the development of working drawings for commercial buildings and site construction. Principles of materials and methods of construction are integrated into a project where the student is required to derive and document solutions to site development, structural, building envelope and finish- material systems. NOTE: Prerequisites: Prior technical drawing experience and a basic knowledge of materials and methods of heavy construction.
Upon successful completion of this course, students should be able to:
Make preliminary selection and sizing of structural components from standard load tables.
Apply basic building code requirements to schematic design concepts.
Develop details for major architectural systems and components.
Analyze the overall design and details to accommodate the needs of working loads, weather, thermal shock, constructability, working tolerances and occupancy use.
Complete a set of construction documents for a modest commercial structure using CADD systems.
Prerequisite: ARC 215 and TCS 111.
3 Credits2 Weekly Lecture Hours
2 Weekly Lab Hours

ARC 226 Mechanical and Electrical Systems in Buildings
This course presents a quantitative and qualitative survey of lighting, power distribution and heating, ventilating and cooling systems in buildings. Emphasis is placed on considering the impact of design decisions on life cycle costs and operations issues.
Upon successful completion of this course, students should be able to:
Discuss the various configurations of equipment used in hot air, hot water and steam heating systems and their functions.
Show how domestic hot-water systems function utilizing alternative fuels.
Explain how electric power and lighting systems are distributed through a building.
Determine, from architectural drawings, the U factor of a building.
Calculate heating requirements for homes in various geographical locations.
Determine, from architectural drawings and specifications, the type of heating and/or air conditioning system specified.
Discuss the role of insulation and other envelope design elements in energy management.
Identify structural envelope leaks and specify means for correcting them.
Discuss "Passive" and "Active" solar energy collection system design theory and relate them to specific problems.
Prerequisite: TCS 112 and PHY 107.
3 Credits3 Weekly Lecture Hours