What is the Bachelor of Science in Architectural Engineering Technology?

The Architectural Engineering Technology (ARC) program synthesizes the aesthetic, technical, and functional elements of building design and construction. The academic thrust of the program is applied technology. The students in this program will be educated in the process of building design from concept to completion.

The purpose of the Architectural Engineering Technology program is to prepare students for careers in architectural, structural, and mechanical aspects of the design and construction of buildings. The students will be educated in the process of carrying design projects from schematics through construction. In addition to preparing students for meaningful and rewarding careers at the Bachelor's level, the program will also prepare students for successful entry in the professional and non-professional graduate programs in architecture and other areas.

Program Objectives:

- Graduates will have broad background in one or more areas of building design, site, planning, construction, project management and technology. Graduates will assume leadership positions in architectural and building construction industry.
- Graduates will be critical thinkers and problem solvers in industry.
- Graduates will be effective communicators in professional settings.
- Graduates will adapt state of the art technologies and processes in industry.
- Graduates will pursue continuing education and professional development opportunities.

This program is accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org

Potential Employment/Employment Demand

Employment in the architectural field is strongly tied to the level of local construction, particularly new residential structure such as office buildings, shopping centers, schools and health care facilities. The boom in new construction in the region is expected to continue for a considerable time in the future. As the stock of buildings age, demand for remodeling and repair work should also grow. The needed renovations and rehabilitation of old buildings is expected to provide many job opportunities according to the Occupational Outlook Handbook. Also according to the Occupational Outlook Handbook, employment in this field will grow as fast as the average for all occupations during this period.

Student Outcomes: Architectural Engineering Technology

- An ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities;
- An ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies;
- An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes;
- An ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives;
- An ability to function effectively as a member or leader on a technical team;
- An ability to identify, analyze, and solve broadly-defined engineering technology problems;
- An ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature;
- An understanding of the need for and an ability to engage in self-directed continuing professional development;
- An understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity;
- A knowledge of the impact of engineering technology solutions in a social and global context; and
- A commitment to quality, timeliness, and continuous improvement.

Curriculum Summary

Degree Type: BS
Total Required Credits: 130

For additional information:
Dr. Amishba Bandyopadhyay, Chair
Architecture and Construction Management Department
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631-420-2034

School of Engineering Technology
Dean’s Office: 631-420-2115
Office of Admissions: 631-420-2200

Admission to Farmingdale State College - State University of New York is based on the qualifications of the applicant without regard to age, sex, marital or military status, race, color, creed, religion, national origin, disability or sexual orientation.

Program of Study

Liberal Arts and Sciences (61 credits)
EGL 101 Composition I: College Writing (GE)......................... 3
EGL 102 Composition II: Writing About Literature............... 3
EGL 310 Technical Writing (GE)................................. 3
MTH 129 Pre-Calculus with Applications (GE)....................... 4
MTH 130 Calculus with Applications (GE)......................... 4
MTH 236 Calculus II with Applications.............................. 3
MTH Electives (above MTH 236)................................... 6
PHY 135 College Physics I (GE).................................. 4
PHY 136 College Physics II........................................ 4
Science/MTH Elective (upper level)................................. 3
ECO 321 Engineering Economics................................ 3
The Arts (GE).................................................................. 3
Social & Behavioral Science (GE)................................. 3
Humanities (GE)......................................................... 3
American/Other World/Western Civilization History (GE)........ 3
Foreign Language (GE)................................................. 3
Liberal Arts & Sciences electives................................. 6

Please refer to the General Education and Writing Intensive requirement sections of the catalog and consult with your academic advisor to ensure that graduation requirements are satisfied. *in consultation with department advisor.

Required: Architectural Engineering Technology (69 credits)
CON 101 Introduction to Technology & Applied Programming........ 2
CON 103 Surveying.................................................. 3
CON 106 Statics......................................................... 3
CON 111 Graphics I................................................... 2
CON 121 Graphics II.................................................. 2
CON 161 Materials & Methods of Construction I...................... 3
CON 162 Materials & Methods of Construction II.................... 3
CON 207 Elements of Strength of Materials.......................... 3
ARC 251 Architectural Design I................................. 3
ARC 253 Architectural Design II................................. 3
ARC 263 Mechanical, Electrical, Plumbing & Energy Systems in Buildings................................. 3
ARC 272 Construction Design................................. 3
CON 302 Soils, Foundations & Earth Structures..................... 3
CON 357 Quantity Surveying and Costing.......................... 3
ARC 350W Architectural Theory & Design Factors................ 3
CON 361 Governmental Building & Environment Codes & Regulations........................................ 3
ARC 362 History of Western Architecture.......................... 3
ARC 364 Site Design and Construction.............................. 3
ARC 366 Architectural Design III................................. 3
CON 401W Construction Project Mgmt. & Scheduling.......... 3
CON 403 Structures I (Analysis & Concrete)...................... 3
ARC 404 Structures II (Steel & Wood).......................... 3
ARC 446 Architectural Design IV................................. 3
ARC 495 Capstone Project........................................ 3
Total Credits.................................................................. 130

Farmingdale State College - State University of New York

Farmingdale State College  2350 Broadhollow Rd, Farmingdale, NY 11735  Tel 631-420-2000  www.farmingdale.edu
CON 101 Introduction to Technology and Applied Programming
A survey of technological concepts, terminology and a brief review of mathematical concepts. This course introduces concepts of vector and its applications. It introduces hands-on programming and its applications, and reviews problem-solving techniques for technological applications.
(1,2) Credits: 2

CON 103 Surveying
The development of skills in the use of the basic surveying instrument, level, transit, Tripod, and differential leveling and cross-sectioning, Azimuth, bearing and angle determination by repetition procedures. Angular closures, Stationing and stadia reduction of inclined sights, topographic mapping by transit stadia and plan table methods.
Prerequisite(s): CON 101
Corequisite(s): CON 103L
(2,3) Credits: 3

CON 106 Statics
This is a basic course in Statics. The main objective of this course is to provide the student with a basic understanding of the principles of statics. Topics such as resultant of a force, equilibrium of forces, moments, couples, analysis of simple trusses, centroids, center of gravity, moments of inertia and friction are covered in this course.
Prerequisite(s): MTH 129
(2,3) Credits: 3

CON 111 Graphics I
To develop student’s abilities in lettering, technical sketching, design and the use of drafting instruments. The fundamentals of orthographic projection and pictorial drawings develop the student’s abilities to visualize and describe objects and structures graphically.
(1,2) Credits: 2

CON 121 Graphics II
To continue the development of the graphic skills from Graphics I to include one and two point perspective drawings and the use of drafting instruments. Also included is an extensive use of computeraided drawing on AutoCad.
(1,2) Credits: 2

CON 161 Materials and Methods of Construction I
An introduction to the engineering properties and the uses of construction materials including soils, concrete, masonry, steel and wood. Classroom testing, demonstrations of several materials are included. Conventional construction systems are studied. The student is also given an orientation to the construction industry, the associated professions, and the varieties of employment available.
(3,0) Credits: 3

CON 162 Materials and Methods of Construction II
A continuation of Construction I aimed to include the study of architectural properties of selected materials, methods of construction, and building components. Classroom testing, technical problem solving using quantitative and graphic analysis of specific building construction systems.
Prerequisite(s): CON 161
(3,0) Credits: 3

CON 207 Elements of Strength of Materials
Introduces to the concepts of stress, strain, bending and shear stresses, including elasticity, shear and moment diagrams for beams, moment of inertia of unsymmetrical sections, thermal and combined stresses. Laboratory demonstration of experiments and testing equipment are included.
Prerequisite(s): CON 106 or MET 201
(1,2) Credits: 3

ARC 253 Architectural Design II
Prerequisite(s): Architectural Design I. Emphasis is placed on the process by which design decisions are made and the methods of analysis in context to the design. Course requirements include: structure, form and function, building in context, light and construction.
Prerequisite(s): ARC 251
(2,3) Credits: 3

ARC 263 Mechanical, Electrical, Plumbing and Energy Systems
An overview of mechanical, electrical and plumbing (MEP) aspects of buildings. Intended to develop students’ ability to analyze the energy requirements of buildings and various methods of energy conservation and thermal efficiency. Topics covered include heat transfer, ventilation, and systems for heating and cooling. Also included are water supply and wastewater treatments for buildings.
Prerequisite(s): CON 162
(3,0) Credits: 3

ARC 272 Construction Design
Construction Design is a technology-based design studio emphasizing a methodological approach to facility design. The development of building codes and programs will be used as a basis for the case studies of buildings. The integration of building code requirements, life safety, accessibility, building energy systems, structure, construction, and materials are central to effectively achieving design intent. Knowledge from Materials and Method of Construction I and II, Energy in Buildings and Graphics are applied to specific drawing assignments. A residential Type V building, and a commercial Type II or Type III construction, building project will be advanced resulting in a set of construction documents.
Prerequisite(s): ARC 263 and CON 121 or 162 and 261
(3,0) Credits: 3

CON 302 Soils, Foundations and Earth Structure
This course introduces soils mechanics, foundation and earth structure to the engineering technology students. It includes soil classification; soil properties; soil stresses, earth pressures, bearing capacity, slope stability. It also discusses principles of foundation engineering and design, retaining walls, etc. Laboratory experiments to test behavior of soils included.
Prerequisite(s): CON 207
Corequisite(s): CON 301L
(2,2) Credits: 3

CON 357 Quantity Surveying and Costing
This course focuses on fundamentals of quantity survey and costing of residential and commercial buildings. Quantitative aspects of materials from material drawings is covered in this course. Topics also covered range from site work, forms, concrete, metals and fasteners, forming and retaining walls, etc. Laboratory experiments to test behavior of soils included.
Prerequisite(s): CON 207
Corequisite(s): CON 302L
(2,2) Credits: 3

ARC 350W Architectural Theory and Design Factors (Writing Intensive)
This course will examine a series of architectural design projects that attempts to explain the design decisions that resulted in the built environment. Topics include: historical theory, form and aesthetics; architectural technology; the urban, natural and human environment; economic, zoning and code factors; the social and behavioral implications of architecture, the design process itself and the architectural profession. This is a writing-intensive course.
Prerequisite(s): ARC 253 and (ARC 362 or CON 362) and EGL 101 with a C or higher.
(3,0) Credits: 3

CON 361 Government Building, Environmental Codes and Regulations
This course studies the concepts in preparation of an architectural design project that applies to the impact statement. It also reviews state and local building and land use controls. Attention will be given to governmental regulations required to obtain building permits for particular construction projects.
Prerequisite(s): CON 162
(3,0) Credits: 3

ARC 362 History Western Architecture
A study of the development of building design through ancient Egyptians and Greeks through to the major historical periods to the present. Emphasis is on the evolution of the forms derived from indigenous traditions over periods of time. Note: students completing this course may not receive credit for CON 362.
(3,0) Credits: 3

ARC 364 Site Design and Construction
This is an introduction to the utilization of engineering and architectural principles from concept through the construction techniques of sustainable site development. Site planning techniques, municipal land development requirements, zoning regulations, soil stabilization techniques, rainwater harvesting, stormwater management practices, and site construction details are applied to a site design project. Computer-aided programs in site design and survey data will be introduced.
Prerequisite(s): CON 103
(2,2) Credits: 3

ARC 366 Architectural Design III
Continuation of Architectural Design II. Emphasis is placed on the urban and natural environment. The role of aesthetics, symbols, and the use of historical elements in the making of places, spaces and communicating meaning are explored. Topics include: building on Main Street, the making of an urban space and a cemetery or park design.
Prerequisite(s): ARC 253
(3,3) Credits: 3

CON 401W Construction Project Management and Scheduling (Writing Intensive)
This course gives an in-depth introduction and orientation to construction project management. This includes professional construction management in practice and methods in professional construction management. Some of the areas this course will cover are: Estimating and Award, Application of Controls, Scheduling, Planning and Control of Operations and Resources, Procurement Quality Assurance, Safety, Health in Construction, Industrial Relations, Computer Applications included. This is a writing-intensive course.
Prerequisite(s): CON 162 and EGL 101 with a C or higher.
(3,0) Credits: 3

CON 403 Structures I
This course introduces fundamentals of structural analysis for beams, trusses, frames, etc. It includes reinforced concrete, as well as indeterminate structures. This course also introduces fundamentals of reinforced concrete design including strength design for beams, slabs, and two way slabs. Computer application included.
Prerequisite(s): CON 207
(3,0) Credits: 3

CON 404 Structures II
This course introduces fundamentals of structural steel design. This includes design of tension members, compression members, beams, columns, and various connections. The course also teaches the basic principles of wood design, which includes formwork design and frame construction. Computer application is included.
Prerequisite(s): CON 403
(3,0) Credits: 3

ARC 466 Architectural Design IV
This course is the culmination of the Architectural Design sequence. It includes the application of the principles of architectural design and includes elements of building systems, structural and construction details. The course is a senior capstone course that integrates principles of architectural design and includes elements of building systems, structural and site design, zoning, building codes, etc. on an actual site in the area. Students will present their final project to the faculty at the end of the semester.
Prerequisite(s): ARC 366
(2,3) Credits: 3

ARC 469 Design Capstone Project
This capstone course integrates several architectural and engineering design philosophies and methodologies into a comprehensive studio project. This course introduces very little new material; rather it is to synthesize knowledge learned in the following areas of design and analysis: architectural, structure, construction, site, energy (mechanical/electrical) and building systems and management. The course also teaches the basic principles of wood design, which includes formwork design and frame construction. Computer application is included.
Prerequisite(s): ARC 363, 466 and CON 404
(2,2) Credits: 3