

Architectural Technology

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PROGRAMS:

Architectural Technology/AAS/BTech

FACULTY:

Professors: Berensmann, Maldonado, Sperling
 Assoc Prof: Zagaroli
 Asst Profs: Bouratoglou, Edwards, Schneiderman, Steadham
 CLT: Baez

Associate in Applied Science in ARCHITECTURAL TECHNOLOGY

The Architectural Technology program, the only one of its kind in the CUNY system, educates students to assist the architect and perform at a high level in design, contract documents and the construction stages of a building project. The program familiarizes students with up-to-date architectural office practices and procedures including computer-aided design and drafting. Studio work gives the students the opportunity to develop their talents by participating in various architectural projects from inception to final drawings and models.

There is a four-year baccalaureate degree (BTech) program and a two-year associate degree (AAS) program. The BTech degree has an emphasis on restoration and renovation of existing New York City buildings. Students enrolled in the AAS degree may transfer directly into the bachelor of technology degree program at any time upon meeting the requirements or upon completion of the AAS degree program at City Tech. Graduates of the AAS degree program who want a strong emphasis in design may transfer to a five-year architectural college. Interested students should consult a departmental advisor before completing their second semester.

A partial listing of positions that graduates of this program will qualify for includes: architectural technician, CADD drafter, architectural renderer, architectural model maker, manufacturer's representative, assistant specifications writer, and clerk of the works. Employers of the graduates of these programs have included: Davis/Brody Architects, The Dormitory Authority of the State of New York, Gwathmey Siegel, HOK, Skidmore Owings & Merrill, Michael Lynn Associates, The Metropolitan Museum of Art, New York City Department of Parks, Robert A.M. Stern Architects, U.S. Government Corps of Engineers, Walker Group, Peter Brooks Associates (England), Heier & Monse Architects (Germany) and Christian Moreau Architects (France).

REQUIRED COURSES IN THE MAJOR		Credits
ARCH 1100/AR 100	Architectural Drawing I	2
ARCH 1111/AR 111	Architectural Foundation I	3
ARCH 1121/AR 121	History of Architectural Technology	2
ARCH 1140/AR 140	Materials in Architecture	2
ARCH 1200/AR 200	Architectural Drawing II	2
ARCH 1211/AR 211	Architectural Foundation II	2
ARCH 1240/AR 240	Methods of Construction in Architecture	2
ARCH 1250/AR 250	Site Planning	2
ARCH 1290/AR 290	Architectural CADD	2
ARCH 2300/AR 300	Architectural Drawing III	2
ARCH 2311/AR 311	Architectural Design III	3
ARCH 2321/AR 321	History of 20th Century Architecture	3
ARCH 2370/AR 370	Architectural Environmental Systems	3
ARCH 2400/AR 401	Architectural Drawing IV	3
ARCH 2411/AR 411	Architectural Design IV	3
ARCH 2480/AR 480	Principles of Stability in Structures	3
ARCH 2491/AR 491	Computer Generated Architectural Presentation Drawings	2
Subtotal		41
OTHER REQUIRED COURSES²		
ENG 1101/EG 101	English Composition I	3
MAT 1275/MA 275	Introduction to Mathematical Analysis ³	4
PHYS 1433/SC 433	Physics 1.2	4
ELECTIVE	Advisor Approved Elective or ADV 1100/AD 100, ADV 1113/AD 113 or MGT 3520/FM 520	3
COMM	Communications Choose One: ENG 1121/EG 121, SPE 1330/TS 330, SPE 1335/TS 335 or SPE 1340/TS 340	3
LAP	Literature/Aesthetics/Philosophy Choose One: ARTH 1103/HU 103 or PHIL 1101/PH 101	3
BS/SS	Behavioral Science/Social Science Choose One: HIS 1102/HI 102, PSY 1101/PS 101 or SOC 1101/SO 101	3
Subtotal		23
TOTAL CREDITS REQUIRED FOR THE DEGREE¹		64

¹ The BTech degree can be acquired either as a two-plus-two year program (AAS + BTech) or as a four-year bachelor's degree.

² See page 34 for detailed explanation of core required courses and categories.

³ Or higher level math course. Students without the requisite background for MAT 1275/MA 275 will be required to take a non-contributory MAT 1175/MA 175 in preparation.

Associate in Applied Science in ARCHITECTURAL TECHNOLOGY

Curriculum by Semester

The student will earn an associate in applied science degree (AAS) with a major in architectural technology upon completion of the courses listed (64 credits).

FIRST SEMESTER		Credits
ARCH 1100/AR 100	Architectural Drawing I	2
ARCH 1111/AR 111	Architectural Foundation I	3
ARCH 1121/AR 121	History of Architectural Technology	2
ARCH 1140/AR 140	Materials in Architecture	2
ENG 1101/EG 101	English Composition I	3
MAT 1275/MA 275	Introduction to Mathematical Analysis	4
Subtotal		16
SECOND SEMESTER		
ARCH 1200/AR 200	Architectural Drawing II	2
ARCH 1211/AR 211	Architectural Foundation II	2
ARCH 1240/AR 240	Methods of Construction in Architecture	2
ARCH 1250/AR 250	Site Planning	2
ARCH 1290/AR 290	Architectural CADD	2
BS/SS ¹	Behavioral Science/Social Science	3
COMM ¹	Communications Elective	3
Subtotal		16
THIRD SEMESTER		
ARCH 2300/AR 300	Architectural Drawing III	2
ARCH 2311/AR 311	Architectural Design III	3
ARCH 2321/AR 321	History of 20th Century Architecture	3
ARCH 2370/AR 370	Architectural Environmental Systems	3
PHYS 1433/SC 433	Physics 1.2	4
SC 433L	Physics 1.2 Lab	0
Subtotal		15
FOURTH SEMESTER		
ARCH 2400/AR 401	Architectural Drawing IV	3
ARCH 2411/AR 411	Architectural Design IV	3
ARCH 2480/AR 480	Principles of Stability in Structures	3
ARCH 2491/AR 491	Computer Generated Architectural Presentation Drawings	2
LAP ¹	Literature/Aesthetics/Philosophy	3
ELECTIVE ¹	Elective (from approved list)	3
Subtotal		17
TOTAL CREDITS REQUIRED FOR THE DEGREE		64

¹ See the Degree Requirements section for detailed explanation of core required courses and categories.

Bachelor of Technology in ARCHITECTURAL TECHNOLOGY

City Tech's bachelor degree program in architectural technology is the only program of its kind in the City University of New York. It prepares the student to be proficient in 21st century technologies that are required to manage all phases of professional practice in an architectural office environment.

The bachelor's degree focuses on the latest technologies currently being used in the renovation, restoration and preservation of existing buildings. The program provides a basic understanding and the practical skills needed to function as an assistant in an architectural office.

Our programs thoroughly familiarizes the student with up-to-date architectural office terminology, practices and procedures, including computer-aided drafting and design (CADD) techniques. Studio work gives students an opportunity to develop their own ideas and creative talents through participation in architectural projects from inception to final presentation drawings and the construction of models. As graduates, the students are well equipped to be a part of an architectural design team in a broad range of planning and construction coordination roles.

Graduates from our bachelor degree program will be qualified to work as project managers or job captains in architectural offices. They are provided with immediately marketable skills and a solid foundation for career advancement. Graduates from this program could qualify to go on to earn a master's degree in architecture.

REQUIRED COURSES IN THE MAJOR		Credits
ARCH 3511/AR 511	Architectural Design V	3
ARCH 3522/AR 522	A History of New York City Architecture	3
ARCH 3561/AR 561	Architectural Office Management	3
ARCH 3609/AR 609	Integrated Software in the Architectural Office	3
ARCH 3662/AR 662	Municipal Agencies and the Formal Approval Procedure	3
ARCH 4740/AR 740	Detail and Construction Technologies for Existing Buildings	3
FM 880	Space Planning	3
ARCH 4811/AR 811	Urban Design	4
ARCH 4880/AR 880	Survey of Structural Systems and Building Infrastructure	3
Subtotal		28
ELECTIVES		
Choose 3. If the AAS Degree is 63 credits or greater, choose 2		
ARCH 3591/AR 591	Computer Assisted Architectural Animation	3
ARCH 3611/AR 611	Theoretical Design	4
ARCH 4709/AR 709	Advanced 3D Modeling and Rendering	3
ARCH 4900/AR 900	Internship in Architectural Technology	3

FMGT 3620/FM 620	Building Systems I	3
FMGT 4720/FM 720	Building Systems II	3
FMGT 4780/FM 780	Programming and Introduction to pace Planning	3
MAT 1475/MA 475	Calculus I	4
Subtotal		9/6
OTHER REQUIRED COURSES		
MAT 1375/MA 375	Mathematical Analysis	4
SC 434L	Physics 2.2	4
COMM ¹	Communications Choose One: ENG 1121/EG 121 or TS 401	3
LAP ¹	Literature/Aesthetics/Philosophy Choose One: EG 402 or EG 403 Choose One: HU 401, PH 103 or PH 106	3 3 3
BS/SS ¹	Behavioral Science/Social Science Choose One: PS 404 or SO 402 Choose One: HI 402 or ECON 1101/EN 101	3 3 3
Subtotal		23
TOTAL CREDITS REQUIRED FOR THE DEGREE		120
¹ See page 34 for detailed explanation of core required courses and categories.		

SEVENTH SEMESTER

ARCH 4740/AR 740	Detail and Construction Technologies for Existing Buildings	3
FMGT 4880/FM 880	Space Planning	3
ELECTIVE ¹	Elective (from approved list)	3
PHYS 1434/SC 434	Physics 2.2	4
SC 434L	Physics 2.2 Lab	0
Subtotal		13
EIGHTH SEMESTER		
ARCH 4811/AR 811	Urban Design	4
ARCH 4880/AR 880	Survey of Structural Systems and Building Infrastructure	3
ELECTIVE ¹	Elective (from approved list)	3
LAP ¹	Literature/Aesthetics/Philosophy	3
BS/SS ¹	Behavioral Science/Social Science	3
Subtotal		16
TOTAL CREDITS REQUIRED FOR THE DEGREE plus 60 min from AAS		60 120 total
¹ See page 34 for detailed explanation of core required courses and categories.		

Bachelor of Technology in ARCHITECTURAL TECHNOLOGY

Curriculum by Semester

The student will earn a bachelor of technology degree (BTech) with a major in architectural technology upon completion of the courses listed beyond the AAS degree (60 cr min AAS + 60 cr BTech = 120 credits total).

FIFTH SEMESTER		Credits
ARCH 3511/AR 511	Architectural Design V	3
ARCH 3522/AR 522	A History of New York City Architecture	3
ARCH 3561/AR 561	Architectural Office Management	3
COMM ¹	Communications Elective	3
LAP ¹	Literature/Aesthetics/Philosophy Elective	3
Subtotal		15
SIXTH SEMESTER		
ARCH 3609/AR 609	Integrated Software in the Architectural Office	3
ARCH 3662/AR 662	Municipal Agencies and the Formal Approval Procedure	3
ELECTIVE ¹	Elective (from approved list)	3
BS/SS ¹	Behavioral Science/Social Science	3
MAT 1375/MA 375 ¹	Mathematical Analysis	4
Subtotal		16

COURSES:**ARCH 1100/AR 100
Architectural Drawing I**

1 cl hr, 3 lab hrs, 2 cr

Introduction to the fundamental principles of architectural drafting and detail analysis. Surveying existing conditions, development of plans, elevations, sections and basic detailing are covered as well as material applications and the use of drafting instruments. The student will develop an understanding of light wood frame construction and will learn how to develop a basic set of working drawings.

Prerequisite: CUNY certification in mathematics

**ARCH 1111/AR 111
Architectural Foundation I**

2 cl hrs, 3 lab hrs, 3 cr

Basic architectural visualization systems with an emphasis on orthographic projections, parallel line drawings and preliminary three-dimensional models. The student will acquire skills with respect to the visual interpretation of three-dimensional objects, and the delineation of same, using standard projection systems and free hand sketching techniques to promote an

ability to translate freely between two- and three-dimensional reality.
Prerequisite: None

**ARCH 1121/AR 121
History of Architectural
Technology (W)**

2 cl hrs, 2 cr

The study of architectural technology from prehistoric times to the present, stressing the development of structural systems and the exploration of materials. This course will explore the interaction of building design and historic socio-economic determinants.

Prerequisite: CUNY certification in reading and writing

**ARCH 1140/AR 140
Materials in Architecture**

2 cl hrs, 2 cr

An introduction to basic materials of construction and their employment in the building construction industry with emphasis on wood, masonry, steel and concrete.

Prerequisite: CUNY certification in reading and writing; pre- or corequisite: ENG 1101/EG 101

**ARCH 1200/AR 200
Architectural Drawing II***1 cl hr, 3 lab hrs, 2 cr*

The continuation of the development of skills learned in ARCH 1100/AR 100. The course includes the production of architectural contract documents (working drawings) for a one-story incombustible commercial building. *Prerequisites: ARCH 1100/AR 100 and CUNY certification in reading and writing*

**ARCH 1211/AR 111
Architectural Foundation II***1 cl hr, 2 lab hrs, 2 cr*

Topics to be covered include the methods of preparing architectural massing, study and finished presentation models. The course will include projects such as the construction of a staircase, a noteworthy contemporary house, a building in an urban environment and an interior space. Students will be required to explore different materials and techniques and incorporate the graphic presentation skills learned in ARCH 1111/AR 111.

Prerequisites: CUNY certification in math and ARCH 1111/AR 111 or ENT 2200/ST 200

**ARCH 1240/AR 240
Methods of Construction
in Architecture***2 cl hrs, 2 cr*

This course will study the use of contemporary building materials and methods of construction, including conventional materials, wall and ceiling assemblies, finishing materials, floor and roof systems, precast concrete construction and current structural innovations.

Prerequisite: CUNY certification in reading and writing; pre- or corequisite: ENG 1101/EG 101

**ARCH 1250/AR 250
Site Planning***1 cl hr, 2 lab hrs, 2 cr*

The application of the fundamental techniques of site planning principles and the use of topographical maps and models. This course will explore the importance of site development as it relates to architecture. Graphic and model presentations skills are required.

Prerequisites: ARCH 1100/AR 100 and CUNY certification in reading and writing; pre- or corequisite: ARCH 1211/AR 211 or AR 221

**ARCH 1290/AR 290
Architectural CADD***1 cl hr, 3 lab hrs, 2 cr*

Introduction to the use of the computer to assist in the production of construction and design drawings. This course will provide the student with the exposure necessary to use the computer as a drafting tool. The student will acquire skills through the use of the computer and equipment including AutoCAD.

Prerequisites: CUNY certification in reading and writing and ARCH 1100/AR 100 or CT 110 or ST 200

**ARCH 2300/AR 300
Architectural Drawing III***1 cl hr, 3 lab hrs, 2 cr*

The course is a continuation of architectural working drawings using the computer. Problems of intermediate complexity including organizing, coordinating and executing relatively complete Contract Documents (working drawings) for a simple masonry shell building type. This course will focus on a complete coordinated set of construction drawings.

Prerequisites: ARCH 1200/AR 200 and ARCH 1290/AR 290

**ARCH 2311/AR 311
Architectural Design III***2 cl hrs, 4 lab hrs, 3 cr*

This course is an exploration of abstract architectural design theory in the formation of three-dimensional space. The creation of comprehensive architectural design projects are developed following a building program and incorporating elements of site, enclosure, structure, material and technology. A juried presentation will take place at the completion of each project.

Prerequisites: CUNY certification in reading and writing and ARCH 1211/AR 211 or AR 221; pre- or corequisite: ARCH 1250/AR 250

**ARCH 2321/AR 321
History of 20th Century
Architecture (W)***3 cl hrs, 3 cr*

A comprehensive study of 20th-century architects, buildings and principal architectural movements explored in relationship to their artistic, philosophical, historical and technological contexts. This is a writing-intensive course combining lectures and seminars to explore modern architectural movements from the turn of the last century (1900+/-) until the present day. It will cover the mechanics of

expository writing to include critical essays and research papers.

Prerequisites: ARCH 1121/AR 121 and ENG 1101/EG 101

**ARCH 2370/AR 370
Architectural
Environmental Systems***3 cl hrs, 3 cr*

A general study and survey of service facilities and systems employed in buildings such as: plumbing, electrical, heating, ventilation and air conditioning. Applications, equipment and distribution will also be examined.

Prerequisites: CUNY certification in mathematics, ARCH 1140/AR 140, ARCH 1200/AR 200, and ARCH 1240/AR 240

**ARCH 2400/AR 401
Architectural Drawing IV***1 cl hr, 4 lab hrs, 3 cr*

The final course in a four-part sequence, this course requires the student to demonstrate an ability to create professional quality construction documents as if in an office environment. This course will provide the student with the opportunity to generate original work as it relates to the production of construction documents and architectural details.

Prerequisite: ARCH 2300/AR 300

**ARCH 2411/AR 411
Architectural Design IV***2 cl hrs, 4 lab hrs, 3 cr*

The architectural process involved in designing small to medium size projects for specific building types. Scope covers initial research and analysis, program development, flow diagrams, schematic design, and massing studies through final presentation. Final presentations will entail drawings and models reviewed by a design jury.

Prerequisite: ARCH 2311/AR 311; pre- or corequisite: ARCH 2321/AR 321

**ARCH 2480/AR 480
Principles of Stability
in Structures***3 cl hrs, 3 cr*

The analysis of architectural structures and their materials. A study of wood and steel structures using basic physical laws, the behavior of architectural materials in stress and intuitive reasoning related to the mathematical treatment of equilibrium in static structures.

Prerequisites: MAT 1275/MA 275 and ENG 1101/EG 101; pre- or corequisite: PHYS 1433/SC 433

**ARCH 2491/AR 491
Computer Generated
Architectural
Presentation Drawings***1 cl hr, 2 lab hrs, 2 cr*

The course is an introduction to the use of the computer to assist in the creation of architectural presentation drawings in three-dimensions. This course will provide the student with exposure to the use of the computer in the design studio. The student will acquire skills in the use of the computer and associated equipment for the three-dimensional modeling and rendering aspects of the AutoCAD program.

Prerequisites: ARCH 1290/AR 290 and MAT 1275/MA 275

**ARCH 3511/AR 511
Architectural Design V***1 cl hr, 4 lab hrs, 3 cr*

This course deals with the continuing design development and detailing of a new design problem introduced at the beginning of the semester. The class will focus on an interior renovation of an existing building. It differs significantly from previous design courses, which deal strictly with new construction. The course addresses the next level of design, including integration of structure, mechanical layout, lighting, plumbing fixture selection, interior materials, finishes, colors and furniture layout. Students will be required to meet current design and functional needs as well as code requirements.

Prerequisite: ARCH 2411/AR 411 or AAS degree

**ARCH 3522/AR 522
A History of New York City
Architecture (W)***3 cl hrs, 3 cr*

A historical analysis of the city's infrastructure, real estate development, municipal planning, ordinances and key buildings using the comparative method. The class will trace the course of architectural history from the village to the present role of the city as the commercial and cultural hub of the nation. This course will stress the dynamic socio-economic determinants emerging as a result of improvements and growth in technology, transportation, infrastructure, real estate, commerce, housing and recreation.

Prerequisite: ARCH 2321/AR 321 or AR 361

**ARCH 3561/AR 561
Architectural Office
Management**

3 cl hrs, 3 cr

The course will provide an overview of basic business practices found in an architectural office, applying the principles, understanding the reasoning and offering examples in everyday office situations. The course will provide a comprehensive look at architectural practice, with emphasis on the management of firms and projects. The course is designed to help the student with an understanding of the everyday realities of practice and to help prepare for licensure.

Prerequisite: ARCH 2401/AR 401

**ARCH 3591/AR 591
Computer-Assisted
Architectural Animation**

2 cl hrs, 2 lab hrs, 3 cr

This elective course is an introduction to the use of the computer to assist in the production of 2D architectural animations, composite renderings, 3D animated models, time lapse studies, and other architectural design tools. This course involves the use of the computer, methods of architectural rendering and animation, and the drawing and storage of computer animations with different devices.

Prerequisites: ARCH 2401/AR 401, ARCH 2411/AR 411 and ARCH 2491/AR 491

**ARCH 3609/AR 609
Integrated Software in the
Architectural Office**

3 cl hrs, 3 cr

The course is designed to introduce the student to the variety of software that is being used in a design firm. The student will be provided with the guidelines for a better understanding of the integration of specialized software into all aspects of the architectural profession. The course focuses on managing a computerized office and understanding and using the latest technologies in a design firm.

Prerequisites: ARCH 2491/AR 491 and ARCH 3561/AR 561

**ARCH 3611/AR 611
Theoretical Design**

2 cl hrs, 4 lab hrs, 4 cr

This elective course in theoretical design expands upon the knowledge and skills acquired in the core design curriculum. Emphasis is on development of individualized approaches to the design process through the investigation of architectural building typologies in the areas of site, program, and technology. The beginning of this course will focus on research and analysis. The second half of the course will be a synthesis of the research into a student's individual design. The final design will be presented to the class through architectural drawings and/or models. Ongoing critiques and final jury presentations will be an integral part of the course.

Prerequisites: ARCH 3511/AR 511 and AAS degree

**ARCH 3662/AR 662
Municipal Agencies
and the Formal
Approval Procedure**

3 cl hrs, 3 cr

The course is an introduction to the process of seeking application and approval from various agencies for the right to construct architecture in New York City. The class explores the interface between the architect and these agencies to assist in the production of architecture in New York City. This course involves the familiarization of the student with the process and scope of the various municipal agencies involved with the construction of a building in an urban area.

Prerequisite: ARCH 3561/AR 561

**ARCH 4709/AR 709
Advanced 3D Modeling
and Rendering**

3 cl hrs, 3 cr

This elective course focuses on 3-dimensional modeling, rendering, lighting and animation techniques. Most advanced aspects of the rendering software will be explored through a series of exercises designed to acquaint the student with the various commands found within the program used.

Prerequisites: ARCH 2491/AR 491, ARCH 3591/AR 591 and ARCH 3609/AR 609

**ARCH 4740/AR 740
Detail and Construction
Technologies for Existing
Buildings**

3 cl hrs, 3 cr

A continuation of the ARCH 1140/AR 140 and ARCH 1240/AR 240 series, this class will expand the student's knowledge of how to insert new technologies and construction into an existing building shell. This course will take a practical approach to evaluate, classify and diagnose construction deficiencies of existing buildings. The course will utilize a step-by-step approach to documenting, detailing and programming existing facilities.

Prerequisites: ARCH 2401/AR 401 and ARCH 3522/AR 522

**ARCH 4811/AR 811
Urban Design**

1 cl hr, 6 lab hrs, 4 cr

This architectural design course will explore a range of urban design issues and design opportunities found in New York City. Students will explore both the theoretical and pragmatic aspects of design applied in an urban environment. As a culmination of the design series of classes, this course will incorporate previous studio and lecture course work to tie together the topics of urban planning, architectural design, environmental sustainability and historic preservation.

Prerequisite: ARCH 3511/AR 511; *pre- or corequisite:* ARCH 4740/AR 740

**ARCH 4880/AR 880
Survey of Structural
Systems and
Building Infrastructure**

3 cl hrs, 3 cr

Emphasis is placed on the theoretical and practical application of structural design principles for new and existing steel and concrete structures. The behavior of these various materials under stress, and the proper selection of each will be discussed. Conditions encountered during renovations and their solutions will be included. The appropriate integration of the mechanical systems (HVAC, plumbing and electrical) for each of these structural applications will be examined.

Prerequisites: ARCH 2480/AR 480, MAT 1375/MA 375 and PHYS 1434/SC 434

**ARCH 4900/AR 900
Internship in
Architectural Technology**

1 cl hr, 120 field hrs per semester, 3 cr

Assignment to field work/study situations of approximately eight to ten hours per week at one of the following: an architectural office, engineering office, interior design office, architecture, engineering or interior design branch of a municipal agency or corporate design office, construction administration or office practices branch of a construction firm. A drafting position with a non-architectural firm is subject to review. Each student will keep a log/journal to be shared in group seminars. Supervision will be by faculty and by the job supervisor.

Prerequisites: ARCH 2401/AR 401, ARCH 2411/AR 411 and approval of internship director