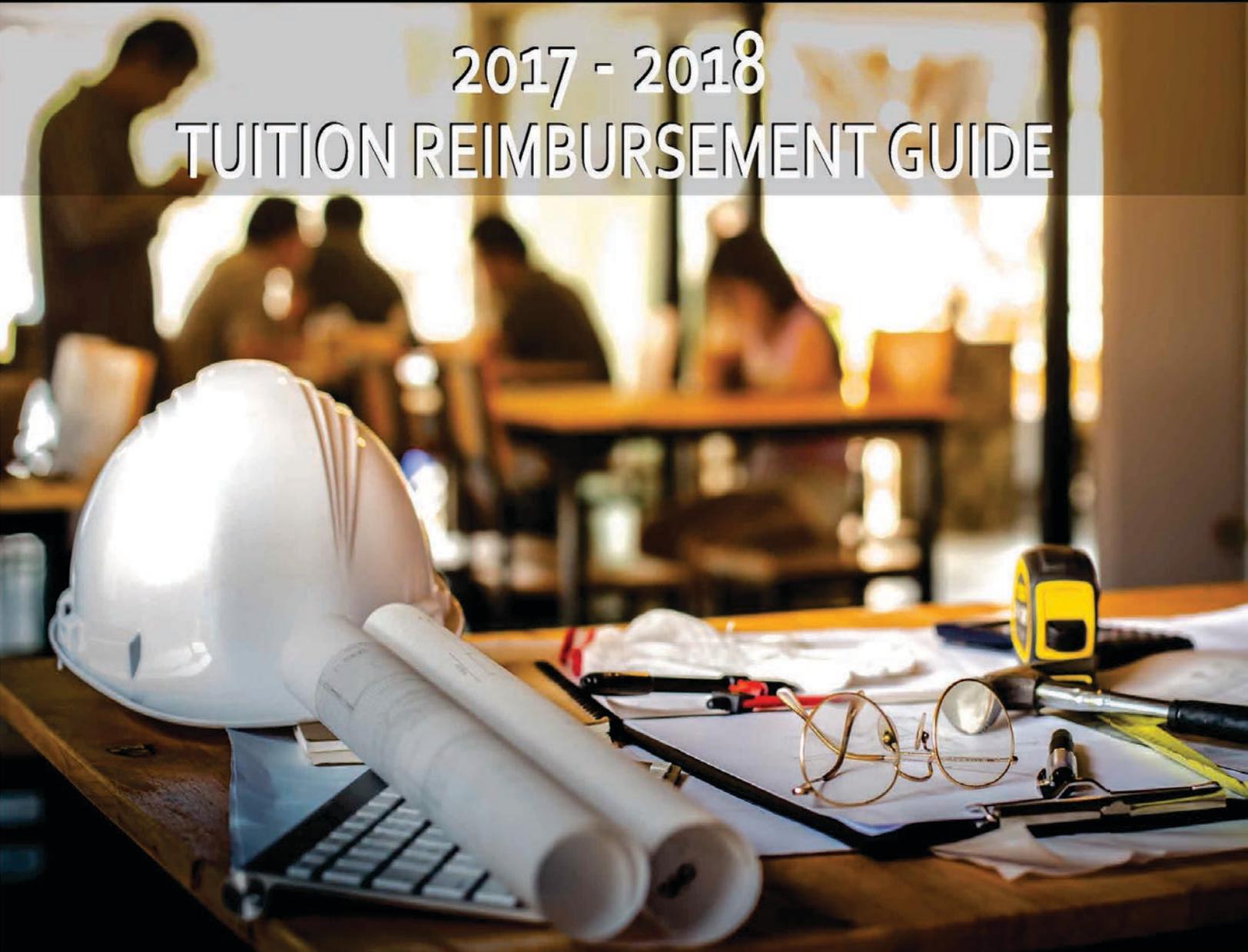


**GENERAL BUILDING
CONTRACTORS ASSOCIATION**

2017 - 2018 TUITION REIMBURSEMENT GUIDE



Learn about Eligibility. Explore Available Classes. Apply for Reimbursement.
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Angela Hendrix, Director of Education & Professional Development
ahendrix@gbca.com * 215.568.7015

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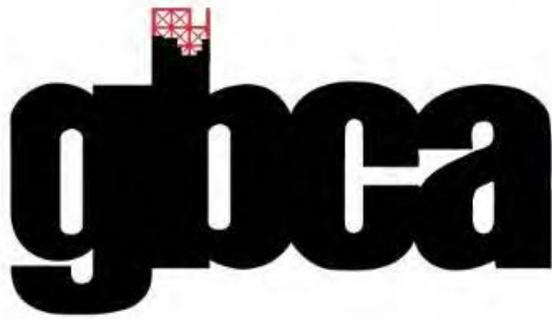
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VILLANOVA
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**GENERAL BUILDING
CONTRACTORS ASSOCIATION**

**Professional & Continuing Studies
2017-2018 Course Curriculum**

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Dear Students,

This past year GBCA has expanded on its educational and professional development offerings even further, realizing that they both play a vital role in building a successful career in construction. Since 1961, GBCA has strived to conduct comprehensive education and training programs to insure a highly-skilled, productive and motivated workforce. Thousands of individuals have participated in GBCA-sponsored classes to advance their careers in the construction industry over the last 56 years. These courses have been specifically chosen and tailored in collaboration with our university and education partners to suit individuals from entry level positions, to supervisors, to the most seasoned project managers and executives.

Employees of GBCA member companies have unparalleled access throughout the year to a variety of courses and professional development seminars, which are made possible through funding by the Industry Advancement Program (IAP). Continuously offered education and professional development programming enables construction personnel to enhance their knowledge and fine-tune skills, that will in-turn enable GBCA member companies to maintain the highest industry standards.

We encourage you to review the following course offerings and consider participating in the GBCA tuition reimbursement program. The following provides a description for each of the courses chosen for this program. You can visit our website at www.GBCA.com/education to apply through GBCA and also to see updated information on when and where each course is being offered. We will continually keep our website up to date with upcoming course information. For the 2017-2018 Tuition Reimbursement Guide we have added the MS program at Jefferson (formerly Philadelphia University). New eligibility restrictions have been introduced, as our robust tuition reimbursement program continues to grow. We strive to offer our members access to the best classes and programs, so stay tuned to our website throughout the year. If you have questions not addressed in this guide, please feel free to call me at any time.

Sincerely,

Angela Hendrix
Director, Education and Professional Development
(215) 568-7015 | ahendrix@gbca.com



Eligible, approved participants can receive reimbursement of up to \$2,000.00 per individual, per semester for approved courses. The maximum tuition reimbursement for each student is \$4,000 per calendar year.

Eligibility

GBCA tuition reimbursement is available to employees, both field and firm personnel, of Active and Associate member companies and companies that contribute to the GBCA-administered Industry Advancement Program (IAP). **IAP contributors at a minimum must contribute \$2,000 per year to participate – this is measured based on the full-calendar year previous to the student’s application. Apprentices regardless of trade must be in at least their 3rd year.** Do not apply for enrollment unless you are certain you can complete the course(s). If you are accepted into a course and discover that you cannot attend, notify GBCA’s Education Department and the university immediately. Students who drop a class or are dropped from a class, are ineligible to receive tuition reimbursement from GBCA for one year. Tuition reimbursement is at the discretion of GBCA.

Registration & Approval Process

1. You must first apply and receive approval from GBCA before enrolling with the college or university.
2. After receiving approval from GBCA you must register directly with the appropriate educational institution.
3. GBCA’s Acknowledgement Form and Release of Grades must be signed and returned before the approved course begins.

Limitations

GBCA is only responsible for the basic cost of the course and will not cover items such as text books, lab fees, etc. Tuition for out-of-state and out-of-country students or any other tuition-increasing reason is the responsibility of the student, no exceptions. Students are required to pay the educational institution or partner up front and **must receive a minimum grade of ‘B’ or better in order to qualify for their reimbursement.** Approved students must sign and return the Acknowledgement Form and Release of grades prior to beginning class. By participating you are agreeing to provide GBCA with an official transcript and invoice upon completion of approved course. We urge you to confirm the day and time of individual courses with each educational institution, as they are subject to change. No course substitutions will be permitted for any reason.



GENERAL BUILDING CONTRACTORS ASSOCIATION, INC.
 36 SOUTH 18TH STREET / PHILADELPHIA, PA 19103 / 215.568.7015 / FAX 215.568.3115

Registration Form GBCA Tuition Reimbursement Program

Complete all information as soon as possible and return via mail, fax, or email to:

STUDENT INFORMATION			
Last name:	First:	Middle:	
Street address:	P.O. Box:	Cell Phone: ()	
City:	State:	ZIP Code:	Email:

EMPLOYMENT INFORMATION			
Current Place of Employment			
Occupation:	Employer:	Address:	
Supervisor:	Phone:	Email:	
Date of hire:			
Previous Place of Employment			
Occupation:	Employer:	Address:	
Supervisor:	Phone:	Email:	
Date of hire:			

COURSE INFORMATION			
University/Institution:	Contact Name:	Phone: ()	Email:
Course title:	Course number:		
Course start date:			
<i>Student signature</i> _____		<i>Date</i> _____	

Angela Hendrix
 Fax: 215.568.3115
 Email: AHendrix@gbca.com
 Address; 36 South 18th Street, Philadelphia, PA 19103

This form must be filled out and returned each time you intend to receive reimbursement.

Community College of Philadelphia

Department of Architecture,
Design & Construction
1700 Spring Garden Street
Philadelphia, PA 19130
www.ccp.edu/node/384

Contact: David Bertram, RA, LEED AP BD+C
Department Chair
Department of Architecture, Design & Construction
Community College of Philadelphia
(215) 751-8860
dbertram@ccp.edu

Course No. Course Title

ADC 101 Intro to Design & Construction

This course introduces students to the fields of architecture, interior design, construction and related disciplines. Students learn basic terminology, and documentation standards and techniques. Significant factors influencing design and construction are explored, including historical precedents and design theory, interrelationships between working professionals, the financing of projects, ethical and social concerns, and physical and legal constraints. Selected current topics, such as sustainability, modular design and computer interface are discussed. This overview course provides students with a broad understanding of the design and construction fields. Students will learn contemporary methods for accessing and processing information about the design professions.

ADC 103 CAD Basics

A general introduction to computer-assisted design. Students gain proficiency in the use of CAD software through creating architectural drawings. Students will learn the terminology, functions and principles of CAD operations as well as building documentation. Additionally, students will be introduced to advanced software for three-dimensional modeling, rendering and animation.

Note: This course focuses on the basics of Computer Aided Drafting. It is necessary for the student to take this course before moving on to ADC 163.

ADC 109 Design Studio I

This studio course introduces students to basic design principles and the manual drawing techniques which are used to graphically convey visual/architectural ideas. Delineation is the means by which students will develop an understanding of the design process. Students will learn to work in both two- and three-dimensional media.

ADC 112 Construction Materials and Detailing: Properties

This course introduces students to commonly employed construction materials, from those used in excavation and foundations through framing and roofing. Materials are studied in terms of their historical uses, composition, physical properties, manufacture and assembly, applications, regulatory constraints and sustainability. Basic terminology, principles and processes in design and construction, and factors that influence material selection and material assemblies are discussed. Construction details are examined and developed. Students learn about key issues including sustainable design, new technologies and materials and the importance of effective team collaboration.

Prerequisites: ADC 103 or ADC 109

ADC 136 Construction Safety & Building Codes

Students will learn about common construction worker safety procedures contained in OSHA regulations, lead safety procedures regulated by the EPA, and the national model building and energy conservation codes produced by the International Codes Council. The focus will be on the International Building Code (IBC), and the International Energy Conservation Code (IECC), as well as state and local adaptations of these. Requirements of the Americans with Disabilities Act (ADA) are also studied.

ADC 146 Construction Supervision and Business Practices

In this course, students will study the organization and operations of a small construction firm, a unit within a larger construction firm, and a facility management department. Topics will include business organization and operations, finance and administration, marketing, code compliance, contract bidding, and construction risk management. Supervision and human relations skills needed by those in supervisory and leadership roles are also studied. Leadership skills and problem solving are emphasized.

Prerequisite: ADC 101.

ADC 159 Design Studio II

This studio design course helps students master techniques used to develop and graphically convey architectural ideas, primarily using computer modeling. Students develop an understanding of the design process related to space through digital and manual delineation.

Prerequisites: ADC 103 and ADC 109.

ADC 160 Presentation Techniques

Introduction to materials and methods in the preparation of architectural presentations, drawings and models. Computer modeling and composition software will be introduced, and students will produce a portfolio with digital and manual pieces. Emphasis is placed on using technique and craftsmanship to make design intent clear and compelling.

Prerequisites: ADC 103, ADC 109

ADC 161 Introduction to Building

Students learn to perform traditional energy audits on buildings as well as comprehensive, whole-home assessments with diagnostic equipment. Students will learn to diagnose critical performance factors in buildings and increase the energy efficiency of the building and the comfort, health and safety of the building's occupants. Students learn to identify major energy related problems and prioritize solutions based on building science principles and cost-benefit analysis. Successful students will be prepared to sit for the Building Performance Institute's (BPI) Building Analyst (BA) Certification examination.

Prerequisite: ADC 101

ADC 163 Digital Documentation in Architecture and Construction

An introduction to architectural construction documents, the process by which they are developed, and their use and function in the progression of design through construction. Students learn to use parametric software (such as Architectural Desktop) and industry-standard symbols, terminology and graphics in the development of a complete set of construction documents. Additionally, students learn to utilize and apply advanced software features to increase productivity and accuracy.

Prerequisite: ADC 103.

Note: *For someone who uses CAD regularly and would like to learn Revit for BIM (Building Information Modeling), ADC 163 is appropriate.*

ADC 186 Surveying

Basic course in site surveying as it applies to building construction. Emphasis is placed on skill development using the builder's level and transit and on computer-based applications for site design. Course work includes fieldwork exercises in measurement, differential leveling and topographic surveying.

Prerequisite: ADC 101.

ADC 212 Construction Materials and Detailing: Methods

This course introduces students to a comprehensive range of construction materials, techniques and systems commonly employed in the construction and finishing of buildings and spaces, from interior finishes and treatments (including lighting, color and acoustics) through exterior cladding or enclosures. Materials are studied in terms of their composition, physical properties, manufacture and assembly, applications, regulatory constraints and sustainability.

Prerequisite: ADC 103 or ADC 109.

ADC 226 Structures I - Analysis

Study of the principles of statics and strength of materials as they pertain to the design of statically determinate structures. Course work includes the concepts of unit stress, strain, deformation and moment of inertia. End reactions, shear and moment diagrams are developed for simple beams.

Prerequisites: ADC 101 and MATH 118 or higher.

ADC 227 Structures II — Design

Introduction to the means and methods employed in the design of structural members, including beams, columns, trusses and connections. Course work consists of structural applications for timber, steel and concrete.

Prerequisite: ADC 226.

ADC 236 Construction Cost Estimating I

Introduction to quantification of building components including blueprint reading, take-offs and application of unit costs.

Prerequisite: ADC 101.

ADC 237 Construction Cost Estimating II — Computer Methods & Cost-Benefit Analysis

This is the second of two courses that cover the principles and practice of construction cost estimating. It builds on the first course (ADC 236), using computerized methods to produce the detailed cost estimates that contractors use to determine the cost of construction for commercial and residential projects. The course covers the role of estimating and bidding in the construction industry. It also introduces cost-benefit analysis, which encourages sustainability by determining the true cost and value of a building throughout its life.

Prerequisite: ADC 236.

ADC 246 Contracts & Specifications

Study of the purposes, structure and provisions of contemporary construction industry contracts. Relationships among owners, architects and other design professionals, general and subcontractors, and vendors and suppliers are reviewed in detail. Students learn to adjust standard contract formats and specifications to tailor them for individual projects, according to C.S.I. procedure.

Prerequisite: ADC 101.

ADC 253 Environmental Systems I

An overview of environmental control systems used in modern buildings, focusing on mechanical, electrical, and plumbing systems. Students will gain a basic understanding of and foundation in these systems and their design. Through application and practice, students will learn the interrelationships between systems and approaches to integrating them into building design and construction.

Prerequisite: ADC 101 and ADC 103 or ADC 109.

ADC 254 Environmental Systems II

Components and systems used to control the environment of modern buildings are studied, expanding student's knowledge of Mechanical, Electrical, and Plumbing (MEP) systems. Specialized building systems are also studied, including fire protection, vertical systems, signaling, and communication. Additionally, students will gain an understanding of specialized topics related to sustainability, including alternatives to traditional MEP systems. Students will become prepared for the LEED Green Associate Examination.

Prerequisite: ADC 101 and ADC 103 or ADC 109

ADC 261 Construction Management and Scheduling

This course is a thorough survey of the construction project management process from initial conception to completion. Topics include feasibility analysis, siting/staging issues, software application, personnel management, contractual procedures and job-site safety. Students will be introduced to basic contractor operations, project administration, job planning and Critical Path Method scheduling. After building a conceptual base, students will apply their scheduling knowledge to simulated projects. In this latter phase of the course students will use the most current and prevalent project planning software.

Prerequisite: ADC 246.

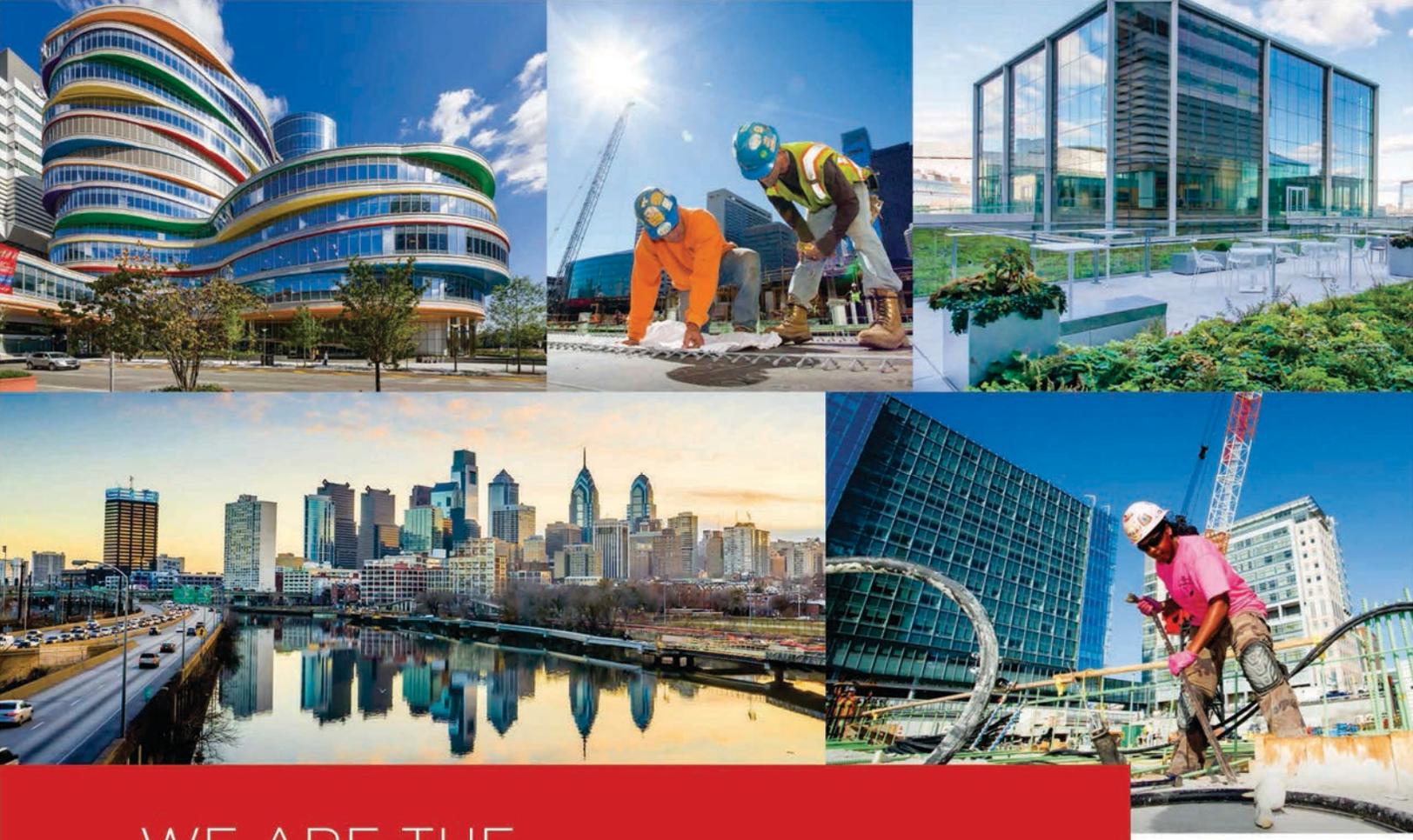
ADC 286 Building Rehabilitation and Energy Retrofit

This course will examine three integrally related topics: 1) the re-development process by which existing building stock is rehabilitated, 2) construction issues specific to the rehabilitation of existing buildings and 3) energy retrofit, which includes sustainability and related strategies. ADC 286 will introduce students to a broad array of tools, including construction management techniques and methods, energy audits and retrofits as well as public and private financing options and project management relative to building rehabilitation for both small and large scale projects, especially in urban neighborhoods.

Prerequisite: ADC 101

- * **REGISTRATION:** Students who have never taken a class at CCP must apply to be a student and should identify themselves as a "guest" student. Contact David Bertram, dbertram@ccp.edu or Tony Palimore, apalimore@ccp.edu with questions. Students who have taken classes here before can register online.

- * All of the courses listed above are undergraduate and would count towards the 63 credits needed to receive an Associate degree in Applied Science from the Community College of Philadelphia. Courses also count when transferring to most four-year colleges or universities.



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Construction Management Program
College of Engineering
3101 Market Street, Suite 130
Philadelphia, PA 19104
www.drexel.edu/engmgmt/cmgt

Contact: Jessica Cruz (Academic Advisor)
Construction Management Program, College of Engineering
Drexel University
(215) 895-5943
jc635@drexel.edu

Course No. Course Title

CMGT 101 Intro to Construction Mgmt.

This course will introduce the basic history and management concepts of the construction industry to students with the expectation that upon completion students will have an overview of the industry. Career choices, industry firms, and key players in the Construction Management process will be explored.

CMGT 161 Building Materials & Constr. Methods I

This course is designed to explore the range of building materials in use today and their interrelationships in a construction project. Topics will include a study of the major components of construction materials, the selection process, specification, alternatives, procurement, placement and quality management for the building systems covered. Foundations, excavations, wood framing and steel construction and the role these materials play in the success of a project once chosen will be considered and evaluated.

CMGT 162 Building Materials & Constr. Methods II

Continues CMGT 161. Covers concrete, reinforced concrete, site cast and pre-cast concrete, brick and concrete masonry, reinforced masonry, and properties of these materials & construction methods associated with them.

CMGT 240 Economic Planning for Construction

Covers techniques for economic decision making for building and infrastructure construction topics. Topics include cash flow, present worth analysis, equivalent annual worth, rate of return, risk analysis, and benefit/cost analysis.

CMGT 261 Construction Safety

Covers OSHA liability, general safety, hazard communication, fire, material handling, tools, welding, electricity, scaffolding, fall protection, cranes, heavy equipment, excavation, concrete, ladders and stairways, confined space entry, personal protective equipment, and health hazards. Course approved by the OSHA Training Institute.

CMGT 262 Building Codes

Familiarizes students with the content of the BOCA International Building Code (emphasizing the non-structural provisions), the purpose and intent of code requirements, and how to apply the code to structures and occupancies. Examines how the code is used as a tool in design and construction and prepares students for the advent of a single model building code planned for the nation.

CMGT 263 Understanding Construction Drawings

This course examines a variety of construction documents, including drawings, details, graphic standards, sections, and quantities for competitive bidding and execution of projects. Both residential and commercial construction documents will be examined.

CMGT 265 Information Technologies in Construction

The objective of this course is to expose students to a large variety of information technologies in construction and will discuss the impact of these technologies on work environments, processes, and work quality. Students will investigate a variety of issues surrounding IT in construction including implementation, standards, integration, knowledge management and the underlying technology.

CMGT 266 Building Systems I

This course covers construction management and design concepts relating to heating, ventilation, and air conditioning systems and the integration of these systems into the building design and construction process.

CMGT 267 Building Systems II

Continues CMGT 266. This course covers construction management concepts relating to electrical systems, wiring, lighting, signal and data systems, and transportation systems and the integration of these into the building design and construction process.

CMGT 355 Introduction to Sustainability in Construction

An overview of the design and construction of high performance buildings. Students will gain topical familiarity with the wide range of issues related to sustainable design and construction. The USGBC's green building certification program will be covered in detail. Both historical and contemporary case studies will be utilized.

CMGT 361 Contracts & Specifications I

Analyzes construction contracts, specifications, and practices with regard to business law and liability. Required for construction management students. Elective for others.

CMGT 362 Contracts & Specifications II

Continues CMGT 361. Examines contractor, architect, and engineer responsibilities through case studies and class discussions.

CMGT 363 Estimating I

Covers discussion of the estimating function and review and applications of material quantity survey techniques used in estimating costs of construction projects. Includes types of approximate and precise methods of estimating and their uses, and computer applications. Required for construction management students

CMGT 364 Estimating II

Covers pricing and bidding of construction work including cost factors, labor and equipment, productivity factors, prices databases, job direct and indirect costs, methods of estimating time, materials, equipment, subcontractors' work, general expenses, and profit, bid preparations and submission, and computer applications.

CMGT 365 Soil Mechanics in Construction

Gives an overview of the types of problems encountered in geotechnical construction. Subjects covered will be composition, groundwater fundamentals, settlement and consolidation, stability of earth slopes, types of foundations and behavior of difficult soils.

CMGT 371 Structural Aspects in Construction I

The first of two course series designed specifically for construction management majors. The sequence addresses the interactions of different kinds of loads with common structural elements and design considerations for typical construction materials. This course places emphasis on the design of wood framed construction.

CMGT 372 Structural Aspects in Construction II

The second part in a two-course sequence for Construction Management majors. The course places emphasis on the design and analysis of concrete and steel frame construction.

CMGT 375 Building Information Modeling in Construction

This course is intended to provide students with a hands-on introduction to Building Information Modeling (BIM) in Construction. Emphasis will be placed on the use of BIM to support current construction activities such as design review, coordination, scheduling, logistics, estimating, and project close-out. Topics will include an introduction to 3D BIM modeling, 3D coordination and clash detection, 4D visual scheduling and logistics, 5D estimating, and BIM for Facility Management. Students will learn the fundamentals of the most widely used software applications in the construction industry: SketchUp, Revit and Navisworks.

CMGT 450 Management of Field Operations

This course is intended to equip students with knowledge and skills required to successfully manage and support construction field operations. Knowledge areas include contract administration, project engineering, site superintendence, and other topics critical to field operations.

CMGT 451 Heavy Construction Principles & Practices

This course is intended to provide students an introduction to the principles and practices employed in heavy construction. The course content is presented from a practical perspective focusing on actual field applications.

CMGT 461 Construction Management

Covers construction management concepts and practices, the management system, construction planning and programming, project control, environmental management, total quality management, and ethics in construction management.

CMGT 463 Value Engineering

The first of two course series designed specifically for construction management majors. The sequence addresses the interactions of different kinds of loads with common structural elements and design considerations for typical construction materials. This course places emphasis on the design of wood framed construction.

CMGT 465 Marketing Construction Services

Applies marketing principles to the construction industry. Includes understanding the roles of market research, business development planning, and networking techniques. Students will acquire the skills and techniques to prepare a winning presentation.

CMGT 467 Techniques of Project Control

The first of two course series designed specifically for construction management majors. The sequence addresses the interactions of different kinds of loads with common structural elements and design considerations for typical construction materials. This course places emphasis on the design of wood framed construction.

CMGT 468 Real Estate

Overview of the development process including site selection, residential densities, market analysis and cash flow analysis.

CMGT 469 Construction Seminar: Contemporary Issues

This course is intended to prepare students for professional practice through a survey of the current and future state of the industry.

CMGT 499 Construction Management Independent Study Project

This course is a capstone course intended to be a culminating experience in the Construction Management Program.

Undergraduate Certificate Programs

<http://catalog.drexel.edu/undergraduate/collegeofengineering/constructionmanagementcert/>

Construction Management I – Fundamentals (18.0 quarter credits)

The Certificate introduces students to the basic concepts of the construction industry.

Requirements

CMGT 101	Introduction to Construction Management
CMGT 161	Building Materials and Construction Methods I
CMGT 162	Building Materials and Construction Methods II
CMGT 163	Building Materials and Construction Methods III
CMGT 261	Construction Safety
CMGT 263	Understanding Construction Drawings

Construction Management II - Construction Science (18.0 quarter credits)

This certificate focuses on introducing students to design concepts relating to heating, ventilation, and air conditioning systems and the integration of these systems into the

construction process. In addition, the certificate also covers the process of estimating as well as building codes involved in construction projects.

Requirements

CMGT 266 Building Systems I

CMGT 267 Building Systems II

CMGT 363 Estimating I

CMGT 364 Estimating II

Select two of the following:

CMGT 240 Economic Planning for Construction

CMGT 262 Building Codes

CMGT 265 Information Technologies in Construction

Construction Management III - Management Concepts (19.0 quarter credits)

This certificate focuses on construction contracts, specifications, and practices with regard to business law and liability. The certificate also covers value engineering and construction planning, scheduling, network systems, as well as the communications required for project control and claims prevention.

Requirements

CMGT 361 Contracts And Specifications I

CMGT 362 Contracts and Specifications II

CMGT 461 Construction Project & Company Management

CMGT 463 Value Engineering

CMGT 465 Marketing Construction Services

CMGT 467 Techniques of Project Control

Construction Management IV - Customized Independent (18.0 quarter

credits) This certificate is designed to allow students to choose the higher-level courses that best suit their special needs and interests. Students must select all six of their courses at the start of the Certificate program.

Requirements: A minimum of six (6) 300-level or higher approved CMGT courses.

Students interested in continuing their education after certification are able to apply their coursework and credits directly to the Bachelor of Science in Construction Management.

Master's in Construction Management (45 quarter credits)

Required:

Core Classes (15 credits)

CMGT 501 Leadership in Const
CMGT 505 Const Acct & Fin Mgmt
CMGT 510 Const Control Tech
CMGT 512 Cost Est& Bidding
CMGT 515 Risk Mgmt in Const

Culminating Experience (6 credits)

CMGT 696 Capstone Part I
CMGT 697 Capstone Part II

Concentration Options:

Project Management (24 credits)

CMGT 525 Appl Const Project Mgmt
CMGT 528 Const Contract Admin
CMGT 530 Equip App & Economy
CMGT 532 International Const Pract
CMGT 538 Strategic Mgmt in Const
CMGT 540 Schedule Impact Anal
CMGT 548 Quality Mgmt & Perform
CMGT 550 Productivity Analysis

OR

Real Estate (select any 8 courses) (24 credits)

REAL 568 Real Estate Development
REAL 571 Adv. Real Estate Invest.
REAL 572 Adv. Market Research
REAL 573 Sales & Market Real Est
REAL 574 Real Estate Econ Urban
REAL 575 Real Estate Finance
REAL 576 Real Estate Valuation
REAL 577 Legal Issues in RE
CMGT 535 Comm Impact Anal

OR

Sustainability & Green Construction (24 credits)

CMGT 535 Comm Impact Anal
CMGT 545 Sustainable Prin& Prac
CMGT 546 Sustainable Tech
CMGT 547 LEED Concepts
CMGT 558 Community Sustain

***Sustainability and Green Construction Concentration Electives:** Graduate CMGT and REAL courses are acceptable selections. With permission and space permitting, students may also choose graduate courses in the areas of specific related study from Environmental Engineering (ENVE), Environmental Science (ENVS).

Graduate Certificates

Construction Management Graduate Certificate (18 quarter credits)

<http://online.drexel.edu/online-degrees/business-degrees/cert-construction-management/index.aspx>

CMGT 510 Construction Control Techniques

This course addresses the knowledge and skill sets required to successfully plan and control complex construction projects. Topics include procurement and contracts, pre-bid planning, contract budgets and cash flow, and planning case studies.

CMGT 512 Cost Estimating & Bidding Strategies

This is an advanced course in construction estimating addressing competitive bidding strategies. Topics include profit objectives, analyzing the competition, and determining optimum combo of price, cost and volume.

CMGT 515 Risk Management in Construction

This course presents risk management techniques and practices specific to construction projects. Students will gain an understanding of the risks stemming from technical and business sources related to the construction process, and to identify, quantify, and develop the appropriate response strategies.

CMGT 525 Applied Construction Project Management

This course presents the knowledge and skills required to successfully manage complex construction projects. Topics include the project management hard skills such as estimating and budgeting, time management, and planning.

CMGT 528 Construction Contract Administration

This course introduces the managerial and legal aspects of construction contract administration. The student is introduced to basic concepts of contract law employed in construction and the rules of interpretation. Topics include changes and change orders, disputes, differing site conditions, and defective documents.

CMGT 538 Strategic Management in Construction

This course presents concepts in strategic management within construction organizations. Topics include clients/constructors/competencies, portfolio management, and marketing strategies for construction firms.

Real Estate Graduate Certificate (18 quarter credits)

<http://online.drexel.edu/online-degrees/business-degrees/cert-realestate/index.aspx>

REAL 568 - Real Estate Development

This course will provide a comprehensive exploration of the development process for real estate development projects. Residential, multi-family, single family, apartments, office buildings, retail projects, industrial developments and the development process for each market segment.

REAL 571 - Advanced Real Estate Investment & Analysis

This course will explore the market analysis and feasibility methods in framing and supporting investment decision making for real estate projects. Detailed market analysis strategies will be employed and case studies will be analyzed to deepen the student's knowledge and judgment for investment decision making.

REAL 572 - Advanced Market Research & Analysis

This course will explore the market research methods used to understand and dissect geographical and demographical real estate markets. Detailed market research strategies will be employed and case studies will be analyzed to deepen the student's knowledge of market research techniques and resources.

REAL 575 - Real Estate Finance

This course will focus on the options and implications of different financing methods with the unique tradeoffs associated with each considered.

REAL 577 - Legal Issues in Real Estate Development

This course will explore the unique legal requirements of the real estate business including property rights, involuntary transfers, easements, private restrictions, public restrictions, zoning and land development laws.

Select one of the following:

REAL 573 - Sales & Marketing of Real Estate

This course will explore the strategies for successful marketing of real property bases on market research and development strategies.

REAL 574 - Real Estate Economics in Urban Markets

This course will offer a unique and detailed perspective on urban real estate development and the special sub-markets in which they exist. Attention will be given to the characteristics of the particular economic factors relevant in urban real estate markets.

REAL 576 - Real Estate Valuation & Analysis

This course will introduce the concepts of real estate valuation, appraisals, and the relationship of these to financing and cash requirements.

Sustainability and Green Construction Graduate Certificate (18 quarter credits)

<http://online.drexel.edu/online-degrees/business-degrees/grad-cert-sustainability-greenconstruction/index.aspx>

CMGT 535 Community Impact Analysis

This course provides an overview of community impact assessment, including the benefits of conducting such an assessment. It also provides general guidelines for conducting a community impact assessment, including the types of impacts that should be assessed during the process and related issues.

CMGT 545 Sustainable Principles & Practice

This course addresses the fundamentals of green building concepts and practices underlying sustainable construction from a perspective of the LEED Green Building rating system.

CMGT 546 Sustainable Technology

This course addresses the sustainable technologies in the built environments and is presented as a whole building design system. The course is organized into three major categories — Design Guidance, Project Management, and Operations & Maintenance.

CMGT 547 LEED Concepts

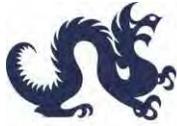
This course addresses the fundamental concepts and practices underlying the LEED Green Building rating system.

CMGT 558 Community Sustainability

This course provides clear direction to students to design cities and developments that are sustainable and reduce environmental harms.

Admission/Registration:

- * If a student wishes to pursue a Bachelor's degree or undergraduate certificates in Construction Management as a full-time, part-time or transfer student they must apply for admission into Drexel University. For information on how to apply for undergraduate studies at Drexel, please visit <http://www.drexel.edu/undergrad/> or call 215-895-2400. Once accepted into Drexel and the Construction Management program, students will be assigned an academic advisor that will help them with registration.
- * For students who are not seeking a degree (non-matriculated) and want to take classes, they should contact Mr. John Rans at 215-571-3810 or via email at jrr36@drexel.edu.
- * Students wishing to pursue the online graduate certificates or the Master's in Construction Management must apply to Drexel University as well. For more information on how to apply for the fully online graduate certificates and Master's in Construction Management, please visit <http://online.drexel.edu/>. GBCA members must enter their organization's affiliation code **GBCA** on their application to qualify for their tuition reduction. Once accepted and admitted in the program, students may contact academic advisor Jessica Cruz (215-895-5943) for help with registration.
- * The B.S. in Construction Management at Drexel University is a 186 credit degree program. The M.S. in Construction Management at Drexel University is a 45-credit degree program consisting of a required five-course core curriculum (15 credits), eight courses in an area of concentration (24 credits), and a two part capstone course (6 credits). We also have three graduate certificates in: Construction Management (18 credits), Real Estate (18 credits) and Sustainability and Green Construction (15 credits). Classes dates and times are subject to change. Questions can be directed to Jessica Cruz at jc635@drexel.edu.



Contact: Mercedes Moultrie
Program Manager
Project Management Program, College of Engineering
Drexel University
(215) 571-3939
mm342@drexel.edu

Course No. Course Title

Undergraduate-level Courses

PROJ 101 Project Management for All

Essentials of managing projects and application of planning, monitoring and controlling techniques throughout the project life-cycle. Students learn the hands-on fundamentals of project management that enhance their ability to support projects in their current or future organizations in any field. Open to students in all disciplines.

PROJ 401 Introduction to Project Management

This course examines design, appraisal, planning, and implementation of a project. It provides in-depth analysis of approaches to managing projects in both public and private sectors.
Prerequisite(s): ENGL 103 (or equivalent) [Min Grade: D]

PROJ 402 Essentials of Project Planning & Scheduling

This course will prepare students to apply relevant concepts in project planning, scheduling and control. Project scheduling methods are covered including: bar (Gantt) charts, network diagrams, critical path method, three-point estimates, critical chain concepts, resource allocation, resource leveling, and earned value management.
Prerequisite(s): PROJ 401 (or equivalent) [Min Grade: C]

PROJ 403 Essentials of Project Leadership and Teamwork

This course will examine the organizational environment required for building and maintaining successful project teams. It prepares and provides guidance to project team members and managers to use human resources effectively through good management, wise leadership, and meaningful communications.
Prerequisite(s): PROJ 401 (or equivalent) [Min Grade: C]

PROJ 410 Essentials of Project Quality Management

This course will examine basic quality concepts, tools, and techniques, and explore the sub-processes of quality management: quality planning, quality assurance, and quality control as they relate to project management.
Prerequisite(s): PROJ 401 (or equivalent) [Min Grade: C]

PROJ 415 Essentials of Project Estimation & Cost Management

This course will provide an overview of basic project financial and economic principles involved in managing projects. It is intended to familiarize project team members and managers with relevant methods, tools, and techniques in project cost estimation, budgeting, cost forecasting, and cost control.

Prerequisite(s): PROJ 401 (or equivalent) [Min Grade: C]

PROJ 420 Essentials of Project Risk Assessment & Management

This course will examine the major risk factors throughout various phases of the project life cycle. It considers the overall project planning process, describes key concepts of project risk planning, highlights relevant tools and techniques for risk identification, explores the use of risk assessment methods, and emphasizes risk and opportunity response strategies.

Prerequisite(s): PROJ 401 (or equivalent) [Min Grade: C]

PROJ 430 Essentials of Managing Multiple Projects

This course will examine the management principles, tools, and techniques required to manage multiple projects. Emphasis is placed on functions of the project management office (PMO) and practices of project and program portfolio management.

Prerequisite(s): PROJ 401 (or equivalent) [Min Grade: C]

PROJ 435 Essentials of International Project Management

This course will examine the adaptation of project management principles and methods when operating in an international environment. It investigates cultural, legal, ethical, and financial factors in the context of managing international projects.

Prerequisite(s): PROJ 401 (or equivalent) [Min Grade: C]

PROJ I199-I499 Independent Study in PROJ

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

PROJ T180-T480 Special Topics in PROJ

Topics decided upon by faculty will vary within the area of study.

Graduate-level Courses

PROJ 501 Introduction to Project Management

This course will prepare students to manage scheduling, supply management, project team recruiting, resource allocation, time/cost tradeoffs, risk assessment, task coordination, team-building, progress monitoring, and post-project assessment through a comprehensive overview of project management. Case studies are used to illustrate the principles and tools of project management as a process.

PROJ 502 Project Planning & Scheduling

This course will prepare students to master concepts in project planning, scheduling and control. Project scheduling methods are covered including: critical path systems, critical chain scheduling, statistical analysis, Program Evaluation Review Technique, linear resource leveling, and legal ramifications on contracted projects.

Prerequisite(s): PROJ 501 (or equivalent) [Min Grade: B]

PROJ 510 Project Quality Management

Quality management is related to project management. Examines basic quality concepts and explores the three sub-processes of quality management: quality planning, quality assurance, and quality control as they relate to project management.

Prerequisite(s): PROJ 501 (or equivalent) [Min Grade: B]

PROJ 515 Project Estimation & Cost Management

This course will provide an overview of project financial and economic principles involved in product and system development. It is intended to familiarize project managers with methods in project accounting, budgeting, cost estimation, financial management, design optimization, and economics.

Prerequisite(s): PROJ 501 (or equivalent) [Min Grade: B]

PROJ 520 Project Risk Assessment & Management

Examines the risk factors throughout every phase of a project. Looks at the overall project planning process, explores the use of high-level risk assessment tools, and describes key ideas for project risk planning. Models for risk analysis, assessment, and classification are presented.

Prerequisite(s): PROJ 501 (or equivalent) [Min Grade: B]

PROJ 525 E-Tools for Project Management

This course will examine the use of electronic tools as a means of creating a virtual workplace. Issues related to the use of the e-tools for collaboration and decision making for project management will be explored.

Prerequisite(s): PROJ 501 (or equivalent) [Min Grade: B]

PROJ 530 Managing Multiple Projects

Examines the complex and simultaneous management principles and techniques required to manage multiple projects. Emphasis is placed on a theory and practice of project management that is rigorous and disciplined, yet flexible.

Prerequisite(s): PROJ 501 (or equivalent) [Min Grade: B]

PROJ 535 International Project Management

Examines the uniqueness and adaptations of project management when operating in an international context. Details the investigation of cultural, legal, and regulatory environments as the context of international project management.

Prerequisite(s): PROJ 501 (or equivalent) [Min Grade: B]

PROJ 540 Project Procurement Management

Examines role of procurement in project management including processes and activities needed to acquire products, services and results required to accomplish a project from outside the project organization. Planning, conducting administering and closing procurements are course components as are relevant legal and ethical issues, contract capacity, authority, public and private bidding processes and dispute resolution methods.

Prerequisite(s): PROJ 501 (or equivalent) [Min Grade: B]

PROJ 603 Project Leadership and Teamwork

Examines project leadership skills required for building and maintaining successful high-performance project teams. Prepares project managers to facilitate teamwork through good management and wise leadership.

Prerequisite(s): PROJ 501 (or equivalent) [Min Grade: B]

PROJ 645 Project Management Tools

Examines theories relating to project management software acceptance, use of project management tools, and how tools relate to project success. Develops in-depth skills in a widely-used project management software package, and provides exposure to other selected project management tools for successful collaboration in collocated and virtual project teams.

Prerequisite(s): PROJ 501 (or equivalent) [Min Grade: B]

PROJ 650 Project Stakeholder Management

Examines theories and processes required to identify the individuals, groups, organizations, and other stakeholders that could impact or be impacted by a project. Also covers analyzing stakeholder expectations and their influence on the project, and developing strategies for engaging project stakeholders in effective project decisions to ensure successful project outcomes.

PROJ 665 Managing Project Knowledge

Examines how knowledge services are designed, developed, and implemented within an organization and a project. The goal is to build expertise with knowledge management materials and skills needed to succeed in building an effective knowledge strategy within a project, a program, and an organization. Students learn strategies for building knowledge services, including the theories, models, methods, processes, and social factors that promote successful change.

PROJ 670 Project Management Methodologies: Managing Project Lifecycles

Examines project management methodologies, including Project Management Institute (PMI)® global standards, Agile, PRINCE 2, SCRUM, ITIL, and other leading methodologies. Reviews how project lifecycles are designed, developed, and implemented within a project and across the organization. Builds knowledge and expertise with major project management methodologies and materials and develops skills needed to select, adapt, and apply an effective strategy for a project, a program, and an organization. Students learn strategies for managing projects throughout their lifecycles, including the theories, models, methods, processes, and other factors that enhance project success.

PROJ 695 Capstone Project in Project Management

Provides an opportunity for the student to successfully integrate knowledge and skills acquired during their master's program in project management. Students will evaluate the project management practices in an organization and create a report that identifies strengths and weaknesses in an organization and recommend strategies for improvement.

Prerequisites: PROJ 502 [Min Grade: B] and PROJ 510 [Min Grade: B] and PROJ 515 [Min Grade: B] and PROJ 520 [Min Grade: B] and (PROJ 525 [Min Grade: B] or PROJ 645 [Min Grade: B]) and PROJ 530 [Min Grade: B] and PROJ 535 [Min Grade: B] and PROJ 540 [Min Grade: B] and PROJ 603 [Min Grade: B]

PROJ I599-I799 Independent Study in Project Management

Provides individual study or research in project management under faculty supervision. Course may be repeated for credit.

PROJ T580-T780 Special Topics in PROJ

Topics decided upon by faculty will vary within the area of study.

PROGRAM OFFERINGS IN PROJECT MANAGEMENT

Graduate Certificate in Project Management

18.0 credits (6 courses: 5 required plus 1 elective)

<http://catalog.drexel.edu/graduate/collegeofengineering/projectmanagementcert/>

The graduate certificate in Project Management, a part-time, fully-online program, is designed to support the growing need for project management graduate education. It provides students with the knowledge necessary for successful professional and leadership careers in the rapidly-expanding field of project management and will prepare students to pursue the Certified Associate in Project Management (CAPM)® or Project Management Professional (PMP)® credential from the Project Management Institute (PMI). Interested candidates should visit Drexel University Online for admissions requirements and more information about how to apply.

M.S. in Project Management

45.0 credits (15 courses: 11 required plus 4 elective)

<http://catalog.drexel.edu/graduate/collegeofengineering/projectmanagement/>

The Master of Science (MS) in Project Management, a part-time, fully-online program, is designed to equip professionals with the knowledge expected of project managers in any field. The course content is mapped to the internationally-recognized Project Management Institute's (PMI) A Guide to the Project Management Body of Knowledge (the PMBOK Guide)®. Interested candidates should visit Drexel University Online for admissions requirements and more information about how to apply.

Ph.D. in Project Management

90.0 credits

<http://catalog.drexel.edu/graduate/collegeofengineering/projectmanagement/>

The Doctor of Philosophy (PhD) in Project Management is designed to support the growing need for project management researchers and educators with PhD degrees. It provides students with the knowledge necessary for successful academic, research, teaching, training, and consulting careers in the rapidly expanding field of project management. Interested candidates should visit the Graduate Admissions website for admissions requirements and more information about how to apply.

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Project Management program features

- Part-time
- Start in fall, winter, or spring
- Courses in the Graduate Certificate and M.S. are offered every term
- Courses in the Graduate Certificate and M.S. are offered entirely on-line, so they can be completed ANYWHERE
- All students have access to Drexel facilities, technical support, services, libraries, and software

- The Graduate Certificate can be completed in as little as 1 year
- Effective fall 2016, the Graduate Certificate has been declared eligible for financial aid by the U.S. Department of Education
- Courses from the certificate can be applied toward the M.S. in Project Management
- The M.S. can be completed in as little as 2 years
- Interested students have the opportunity to pursue dual M.S. degrees
- Use electives to complete a graduate minor or graduate-level certificate in an area of interest
- The Ph.D. can be pursued on a part-time or full-time basis

Drexel's Project Management Program: A PMI® Registered Education Provider (R.E.P.)



The Project Management program in the College of Engineering at Drexel University is approved by the Project Management Institute (PMI) as a Registered Education Provider (R.E.P.). This designation indicates that Drexel has met or exceeded rigorous standards for the quality and the effectiveness of its program as defined by PMI. As a result, PMI has authorized Drexel to issue professional development units (PDUs) to meet the education requirements needed by PMI credential holders.

This designation has many benefits to the project management student. An alignment with PMI, the world's largest project management association, provides a verified focus of the course material and learning outcomes so that the student is assured an optimal experience. All courses must be current and align with PMI's Global Standards assuring quality of content leading to the student's professional development.

For more information about the Project Management Institute, visit www.pmi.org.



Office of Continuing Education
1600 Woodland Road
Abington, PA 19001
www.abington.psu.edu/continuing-education/project-management

Contact: Randy Ingbritsen
Continuing Education Representative
(215) 881-7405
rxl3@psu.edu

Course No. Course Title

PM 01 Project Initiation & Planning

This course introduces the student to the project management process; the role of the Project Manager; project communications, and project leadership. It begins the planning process covering topics such as the objectives, scope, and success criteria. This is the first of four courses required for the Certificate in Project Management.

PM 02 Project Scheduling & Integration

This course continues to build upon the lessons learned in "Project Initiation and Planning". Content covers the work breakdown structure, project schedule, PERT/GANTT/CPM methods, and project integration. This is the second of four courses required for the Certificate in Project Management.

Prerequisite: Project Initiation and Planning (BA297D)

PM 03 Project Management Costing & Control

To understand the cost estimating techniques, earned value analysis, change management, and lessons learned. Specific course objectives include: Understanding the project management discipline; Creating a cost estimate and cost baseline; Addressing project changes; Project reporting; Conducting lessons learned.

Prerequisite: Project Scheduling and Integration (BA297E)

PM 04 Project Risk and Management

To understand the related project management risks, creating a risk register, and to understand how to manage a project. Specific course objectives include: understanding the project management discipline; risk identification; qualitative and quantitative risk analysis; project management skills; ethics in project management.

Prerequisite: Project Management Costing and Control

* **PLEASE NOTE: THE PROJECT MANAGEMENT CERTIFICATION CLASSES MUST BE TAKEN IN SEQUENCE. Disclaimer: PMI and PMP are registered trademarks of the Project Management Institute, Inc.**

- * **Registration is now open. Penn State Abington-Ogontz Campus is located at 1600 Woodland Road, Abington, PA 19001. Register by phone at: 215-881-7389 Monday - Thursday 8:00 a.m. - 9:00 pm; Friday until 4:30 pm or fax: 215-881-7317. Contact Robin Burgess at 215-881-7401 with any questions. Also check dates for classes as they are subject to change.**

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Contact: Ed Keeter
Director and Associate Professor
(215) 951-2914
keetere@philau.edu

BS in Construction Management

Course No.	Course Title
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CMGT-102 - Introduction to the Construction Industry	
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Through analysis of relevant case studies, this course examines construction management concepts and principles as applied to contemporary practice and investigates the intersecting roles of construction manager, architect, client, and general contractor. Topics include planning, programming and documentation from pre-construction to project close-out; legal aspects relative to environmental protection, public and worker safety, contract documents, insurance and bonds; labor relations and inspection; project control, total quality management and ethics in construction management.

CMGT-104 - Construction Management II	
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Utilizing pertinent case studies, this course focuses upon the planning and scheduling stages of the building process, with particular emphasis upon reading construction documents and basic estimating principles applied to small-scale, residential and commercial projects. Construction site procedures as well as techniques for estimating unit quantities and costs of materials, labor and equipment, are introduced, and given industry application utilizing building specifications and computer software.

Prerequisite: ARCH-427 or CMGT-102

CMGT-200 - Construction Project Planning & Scheduling	
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A study and application of the tools and concepts used in planning and controlling construction projects. Students employ the Critical Path Method (CPM) of project scheduling, resource leveling, and time-cost analysis using manual and computer-based solution methods to develop and maintain

working project schedule models.

Prerequisite: CMGT-101 or ARCH-428 or permission of Program Director

CMGT-206 - Building Systems

This course introduces students to the foundation, structural, envelope, Mechanical, electrical, plumbing, and automation systems and their interaction in a functioning building facility. Emphasis is placed on value achieved through constructability, performance, and sustainability characteristics.

Prerequisite: CMGT-102

CMGT-208 - Materials & Methods of Construction

This course is an introduction to the materials, assemblies and methodologies of general construction organized around Construction Specifications Institute division format. Topics include site-work and excavation techniques and proceed through basic building systems in concrete, masonry, wood, plastic and steel along with interior and exterior finishes. Emphasis is placed on achieving design intent through appropriate construction techniques and sequencing. Case studies, site visits, ongoing project examples are an integral part of the course.

Prerequisite: CMGT-104

CMGT-304 - Construction Safety & Risk Management

This course familiarizes students with best practices for risk identification, assessment, and mitigation for construction businesses and projects. Students will examine case examples of construction industry businesses and construction project site conditions, identify and assess specific risks, and formulate management plans to mitigate and manage the risks. Particular emphasis is placed on OSHA compliance and worksite safety management.

Prerequisite: take CMGT-102;

CMGT-306 - Construction Site Operations

This course familiarizes students with methods, procedures, and practices required for the effective management of field operations preparing students to assess construction project sites and prepare comprehensive site management plans. The course explores aspects of site management such as layout, logistics, sustainable practices, administration, and false work in a hands-on collaborative environment.

Prerequisite: CMGT-102

CMGT-308 - Construction Safety Lab

This one-hour course deepens student awareness and understanding of jobsite safety hazards, mitigation techniques, and OSHA Regulation compliance. Particular emphasis is placed on hands-on practical application of the principles covered in CMGT 3xx, Construction Safety and Risk Management.

Prerequisite: CMGT-102

Co-requisite: CMGT-304

CMGT-310 – Construction Surveying

This course presents the basic surveying principles and their applications in construction. Students are introduced the use of surveying equipment to achieve horizontal and vertical distance measurement, horizontal and vertical angle measurement, and computation of coordinates. The course includes additional topics like field data collection for site mapping, such as topographic surveys, boundary surveys, feature location, ground survey control, and traverse computations in addition to construction layout practices with the use of digital instruments.

CMGT-410 – Principles and Practices of Heavy Construction

This course is intended to provide students with an introduction to the principles and practices employed in heavy/civil infrastructure and marine construction. The course content is presented from a practical perspective focusing on the management of heavy/civil construction projects. The course is designed for construction management majors as well as those majoring in related fields and is intended to provide a broad understanding of heavy construction techniques and contracting.

Prerequisite: CMGT-200, 202 & 300

CMGT-450 - Construction Management Seminar

This seminar course is an opportunity for upper-level construction management students to explore emerging trends in the construction industry while integrating the knowledge and skills developed through their previous coursework. Seminar discussions will respond to readings, guest lecturers and project reviews presented by industry partners. The course includes individual and group research projects the results of which are also discussed during seminar meetings. Material and discussions will include topics such as professional practice, integrated project delivery, industry specific ethical challenges, sustainable practice, and career alternatives.

Prerequisite: CMGT-302 CMGT-300

MS in Construction Management

Course No. Course Title

MCM-600 - Construction Estimating & Scheduling

Utilizing pertinent case studies, this course focuses upon the planning and scheduling stages of the building process, with particular emphasis upon reading construction documents and basic estimating principles applied to small-scale, residential and commercial projects. Construction site procedures, as well as techniques for estimating unit quantities and costs of materials, labor and equipment, are introduced, and given industry application utilizing building specifications and computer software.

MCM-602 - Construction Information Modeling

Technological advances within the construction industry demand that today's managers possess proficiency in current building methodologies and literacy in current computer software. This course concentrates upon the use of sustainable construction methods and materials to produce cost effective projects with emphasis upon resource efficiency, environmental protection and waste minimization. Innovative methods of documentation and digital techniques, principally Integrated Practice and Building Information Modeling (BIM) are given comprehensive coverage, relative to the application of the software to the actualization of the built form.

MCM-603 - Construction Law: Roles & Responsibilities

Current legal problems associated with the construction industry are investigated from management's perspective through consideration of the roles assigned to the various project participants. The entire building process from predesign to owner use is scrutinized, highlighting case law and statutory information, contractual relationships, licensing issues, design through build, bidding and procurement rules, mechanics liens, insurance and surety bonds, and liability awareness. Available methods of dispute resolution are evaluated, including negotiation, mediation, arbitration, and litigation with emphasis upon claim avoidance.

MCM-604 - Project Finance & Cost Control

Utilizing pertinent case studies, this course probes the economics of construction and analyzes project control systems used to effectively manage cost and time. Principles drawn from cognate business fields, specifically accounting, finance, and taxation, are given real-life application relative to construction projects of multiple types and scales. Key budgetary issues are examined in-depth, including financial statements and balance sheets, variance analysis and optimum cash flow methods, as well as efficient cost reporting systems. Additional topics include internal controls, financial analysis and presentation, contractor surety and lending, and fraud, with particular emphasis upon cost-effective methods to procure and deliver construction projects including lump sum, unit price, cost-plus, and design-build.

MCM-606 - Construction Risk Management

This course examines the key concepts, models, codes, tools and techniques used in managing risks within the architecture, construction and engineering industries. The course will focus on planning for the effective implementation of the risk management process, identification and qualitative and quantitative assessment of risks, appropriate strategies to respond to risks, and how to sustain the risk management process throughout the life of a construction project.

MCM-612 - Advanced Construction Project Management

Through detailed case studies drawn from contemporary practice, this course provides in-depth study of the principles and methods critical to the management and integration of the design and construction processes. Planning, scheduling, bidding, professional/client relationship, contractor selection and LEED accreditation are analyzed. Theoretical and practical aspects of project planning are charted, incorporating such essential steps as feasibility studies, estimating project costs, cash flows and cost control through critical path methodologies, risk analysis methods and current techniques for value engineering.

Prerequisite: MCM-600, MCM-602, MCM-603, MCM-604, MCM-606

MCM-614 - Materials & Methods of Construction

This course explores a management approach to evaluation and policies involving materials, assemblies and methodologies of general construction. Students are exposed to basic building materials, components, and systems and the appropriate techniques to evaluate their value, constructability, and other characteristics affecting project success. Emphasis is placed on the development of company policies regarding material selection, procurement, handling and assembly. Case studies and ongoing project examples are an integral part of the course.

MCM-616 - Real Estate Development

This course provides a step-by-step overview of the stages in environmentally and fiscally sustainable real estate and land-use development, considered from the developer's perspective. Topics range from conceptualization and market analysis; site acquisition, zoning, codes, infrastructure and tax incentives; project planning and design; economic feasibility and financing; the development team; the construction process; plus marketing and financial evaluation. Through cases and lectures presented by leading developers, students investigate the market-driven challenges and benefits of sustainable development with emphasis upon the role of the developer in the creation of an architecturally and ecologically superior built environment.

MCM-618 – Heavy Construction Practices and Principles

This course is intended to provide students with an introduction to the principles and practices employed

in heavy/civil infrastructure and marine construction. The course content is presented from a practical perspective focusing on the management of heavy/civil construction projects. The course is designed for construction management majors as well as those majoring in related fields and is intended to provide a broad understanding of heavy construction techniques and contracting.

The BS in Construction Management is a 121-123 credit program with course offerings during the day and the evening. The MS in Construction is a 36 credit program with course offerings primarily in the evening and online. All classes are located on the East Falls Campus.



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Contact: Stephen J. Krone, D.Sc., P.E., M.ASCE.
Director of Construction Management and Engineering
Phone: (856) 341-5924
Email: krone@rowan.edu

Course No. Course Title

CM 01301 Fundamentals of the Construction Industry I

Provides a general overview of the planning, administration, management, and cost of construction projects and an introduction to the methodology used in executing specific designs. Emphasis is placed on the organization of construction firms, use and types of primary construction equipment, estimating and quantity take-offs, contractual and management systems, scheduling, project administration, and inspection of construction operations.

CM 01302 Fundamentals of the Construction Industry II

Introduces the design process and development of construction documents. It covers the standard design phases: programming, conceptual design, schematic design, design development, construction documents and construction administration, and the format and utilization of project manuals including contract specifications, the interpretation and analysis of engineering plans and specifications, and new technologies being used in design including Building Information Modeling (BIM) and sustainable (green) practices. The course also explores the various common project delivery methods.

CM 01304 Project Administration

Provides exposure to and use of various types of project control systems for project efficiency and documentation. Students will learn how the submittal process operates and is monitored. They will also be shown a variety of tools used in tracking project documentation, and essential elements related to contract law and administration.

CM 01305 Construction Cost Accounting, Estimating & Finance

Introduction to various costs of construction including direct and indirect project costs, comparison of hard and soft costs, job cost analysis and forecasting of cost-to-completion, labor, material and equipment expenses, cash flow, overhead, profitability,

and general conditions costs. Students will learn research techniques used to create accurate estimating and bidding procedures.

CM 01303 Project Building Systems

Students will learn the description and identification of the equipment and materials used in mechanical systems for heating, ventilating and air conditioning, electrical, plumbing, fire protection, piping, gas, lighting, water and waste water, conveyance, life safety systems, environmental, security, audio/visual, and building system controls. The course also provides an introduction to building structural and envelope systems.

CM 01306 Construction Project Planning & Scheduling

Students will learn procedures used in project planning and scheduling that employ float methods of scheduling logic. They will examine the critical path series of activities to project completion, including the use of computer software applications for problem solving, and related tools, spreadsheets, and information management. Also covered are work breakdown structures, activity durations, status reports, resource allocation, re-planning, monitoring, and updating of projects. Students will develop project site logistics plans.

CM 01408 Industrial Relations in the Construction Industry

This course examines various perspectives (union, management, government) on the collective bargaining system in place in the construction industry. Topics include the legal and regulatory environment, problem solving, and the roles of labor and corporations.

CM 01410 Building Construction Systems & Codes

This course provides a conceptual understanding of functions and performance of structural building systems. The primary purpose of this course is to provide familiarity with use of construction code with reference to International Building Codes (IBC) 2012. For anyone in the field of construction or construction management it is necessary to know about the concepts and fundamental aspects of the code. As a result, the course is intended to provide an understanding of how the code was developed, how it is to be interpreted, and how it is applied to design and construction of buildings. The goal of the course is to make implementation of the code easier, and clearer to understand. Other than discussions on structural elements and their construction methods, the course covers issues such as use and occupancy, types of construction, fire-resistive constructions, interior finishes, building material, inspections, and tests.

CM 01409 Building Energy Systems for Construction Managers

The Building Energy Systems for Construction Managers course provides a conceptual understanding of functions and performances of energy systems including mechanical, electrical, electronic, plumbing and transport systems in residential and commercial buildings. The course also provides information on integration between energy systems and other building components. While introducing the concepts of alternative energy sources, energy efficiency, structural implications of mechanical systems, indoor air quality, and environmental control strategies, the course familiarizes students with more recent and current efforts in sustainability and green building ideas. The course also introduces codes and standards relevant to energy devices used in building

construction, such as National Fire Protection Association (NFPA), American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), and National Electrical Code (NEC).

CM 01411 Construction Safety and Loss Prevention

This course offers a practical guide for eliminating safety and health hazards from construction worksites. The Handbook of OSHA Construction Safety and Health addresses the occupational safety and health issues faced by those working in the construction industry. The course covers a vast range of issues including program development, safety and health program implementation, intervention and prevention of construction incidents, regulatory interpretations, understanding, and compliance, OSHA's expectations, health and safety hazards faced by those working in the construction industry and sources of information. The course also features updates for construction regulations, construction job audit, training requirements and OSHA regulations. It includes new record keeping guidelines and forms with additional material on focused inspections. Containing updated contact information for the newest agencies, the course also presents a model safety and health program, examples of accident analysis and prevention approaches.

CM 01407 Advanced Leadership & Communication

This course is designed to teach students to become more effective leaders and communicators in the construction industry. Drawing on various case studies, students will examine ethical practices in the industry. They will define and role play effective communications strategies that simulate situations they may encounter within the industry such as general-to-subcontractor, corporate, and labor relations. Students in this course will also examine principles of negotiation and dispute resolution in the construction industry.

CM 01412 Capstone Course

In the course, students will build on what they have learned in the major, integrating the theory and knowledge that they gained in class with practical experience in the construction industry. Capstone projects are developed through a series of project meetings between the student and program faculty.

REGISTRATION:

To register, please visit: RowanU.com/Apply or call 856-256-4747.

Rowan University's B.A. in Construction Management degree completion program provides those with an associate's degree or at least 60 credits with the remaining credits necessary to complete a bachelor's degree in this growing field while taking classes online. Applicants with less than 60 credits may work with an enrollment counselor to explore available options. This program is ideal for journeypersons and seasoned professionals in the construction industry as well as apprentices who are looking to develop leadership skills and advance their careers. The B.A. in Construction Management degree prepares individuals to supervise, manage, and inspect construction sites, buildings, and associated facilities.

Contact: Denise Guiteras
Administrative Specialist
Civil and Environmental Engineering Department
(215) 204-7814
dguiter@temple.edu

Course No. Course Title

CMT 2124 Construction Methods & Materials

Materials and construction processes of importance to the designer and constructor; construction equipment and methods of handling and placing these materials on the job.

Level: Undergraduate

Department: Engineering: Civil and Environmental Engineering

CMT 3121 Construction Estimating

Estimating quantities of materials, labor, and equipment for various construction tasks; pricing of cost items; indirect costs; types of bids and bidding process; term project using actual construction blueprints; written and oral presentations; computer applications using spreadsheet program and Sage (Timberline) Estimating Software.

Level: Undergraduate

Department: Engineering: Civil and Environmental Engineering

CMT 3123 Construction Estimating Lab

Introduction of the construction bidding process and construction documents; blueprint reading; programming and database generation with spreadsheet software; computer applications using Sage (Timberline) Estimating Software.

Level: Undergraduate

Department: Engineering: Civil and Environmental Engineering

CMT 3145 Structural Analysis

The analysis of statically determinant structures under static and moving loads, techniques of determining the deflection of structural members, and analysis of indeterminate structures.

Level: Undergraduate

Department: Engineering: Civil and Environmental Engineering

CEE 2396 Environment and Safety Aspects

Construction-related environmental issues, erosion control, wetland areas, habitat protection. Issues which relate to protective equipment, safety and potential hazards for construction workers, construction equipment operators, and others impacted by on-going construction activities; with laboratory

Level: Undergraduate

Department: Engineering: Civil and Environmental Engineering

CMT 2125 Construction Contracts and Specifications

Analysis of construction contract law cases, analysis of selected contracts, bidding and contract award procedures, interpretation of specifications. Preparation of written reports and oral presentations are required.

Level: Undergraduate

Department: Engineering: Civil and Environmental Engineering

CMT 2271 Building Systems

A basic study of the primary mechanical and electrical equipment and systems used in buildings. Design principles for selecting and sizing various systems are stressed throughout the course. Mechanical topics include plumbing, heating, ventilating, air condition, water supply, fire protection, and sanitary sewer systems. Electrical topics include basic principles of electricity, single and three phase systems, transformers, branch circuits and feeders, and residential and commercial illumination.

Level: Undergraduate

Department: Engineering: Civil and Environmental Engineering

CMT 3322 Construction Planning & Scheduling

Field office planning, quality control plan development, construction planning and scheduling; term project using actual construction blueprints; written and oral presentations; computer applications using Primavera Project Planner Software.

Level: Undergraduate

Department: Engineering: Civil and Environmental Engineering

CMT 4335 Steel and Wood Structures

Structural systems and framing plans are developed for simple wood and steel structures. Typical framing members are designed and analyzed for adequate strength and serviceability.

Level: Undergraduate

Department: Engineering: Civil and Environmental Engineering

CMT 4336 Concrete and Masonry Design

Structural systems and framing plans are developed for simple concrete and masonry structures. Typical sub-systems and framing members are designed and analyzed for adequate strength and serviceability. The design of plain and reinforced concrete footings is included.

Level: Undergraduate

Department: Engineering: Civil and Environmental Engineering

CMT 4396 Capstone in Construction

Synthesis of estimating, scheduling, and cost control for selected construction projects. Project management computer application. Preparation of written reports and oral presentations is required.

Level: Undergraduate

Department: Engineering: Civil and Environmental Engineering

MKTG 2101 Marketing Management

Introduction to the role of marketing in the U.S. economy and within the firm. The interaction of marketing with other business functions and with society. Components of marketing strategy including analyzing what markets and needs the firm will serve; deciding when, where, and how the firm will meet these needs; and understanding why (i.e., a compelling business reason) the firm should do this. Study of marketing mix development issues, including product development and management; pricing; integrated communications and promotion; distribution, logistics, and supply-chain management; as well as other decisions involved in this process.

Level: Undergraduate

Department: Business, Marketing

HRA 1101 Leadership and Organizational Management

This course prepares students to address the challenges of leading high performing organizations. Students will examine the enablers of principled organizational leadership and performance. Course topics include leadership, change management, decision-making, culture, team building, organizational structure and control, communication, social responsibility and sustainability, motivation, human resource management, and globalization.

Level: Undergraduate

Department: Business: Human Resource Admin

CCET 4973 Construction Finance Management

Construction cost accounting systems, job costing approaches, project budgeting, financial reporting procedure

Level: Undergraduate

Department: Engineering: Civil and Environmental Engineering

RMI 2101 Introduction to Risk Management

Introduction to risk management and insurance. Principal casualty risks to which organizations are exposed, including those involved in employee benefits. Means of identification, evaluation, and treatment of these risks are analyzed, with the methods of treatment including insurance, risk retention, self-insurance, and loss control.

Level: Undergraduate

Department: Business: Risk Management

MSOM 3101 Operations Management

An examination of the activities necessary for the provision of the organization's product or service. Planning and scheduling of operations, allocation of resources, including staffing requirements and equipment decisions, inventory control and production planning, waiting line problems, and quality.

Level: Undergraduate

Department: Business: Management Science/Operations Management

*** Please register at Temple University –1810 Liacouras Walk 101, Philadelphia, PA 19122.**

***Below each course listing above is listed whether it is an undergraduate or graduate course. There are minimum 124 total credits required to complete the Bachelor of Science program in Construction Management Technology.**



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Construction Management Certificate
Program
Small Business Development Center
1510 Cecil B. Moore Avenue, Suite 200
Philadelphia, PA 19121
<http://www.temple.edu/sbdc>

Contact: Kristi Fitzpatrick
Program Training Coordinator
Construction Management Certificate Program, Temple Small Business Development
Center
Temple University – Speakman Hall, RM 214, Fox School of Business
(215) 204-3856, sbtrain@temple.edu

Construction Management Certificate Program

The Construction Management Certificate Program (CMC) is a non-credit, certificate program designed to provide business management tools to existing and aspiring independent contractors in residential rehabilitation, remodeling, and light commercial work. The program takes 9 months to complete beginning in August and ending in May. The duration of each class on average is 5 hours with various extended times for lab sessions.

The course is ideal for construction contractors, technically skilled workers engaged in various trades such as carpenters, plumbers, electricians, apprentices, new companies in business for up to 4 years, novice construction managers and real-estate developers. There are no pre-requisites for the program.

CMC consists of 12 modules taught by practitioners in the construction industry. Each participant is required to attend all 12 modules and complete the following: a team project, a professional team resume, team project presentation and a Business concept paper. The individual courses below cannot be taken as a stand-alone course. All participants must be registered in the program in order to enroll in any of the modules.

Fee: \$2,500.00

The following listings are the required 12 modules needed to complete the **Construction Management Certificate Program**:

Course No. Course Title

Course: FOXSBDC0012 Team Building & Business Management

This is the introductory course to the Construction Management Certificate Program (CMC). Participants are engaged in a variety of exercises and activities designed for team building purposes. Participants are placed into teams based on their level of experience and personal goals. The activities are designed to develop a baseline assessment of each participant, show them how to work in a group setting and establish team goals. They are also exposed to various concepts such as business ethics, maintaining a good credit history, acceptable business practices in the industry, etc.

Course: FOXSBDC0013 Construction Blueprint Reading

This course is designed specifically for those who desire basic knowledge of Print Reading (construction blueprints) or further knowledge of construction drawings. This course utilizes a combination of text, design plans, and structural sketches along with many realistic, hands-on activities and exercises. Upon completion of this course participants will be able to navigate construction documents and proficiently understand and translate the information the drawings depict. This course teaches interpretation and visualization of residential and commercial construction prints.

Course: FOXSBDC0014 Methods & Materials

This course provides participants an overview of the materials and the methods used for the construction of residential and commercial buildings from the foundation to the roof. Upon completion of this course, participants will learn: the basic elements of the building process, characteristics of various building materials, application methods, and the role building materials play in the achievement of a more sustainable environment.

Course: FOXSBDC0015 Quantity Take-Off & Cost Estimating

This course is designed to help contractors figure out the materials and labor costs associated with a construction project. Participants are taught to manually figure out the quantity take-off process with the aid of a variety of resources that are used as benchmarks throughout the process. One major objective of the course is to teach participants how to leverage the plethora of data that is readily available through cost estimating data sets during the life cycle of construction projects. Participants are also introduced to cost estimating software and data sets that help make the process more manageable.

Course: FOXSBDC0016 OSHA Regulations

This course is designed to inform construction industry workers and employers on how to recognize, avoid and promote safety and health hazards in industry work spaces. It promotes the major objectives stipulated by OSHA and ensures that workers in the construction industry are more knowledgeable about workplace hazards. This course also provides information regarding workers' rights, employer responsibilities, and how to process and file complaints when necessary. This course does not certify participants for OSHA 30-Hour Construction.

Course: FOXSBDC0017 Accounting for Contractors

This course covers tax implications based on the type of financing source utilized and the associated benefits where applicable. Participants will learn how to plan and develop budgets that will enable them to manage, fund, and finance construction projects. The goal of this course is not to prepare contractors to become accountants but rather to provide them tools that will help them understand the operations of their business from a financial perspective.

Course: FOXSBDC0018 Loans

This course helps contractors to familiarize themselves with the various types of financing available to fund a project. It teaches contractors when and how to utilize the various sources and the costs associated with these sources. Participants will learn about traditional and alternate sources of financing, how to make financial projections and learn of alternative methods of financing a projects.

Course: FOXSBDC0019 Project Scheduling & Budgeting

This course is designed to equip contractors with the tools that will help keep their project on schedule. Participants will learn how to communicate what work needs to be done, the type of resources necessary to perform and manage the job and the time frame and order in which the various complex steps need to be completed. Construction project managers will be able to effectively communicate the effort needed to deliver a completed project on time and on budget. This course provides an overview of the methods of accounting that are available to construction companies.

Course: FOXSBDC0020 Contract Administration & Control

Construction projects can be very complex in nature depending on the type of construction project being executed. Managing and monitoring quality of the finished product is absolutely necessary and has become critical for the ultimate success of large scale projects. Construction managers need to be able to optimize construction timelines and cost which require intimate knowledge of building practices and operations. This course will teach contractors how to manage quality and total control of a project.

Course: FOXSBDC0021 Contract Law

This course is designed to educate contractors on how construction contracts are formulated through the bidding process. It places emphasis on the construction specific applications of contract law. It covers the basic difference between private and public construction contracts. Participants learn how to distinguish between these different types of contracts and know what each requires. The elements of a contract will be explored as well as the risks involved and the consequences involved with non-performance on a contract. Various contract terms will be explained so that participants get a general understanding of these terms and how disputes can be settled through arbitration.

Course: FOXSBDC0022 Pre-Business

This course provides a comprehensive introduction to the fundamentals of starting and managing a business. Aspiring construction business owners will get an overview of the many issues involved in planning and launching a new business venture. Topics include personal and lifestyle issues of the entrepreneur/business owner, the legal, financial and tax implications of starting a business, business registration, government regulations and compliance issues.

Course: FOXSBDC0023 Insurance & Bonding

This course introduces participants to the various types of risks involved and how to plan effectively. Tools such as surety bonds provide financial security and assurance that contractors will be able to pay all parties involved including suppliers, laborers etc. This course covers the benefits of using surety bonds and the various types of contract surety bonds available to cover projects.

Course: FOXSBDC0024 Team Project Meeting & Lab Session

This course is one of the main requirements towards the completion of the Construction Management Certificate Program (CMC). Participants are placed into teams at the beginning of the program for the sole purpose of undertaking a major team project. The team project runs concurrently with all of the technical courses and the project is incorporated into the course work.

Register as soon as possible by visiting <http://www.noncredit.temple.edu/cmc> or by contacting the Training Department at (215) 204-3856 sbtrain@temple.edu

For additional information about the program visit the Temple SBDC website <http://www.temple.edu/sbdc>



Contact: continuing-ed@udel.edu
(302) 831-7601

Project Management Certificate

The field of Project Management has universal applicability to many businesses and industries. Project managers need to understand business requirements and how to effectively plan, organize, control, and lead a project throughout its entire life cycle.

This non-credit certificate starts you on the path to earning the Project Management Institute's (PMI®) Project Management Professional (PMP®) designation, giving you hands-on experience with practical tools, risk assessment, and team techniques that support effective project management. Our instructors bring decades of project management experience to enrich classroom discussion and learning.

Target Audience:

- Newly appointed or aspiring project managers;
- Experienced project leaders who want to take their management skills to the next level;
- Managers who want to apply the discipline of project management to make their organizations more effective and competitive;
- Business and management professionals who want to enhance their planning and resource management knowledge;
- Project managers seeking entry into the Project Management Institute's PMP® (Project Management Professional) certification process.

Offered in three locations!

- UD **Wilmington** Campus, Arsht Hall, 2700 Pennsylvania Ave, on Wednesday nights
- UD PCS, 501 S College Ave, **Newark** on Monday nights
- UD Lifelong Learning Center, 1201 College Park Drive in **Dover** on Tuesday nights.

Program Details

- 14-week program meets once a week from 6-9:15 pm
- Participants earn 42 project management education hours, enough to sit for the PMP or CAPM Exam
- Textbooks are included in the fee of \$ 2595
- For more details, or to register, visit: <http://www.pcs.udel.edu/project/> or call 302-831-7601

New Online Non-Credit Certificate for Fall 2017!

Business Process Improvement for Project Managers: Tools & Methodologies.

Project Management and Lean/Six Sigma are highly complementary methodologies and skill sets. Project Management tools and techniques can be applied to Lean/Six Sigma projects, and Lean/Six Sigma tools and techniques can be applied to project management. In combination, they enable the professional practitioner to successfully manage projects and to identify, analyze and solve business problems, making verifiable contributions to the organization's bottom line. Professionals who build their credentials to include both of these skills can significantly improve their value to their employer or to the job market.

Who should participate:

- Project managers
- Project schedulers
- Members of project management offices (PMO)
- Anyone interested in learning more about Lean/Six Sigma tools and methodologies

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- 12-week program with once a week live discussions, Thursday, 7-8 pm Eastern Standard Time
- Weekly self-paced material
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Other Project Management Offerings at UD:

- **PMP® Examination Prep**
This two-day exam preparation course is offered in partnership with the Delaware Valley Chapter of PMI, and includes their study guide. This course prepares participants for the PMP® exam. Offered from 8am-4pm on two Saturdays in January in Newark, DE. To learn more about this program, please visit www.pcs.udel.edu/project-exam-prep

To learn more about all the programs we offer, please visit www.pcs.udel.edu

To register, please call 302-831-7600

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Contact: Eileen Callahan
Director of Student Experience, College of Professional Studies
(610) 519-6478
eileen.callahan@villanova.edu

Non-Credit Professional Programs:

Prep for Certified Associate in Project Management (CAPM)[®] Exam

To manage larger projects and gain more responsibility or add project management skills into your current role, then the Certified Associate in Project Management (CAPM)[®] is right for you. This fast paced, four day, exam preparation course is intended for individuals with little to no experience in project management who are looking to gain their first certification. This course meets PMI's 23 contact hour CAPM Exam requirement.

PMP[®] Exam Prep for Project Managers

The PMP is highly recommended for experienced project managers looking to advance their skills, career, and earning potential. This intensive program combines expert instruction with *The CERTWISE™ Learning System for PMP[®] Exam Preparation* training materials and meets PMI's 35 contact hour PMP Exam requirement. This course will help you learn faster, retain more knowledge and stay on track for success on the PMP exam.

Sustainability Facility Professional[®] (SFP[®]) Credential

This program is designed for all facility managers and like-minded professionals with an interest in sustainable practices. It is ideal for related industry practitioners such as architects, designers and safety engineers. Become an SFP and play a key leadership role in creating, managing, and operating sustainable facilities. This globally-recognized credential delivers innovative ideas and training to help you advance your career, improve the efficiency of your facilities, and impact your organization's triple bottom line. Earn 4.5 Continuing Education Units upon completion. LEED[®] Professionals will also earn 70 general CE hours.

Facility Management Professional® (FMP®) Credential

This course is based on the IFMA FMP Credential Program and offers a single source for learning about the FM profession, gaining the skills demanded by employers, and earning the FMP credential. Increase your knowledge and skills in the areas of operations and maintenance, project management, finance and business, and leadership and strategy. The program consists of printed and e-version reading materials, interactive online study tools and online FMP final assessments. Earn 6.0 Continuing Education Units upon completion. LEED® Professionals will also earn 60 general CE hours.

Supply Chain Management

This course is for professionals who are interested in increasing their knowledge and expertise in the field of supply chain management. Establish yourself as a globally recognized supply chain expert with this course, designed to help you earn the Certified Supply Chain Professional (CSCP) designation. Earn 3.9 Continuing Education Units upon completion.



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