

Master of Building Construction Program

Course Descriptions

Integrated Building Processes I **BSCI 7020 (3 credit hours)**

Fundamentals of project conception and planning; project development; proformas; site selection and real estate purchases; sources of project funding, equity, and capital; and protocol in planning, zoning, and utilities. Individual and group research, presentations, and projects. OFFERED FALL SEMESTER ONLY.

Construction Information Management **BSCI 7030 (3 credit hours)**

Advanced computer and information management systems applied in the construction industry. Topics include network systems, EDI, voice recognition, bar coding/other ID systems, imaging, etc. Independent projects, research and homework assignments. OFFERED SPRING SEMESTER ONLY.

Integrated Building Processes II **BSCI 7040 (3 credit hours)**

Construction project delivery, from pre-construction services through ownership. Topics include project management, pre-construction services, pre-planning, procurement, site utilization, subcontracts, commissioning, closeout, building operation, and long-term ownership. OFFERED SPRING SEMESTER ONLY.

Executive Issues in Construction **BSCI 7050 (3 credit hours)**

Construction industry executives will present 6 to 10 topics that represent a cross-section of significant management issues. Students will interact with the professor and the various executives to gain understanding of these problems. By course end, students will be expected to make presentations that demonstrate a level of expertise on the various subjects. OFFERED FALL SEMESTER ONLY.

Research Methods in Building Science **BSCI 7060 (3 credit hours)**

A study of the academic research process, with an emphasis on defining research problems in construction and the development of a research proposal. Topics include: planning and

selection of research methodology, review of relevant literature, collection of data, data analysis, and writing the final research report. OFFERED FALL SEMESTER ONLY.

Graduate Seminar
BSCI 7950 (1 credit hour)

Topics include research techniques, presentation skills, ethics in construction, professional development, job placement, student projects, etc. This course may be repeated for a maximum of one (1) credit. OFFERED FALL AND SPRING SEMESTER.

Capstone Project
BSCI 7980 (3 credit hours)

Independent exploration of an approved topic with final written report of findings and an oral defense of the work. Specific capstone project requirements are established by the supervising committee and vary based on the chosen topic. OFFERED SPRING SEMESTER.

Construction Labor and Productivity
BSCI 7010 (3 credit hours)

Construction labor issues, productivity measurement and productivity improvement in the construction industry. Includes reading, research, and an out-of-class project. Semesters vary.

Electives in Project Management – BSCI 7100 (3 credits):

Alternative Contract Agreements

Survey of alternate project delivery systems in construction with analysis of their impact on project management and company organization. Guest lectures, readings, exams, and projects.
Semesters vary.

Building Great Structures

The purpose of this course is to gain a conceptual understanding of the behavior of structural systems using historically significant works of engineering and architecture, as well as the temporary structural systems used to build them. Through readings, observation, and conceptual analysis we will explore the physical and cultural forces that shape historically significant structures. In addition, we will analyze some of the catastrophic failures that have occurred involving significant structures, and the role construction might have played in causing or preventing these failures. We will seek to find the influence that construction systems and processes have in shaping great works of Engineering and Architecture. Semesters vary.

Contracting Principles

General principles associated with the commercial general construction business including business organizations, financial statements, legal issues, and conceptual estimating.

Semesters vary.

Developing Management Skills for Construction Managers

The focus of the course is to read and review books and articles on management, conflict resolution, and management skills. The out of class work would include directed reading, open research, and writing. The in-class work would include discussion of reading, discussion of writing assignments, questioning oneself and others as to future challenges, developing scenarios, role playing. Guest speakers supplement discussion sessions. Semesters vary.

Project Management Software

BSCI 7300 (3)

This class investigates the use of information technology in the workflow elements of project management within a construction firm (ie: estimating, scheduling, buyout, project administration, and job costing/forecasting). Students will use various project management software packages to simulate typical management functions found in commercial construction. Students will also explore "cutting edge" IT applications related to construction operations through a research paper and presentation. Semesters vary.

Other **BSCI Offered Electives** may be available from time to time, including, but not limited to:

Sustainable Construction

Advanced Materials, Methods, & Operations

Summer Foundations Courses

Foundations I – Special Problems in Construction

BSCI 6970-001

Plans & Specs / Estimating (3 credits)

Introduction to the construction industry, plans and specifications reading and interpretation, construction materials and methods, estimating in construction and skill competency for quantity survey of divisions 1-48. Students perform a complete take-off, pricing, and bid preparation for a small commercial construction project. OFFERED SUMMER SESSION (full 10 weeks).

Foundations II - Electives in Project Management

BSCI 7100-002

Structures & Temporary Structures (3 credits)

This course will introduce the student to the fundamentals of structural analysis and design. The course will include analysis of statically determinate structures, strength of materials, design philosophies in structural engineering, design fundamentals for various materials (wood, steel and concrete) and design of temporary structures. OFFERED SUMMER MINI SESSION II.

Foundations III - Electives in Project Management

BSCI 7100-003

Technology (3 credits)

This course will explore the use of information technology and information management in construction. Topics include: hardware, software, digital file management, and networking systems. This course utilizes problem solving using techniques in spreadsheets, databases, presentation software, and digital media. OFFERED SUMMER MINI SESSION I.

Foundations IV - Electives in Project Management

BSCI 7100-004

Project Management / Scheduling (3 credits)

Pre-requisite: instructor approval. This course will develop, within the student, a working knowledge of scheduling logic, scheduling applications, and project cash flow analysis. Understand the impact of planning and scheduling decisions of project management, including: site utilization, schedule updating, expediting, and resource control. Understand the roles and responsibilities of project supervision, in multiple project delivery systems. OFFERED SUMMER MINI SESSION II.

Foundations V – Electives in Project Management

BSCI 7100-005

Mechanical / Electrical / Plumbing (3 credits)

This course is an overview of the plumbing, mechanical, and electrical systems in buildings. Basic design concepts, materials, and components are covered with emphasis on the management and quality control of systems installation during the construction process. OFFERED SUMMER MINI SESSION I.