

# 2018-2019 MS-REBE Course Descriptions

CMGT – Construction Management Courses

REAL – Real Estate Courses

FMGT – Facilities Management Courses

## **CMGT 4110: PreConstruction Integration & Planning**

Offered: Fall

This course examines the role of preconstruction services, team integration, and joint design planning in various Integrated Project Delivery (IPD) approaches. Various tools and techniques associated with preconstruction services and design planning from the proposal stage through the design stages of a project is considered.

## **CMGT 4120: Construction Planning & Scheduling**

PREREQ: CMGT 4410

Offered: Winter

Understanding and applying scheduling and control to construction projects is essential to successful construction management. Project scheduling emphasizes network-based schedules, such as critical path management (CPM), network calculations, critical paths, resource scheduling, probabilistic scheduling and computer applications. Project control focuses on goals, flow of information, time and cost control, and change management.

## **CMGT 4155: Sustainable Development/LEED**

Offered: Fall

The course includes many case studies of historic and contemporary structures exemplifying various sustainability features. Emphasis will be placed on how LEED project certification influences the overall construction project. Topics will include LEED certification techniques for sustainable sites, water efficiency, energy & atmosphere, materials & resources, indoor environmental quality, innovation and design. The following topics will be covered from a LEED perspective: ventilation, air conditioning, heating, electrical lighting, energy efficiency, and building control systems. The student will study and analyze how management and LEED techniques are applied to current construction projects.

## **CMGT 4170: Construction Accounting & Financial Management**

Offered: Spring

Construction financing studied from three perspectives: 1) capital requirements for the construction company, 2) cash flow requirements for project administration, and 3) asset acquisition requirements. Cross listed with [CMGT 3170](#).

### **CMGT 4177: Environmental Systems & MEP Coordination**

Offered: Spring

A study of mechanical and electrical systems (MEP) used in the construction of buildings. Course content will include system design, component selection and utilization for energy conservation, cost estimating of systems, coordination and management of installation. Specific systems included are electrical, air conditioning, heating, ventilation and plumbing, fire protection, life safety, communication, power systems and lighting. The course will also consider coordination of MEP systems and explore emerging technology and environmental issues related to mechanical and electrical systems in buildings.

### **CMGT 4200: Lean Construction Project Management**

Offered: Winter

This advanced course focuses on cutting edge lean tools and other productive strategies for the management of people and processes in the construction industry. The tools and strategies presented draw on the very successful Toyota Production System adapted to the construction industry. Lean construction methodologies such as the Last Planner® System, the Lean Project Delivery System™, and Integrated Project Delivery will be discussed. Topics also include sustainability and the emerging interest in "green construction," as well as the use of Building Information Modeling to enhance the development and management of integrated projects. This course also looks at the human element in relation to motivation, safety, and environmental stresses. A number of case studies will be presented to highlight best practices in Lean Construction Project Management.

### **CMGT 4230: Design Management & Schedule Control**

Offered: Winter

This course examines the various strategies and techniques associated with managing the design delivery process to align with the construction schedule needs in an integrated fashion. Design planning, scheduling, and resource allocation are considered along with design value determination and management of the various design-construct interfaces.

### **CMGT 4250: Construction Job Site Management**

Offered: Winter

This course addresses how a successful construction project is managed and administered from design through construction to closeout. Emphasis will focus on how to unite the key stakeholders (contractors, architects, engineers, etc.) to provide them with a workable system for operating as an effective project team. The latest technology, laws and regulations associated with contract administration will be presented. Topics pertinent to each stage of a project are introduced and discussed as they occur throughout the life of the project. Numerous real-world examples will be utilized throughout the course. Various electronic project administration tools and techniques will be demonstrated including Building Information Modeling.

### **CMGT 4310: Cost Modeling and Trend Management**

Offered: Spring

This course covers various approaches to construction cost estimating at the conceptual stages of planning and design through detailed construction. Students will learn parametric estimating techniques and how they are applied to construct and predict reliable budgets at the earliest stages of design. Students will build cost models and refine those models with greater detail as design develops through a project. Building information modeling will be introduced and used to create massing models to demonstrate design impacts on project costs. Cost trending techniques will be presented to manage, monitor and document project performance relative to cost.

### **CMGT 4320: Architectural Planning & Design Management**

Offered: Fall, Spring

This course introduces students to the significant value that architecture brings to real estate and the built environment and the various services and professions associated with it. Students will be introduced to principles, protocols and the planning process related to the design function and the link between the architect's vision and the finished physical structure. Students will be introduced to design thinking theory and application. Students will learn to read and interpret the various graphical and written construction documents, know how they are developed and what information they contain. Coverage of architectural, structural, mechanical, electrical, plumbing, and civil drawings and specifications. The business model for design services will be explored as well as the unique risks and challenges associated with managing the design throughout the various stages of development and construction.

### **CMGT 4410: Construction Building Systems**

Offered: Fall, Spring

A survey of residential and commercial construction materials, means, and methods associated with the various structural and architectural systems used to design and construct buildings. Project plans and specifications will be incorporated to teach the basic sequencing and overall construction process. The influence of sustainability in construction will be introduced.

### **CMGT 4420: Construction Estimating**

PREREQS: CMGT 4320 and CMGT 4410

Offered: Fall

This course is designed to provide the student with the theory, principles and techniques of quantity analysis (take-off), labor determinations, overhead and profit analysis. It offers insight into the construction estimating process. The role of the estimator, types of estimating, CSI divisions, bid/contract documents, change order pricing, design/build projects and estimation

compilation will be introduced. Discussions regarding the cost/benefit of sustainable materials and typical construction materials will enhance the requisite knowledge of construction estimating.

### **CMGT 4438: Legal Issues & Risk Management**

Offered: Fall, Winter

General contract and real estate law, including property rights, title concepts, deeds, purchase contracts, law of agency, environmental issues and disclosures, basics finance concerns, tax law, landlord-tenant law, construction contracts, indemnity agreements, rights and remedies of property owners, contractors and subcontractor's issues, and various areas of liability for real estate practitioners and property owners.

### **CMGT 4480: Construction Project Management**

PREREQ: CMGT 4410

Offered: Winter, Summer

Principles and techniques of construction project management, use of systems analysis, internal and external procedures, planning, programming, budgeting and staffing, controlling major projects, emphasis on construction scheduling techniques with case application.

### **CMGT 4490: Residential Development**

PREREQ: CMGT 4410

Offered: Fall, Summer

A course sequence designed to emphasize the practical application of the theories and concepts of residential development. The course provides a capstone experience for seniors. Students are expected to apply their knowledge of general business, real estate and construction management practices by forming a student business entity, acquiring land, building and selling a residential property in a case format. Students will apply accounting, finance, marketing, real estate and construction management techniques in the planning for a residential development. The application of green building materials and methods is emphasized.

### **CMGT 4560: Relational Contracting & Risk Mitigation**

Offered: Fall

Relational contracting is a construction project delivery framework for multidisciplinary, integrated projects that focuses on aligned goals, high performance, innovation, mutual respect, open communication and a "no blame" culture between Client, Contractor, and Design Team. This approach to contracting, also known as Alliance Contracting, is becoming more prevalent in the United States and is often applied when using integrated project delivery systems. This course compares and contrasts transactional contracting methods with relational contracting methods and the influences on the project team and projects outcomes. Relational contracting will also be considered in the context of risk mitigation and project optimization.

### **CMGT 4580: Integrated Teaming & Project Leadership**

Offered: Spring

This course examines the unique leadership skills and talents associated with leading and facilitating multidisciplinary, integrated design and construction teams. The focus of the course is on applying strategic intelligence and a system of leadership in the development of integrated solutions for the built environment. This leadership model is driven by a compelling purpose and supported by people who share practical values and have excellent processes, to look into the future, create a vision, and bring that vision to reality. Effective strategies for supporting high performance teams will be explored.

### **CMGT 4700: Topics Design Build Delivery – on new graduate course offering**

Offered: Summer

In this course you will receive a thorough understanding of the various project delivery methods associated with planning, designing, and constructing a building project. You will learn the fundamental concepts of design-build project delivery and how it compares to the other project delivery methods and to become aware of the current industry trend toward more collaborative, integrated project delivery methods and how the market is responding to meet that demand.

### **CMGT 4701: Topics in Construction Management – Topics vary per quarter**

### **REAL 4000: Business of the Built Environment**

Offered: Fall, Spring

The emphasis of this course is on the importance of real estate and the built environment and its impacts and influences on how we live, work, and play. The course employs a full life cycle sustainable model that links the various phases, functions, and professions of real estate, project delivery, and asset/facility management to create holistic, value generating solutions for society. Professional practices/skillsets associated with the many career options that engage the built environment will be explored.

### **REAL 4007: Real Estate Financial Analysis**

PREREQ: REAL 4407

Offered: Winter, Summer

Alternative analysis formats that can be applied to a wide array of real estate analysis issues; simulates working/decision-making environment; structured overview of analysis tools focused on specific facets of multidimensional real estate decision-making environment; applications in investment analysis, feasibility analysis, valuation, market analysis, and report writing and presentation.

### **REAL 4010: Real Estate Capital Markets**

PREREQ: REAL 4007

Offered: Winter

This course exposes students to the commercial real estate capital markets; including real estate investment trusts (REITs) and commercial mortgage-backed securities (CMBS), plus institutional investors. The complexities of capital market products are discussed, students receive a greater understanding of the alternatives that are available. The class includes lectures, guest speakers, readings, class discussions, a major REIT analysis project, and case studies.

### **REAL 4140: Global Perspectives in Real Estate**

Offered: Spring

Focus on inbound and outbound U.S. real estate transactions and the cultural issues that impact these transactions. This can also be taken as a Burns Global Delegation travel course.

### **REAL 4210: Planning, Entitlements and Public Finance**

Offered: Spring

Real estate development, place making, and community building require the combined efforts of the public, for-profit, and non-profit sectors. Participants in the real estate development process need to understand and appreciate the sometimes competing, and sometimes collaborative interests of governments, agencies, and the private developer. This course is designed to familiarize students with the overall context of urban planning and land use. Students will discover the variety of participants in the development process and will become familiar with the project entitlement process, zoning and land use regulation. Students will also examine public/private financing structures such as public-private-partnerships (P3s) and will become familiar with detailed calculations relating to Tax Incremental Financing (TIF) and Metropolitan Districts.

### **REAL 4337: Real Estate Securities/Syndications/Entrepreneurship**

Offered: Fall, Summer

Introduces real estate securities with emphasis on private offerings, securities, registration requirements and exemptions, investor suitability, syndication, property acquisition, marketing the property, and tax and legal structure considerations.

### **REAL 4347: Management of Income Properties**

Offered: Fall

Explore the complexities of managing apartments, condominiums, office buildings, industrial property and shopping centers. This course covers rental markets, development of rental schedules, leasing techniques and negotiations, repairs and maintenance, tenant relations, merchandising, selection and training of personnel, accounting, and owner relations.

### **REAL 4357: Corporate Real Estate & Management**

Offered: Spring

This course provides a snapshot view of the corporate real estate life cycle and how to strategically plan and manage it. The course addresses key CRE issues including globalization, technology, sustainability and the enterprise business model. Within the framework of a corporate or agency structure, facility management is addressed as a distinct and critical component of successful performance. Topics include facility planning and forecasting, lease administration, space planning, allocation, and management, workplace planning, budgeting, and economic justification, real estate acquisition and disposal, sustainability management, construction project management, move, add, change (MAC) management, operations, maintenance and repair, technology management, emergency, security and life-safety management, and general administrative services.

### **REAL 4369: Real Estate Taxation**

Offered: Winter

Tax factors affecting real estate investments; legal forms of ownership, depreciation, tax basis, tax impacts on exchanges, syndications, real estate securities, and other federal laws affecting real estate.

### **REAL 4400: Real Estate Principles & Practices**

Offered: Fall, Spring, Summer

Principles of real estate, real estate industry and its markets; legal aspects of home ownership from consumer's point of view, including property rights, title concepts, deeds, purchase contracts, listing contracts, law of agency, environmental issues and disclosures, types of mortgages, basics of home loan finance, appraisal investment and tax benefits. Partially satisfies Colorado real estate broker licensing requirements.

### **REAL 4407: Income Property Finance**

Offered: Fall, Spring

Conventional and alternative (creative) financing techniques, mortgage banking, law and markets, loan underwriting analysis, the impact of monetary and fiscal policies on the real estate and mortgage markets, emphasis on case studies and microcomputer applications.

### **REAL 4417: Income Property Valuation & Appraisal**

PREREQ: REAL 4407

Offered: Winter

Residential/Commercial appraising, including market cost and income approaches to value, gross rent multiplier analysis, neighborhood and site analysis; valuation of income properties

including market cost and income approaches to value; capitalization theory and techniques, mortgage-equity analysis, and investment value concepts.

**REAL 4467: Property Development & Feasibility**

PREREQ: REAL 4007

Offered: Spring

Commercial real estate development analysis & feasibility includes economic base analysis, tenant demand analysis, development and construction cost analysis, lease-up analysis, financial feasibility, leasing and property management practices. 5 major property types, office, industrial, retail, apartment and hotel are covered.

**REAL 4477: Income Property Investment**

PREREQ: REAL 4007

Offered: Summer

Comprehensive analytical framework for real estate investment decision-making, equity investment decisions via discounted cash flow, and risk analysis models and strategic planning concepts, structuring parameters to maximize rates of return while controlling downside risks; emphasis on theory, concept building, growth, sustainability and environmental issues and practical application to various types of investment properties.

**REAL 4500: Argus Financial Analysis**

PREREQ: REAL 4007

Offered: Spring

The central focus of this course is to expose the real estate student to a broad array of analysis and presentation tools, with practical applications of the Argus software through interactive examples and case studies. The course covers applications in Investment Analysis, Lease Analysis, Valuation, Feasibility Analysis Budgeting, Report Writing and Presentation. It is assumed that the student understands basic real estate principles and financial analysis.

**REAL 4701: Topics in Real Estate**

Offered: Winter, Summer

Topics vary per quarter.

**REAL 4705: Risk Management in the Build Environment**

Offered:

Decision making and risk analysis concepts in the context of real estate and the built environment. This includes, but is not limited to, liability issues as to persons and property, casualty and property damage questions, employee and employer insurance areas, auto insurance, professional liability insurance, directors' and owners' liability issues, medical

insurance, life insurance, environmental risks, and much more in areas of exposure that one can face in the business world. The course further examines means to minimize such areas of exposure.

**REAL 4800: NAIOP Challenge**

PREREQ: Instructor Permission Required

Offered: Winter

Student teams analyze and formulate real-world solutions for an existing complex real estate problem, culminating in internal and external competitions. Includes a comprehensive written report and oral presentation.

**REAL 4980: Advanced Valuations & Report Writing**

PREREQS: REAL 4417 & REAL 4467

Offered: Spring

Learn techniques not yet institutionalized nor commonly practiced in the field. Includes writing skills appropriate to specialized nature of appraisal reports, and composition of a complex filed problem report to prepare student for writing "demonstration" report required for MAI professional designation.