CE401 CONSTRUCTION ENGINEERING AND MANAGEMENT
Elective Course
Fall 2012

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Course Data: Hours: W4 ThTh56
Room: M3100 M2200

Course Description (Catalog):
CE401 Construction Engineering and Management (3+0+0)3

Course Objectives (Learning Outcomes):
- To establish an understanding of how construction industry operates including the project life cycle and participants involved.
- To introduce the principles of project management and its functions.
- To provide the students with essentials of construction management including procurement, planning, estimating, and scheduling.
- To familiarize students with measuring and managing performance in construction.
- To present and discuss some tools to improve performance at project and organizational level.
- To increase the awareness of students on the emerging issues and advanced processes in construction.

Textbook: None. Handouts and selected papers will be provided.

Reference books:

Curricular Context
This elective course provides the senior year students with the essentials of project and strategic management in construction and familiarizes them with the performance issues and new processes in construction.

Laboratory and Computer Usage: PowerPoint, Primavera Project Planner.

Class Policies:
- Homework assignments: Software application and written reports, 40% of the course grade.
- Term project: Written and oral presentation, 40% of the course grade.
- Final assignment: Written submission, 20% of the course grade.

Contribution of the Course to Program Outcomes:
- An ability to function on multi-disciplinary teams
- An ability to identify, formulate and solve engineering problems
- An ability to communicate effectively
- The broad education necessary to understand the impact of engineering solutions in a global and societal context
- A recognition of the need for, and ability to engage in life-long learning
- A knowledge of contemporary issues
- An ability to use the techniques, skills and modern engineering tools necessary for engineering practice

Course Assessment:
Course will be assessed on the basis of the accomplishments regarding the course objectives and the contributions to the program outcomes. The evaluation will consist mainly of the responses from the students, who will provide their comments to various course related questions in the final week of the semester.
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<tr>
<th>Week</th>
<th>Topic</th>
<th>Content</th>
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<tbody>
<tr>
<td>1</td>
<td>Introduction to the course</td>
<td>Construction management as a discipline, context of construction management, characteristics of the construction industry, domestic and global construction market, overview of the course.</td>
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<tr>
<td>2-3</td>
<td>Construction project management</td>
<td>Definition of a project, nature of construction projects, project life-cycle, principles of project management, project management functions.</td>
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<td>4</td>
<td>Construction cost estimation and bidding</td>
<td>Planning and design, project scope management, elements of cost estimation, estimating methods, project budgeting, bidding.</td>
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<tr>
<td>5-6</td>
<td>Construction project planning and scheduling</td>
<td>Scheduling process, work breakdown structures, scheduling techniques, critical path method, resource management, crashing.</td>
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<td>7-8</td>
<td>Construction procurement</td>
<td>Investing in construction projects, project finance, procurement strategies, project delivery methods, contract types, national and international contracts, contract and claim management.</td>
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<td>9</td>
<td>Performance measurement</td>
<td>Definition of performance, performance issues in construction, factors affecting project success, industry reports, performance measurement tools, key performance indicators.</td>
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<td>10-12</td>
<td>Improving project and organizational performance in construction (Class presentations)</td>
<td>Benchmarking, risk management, financial management, claims and dispute resolution, human resources management, knowledge management, total quality management, strategic use of IT, strategic collaborations, health and safety.</td>
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<tr>
<td>13</td>
<td>Project management strategies</td>
<td>Course overview, project management strategies to enhance performance in construction, final assignment.</td>
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