Course Change Request

Date Submitted: 03/08/18 1:28 pm

Viewing: CVEN 349 : Civil Engineering Project Management

Last approved: 08/28/17 3:15 am
Last edit: 03/08/18 3:19 pm

Changes proposed by: kbrumbelow

Catalog Pages referencing this course:
- CVEN - Civil Engineering
- CVEN - Civil Engineering (CVEN)
- Zachry Department of Civil Engineering
- Zachry Department of Civil Engineering

Programs referencing this course:
- MINOR-ENPM: Engineering Project Management - Minor
- BS-CVEN-COF: Civil Engineering, BS - Coastal and Ocean Engineering Track
- BS-CVEN-CEM: Civil Engineering - BS, Construction Engineering and Management

Faculty Senate Number: FS.34.97

Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kelly Brumbelow</td>
<td><a href="mailto:kbrumbelow@tamu.edu">kbrumbelow@tamu.edu</a></td>
<td>979-862-7633</td>
</tr>
</tbody>
</table>

Rationale for Course

The proposed changes are part of a routine curriculum review.
The proposed changes are for accreditation purposes.

Course prefix: CVEN
Course number: 349

Department: Civil Engineering
College/School: College of Engineering
Academic Level: Undergraduate

Undergraduate course level justification (Select One)

Academic Level: Graduate

Effective term: 2018-2019 2017-2018

Complete Course Title:
Civil Engineering Project Management

Abbreviated Course Title:
CVEN PROJ MGMT

Catalog course description:
Basic elements of management of civil engineering projects; roles of all participants in the process--owners, designers, contractors and suppliers; emphasis on contractual aspect of the process--project estimating, planning and controls.

Prerequisites and Restrictions:
CVEN 302 and CVEN 322, or concurrent enrollment.

Concurrent Enrollment: No

Should catalog prerequisites / concurrent enrollment be enforced:
Yes

In Workflow:
1. CVEN Department Head
2. Curricular Services Review
3. EN Committee Preparer UG
4. EN Committee Chair UG
5. EN College Dean UG
6. UCC Preparer
7. UCC Chair
8. Faculty Senate Preparer
9. Provost II
10. President
11. Curricular Services
12. Banner

Approval Path:
1. 03/08/18 1:29 pm
   Kelly Brumbelow (kbrumbelow):
   Approved for CVEN Department Head
2. 03/08/18 3:19 pm
   Sandra Williams (sandra-williams):
   Approved for Curricular Services Review
3. 03/08/18 3:52 pm
   Eileen Hoy (ehoy):
   Approved for EN Committee Preparer UG
4. 03/08/18 5:03 pm
   Prasad Enjeti (enjeti):
   Approved for EN Committee Chair UG
5. 03/08/18 5:04 pm
   Prasad Enjeti (enjeti):
   Approved for EN College Dean UG
6. 03/08/18 6:12 pm
   Sandra Williams (sandra-williams):
   Approved for UCC Preparer
7. 03/09/18 3:31 pm
   Sandra Williams (sandra-williams):
   Approved for UCC Chair

History
Enforced Prerequisites / Concurrent Enrollment

<table>
<thead>
<tr>
<th>And/Or</th>
<th>Course Prefix/Number</th>
<th>Min Grade/Score</th>
<th>Academic Level</th>
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<th>Concurrency?</th>
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<tr>
<td>And</td>
<td>CVEN 302</td>
<td>C</td>
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<tr>
<td>And</td>
<td>CVEN 322</td>
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Crosslistings: No  Crosslisted With
Stacked: No  Stacked with

Semester: 3  Credit Hour(s): 3
Contact Hour(s) (per week): Lecture: 3  Lab: 0  Other: 0  Total: 3
Repeatable for credit? No  Three-peat? No
CIP/Fund Code: 1408010006
Default Grade Mode: Letter Grade(G)
Alternate Grade Modes: Satisfactory/Unsatisfactory
Method of instruction: Lecture
Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education) Yes

Learning Outcomes

Meets traditional face-to-face learning outcomes.

Describe how learning outcomes are met or provide justification why they are not met.

Non-traditional (study abroad) offering has been assessed by department curriculum committee and found to be consistent with traditional offering in learning outcomes.

Hours

Meets traditional face-to-face hours.

Describe how hours are met or provide justification why they are not met.

Non-traditional (study abroad) offering has been assessed by department curriculum committee and found to be consistent with traditional offering in contact hours.

Will this course be taught as a distance education course? No
Is 100% of this course going to be taught in Texas? No
Will classroom space be needed for this course? No

This will be a required course or an elective course for the following programs:

Required (select program)
Elective (select program)
<table>
<thead>
<tr>
<th>Has/will this course be(en) submitted for core curriculum consideration?</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has/will this course be(en) submitted for Writing or Communication consideration?</td>
<td>No</td>
</tr>
<tr>
<td>Has/will this course be(en) submitted for ICD consideration?</td>
<td>No</td>
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</table>

**Course Syllabus**

Syllabus: Upload syllabus

Upload syllabus:
- [CVEN_349 Trad.pdf](CVEN_349_Trad.pdf)
- [CVEN_349 Nontrad.pdf](CVEN_349_Nontrad.pdf)

Letters of support or other documentation: **No**

Additional information: This edit is to convey certification that the non-traditional (study abroad) offering of the course is consistent with the traditional offering in learning outcomes and contact hours per SACSCOC requirements.

Reviewer Comments:
- Sandra Williams [sandra-williams] (02/22/18 7:40 pm): Rollback: Please attach a traditional syllabus and non-traditional syllabus.

Reported to state? **No**
Instructor
Ali Mostafavi, Ph.D., Assistant Professor
Office Hours: Monday/Wednesday 3:00PM-4:00PM, or by appointment (in-person or via Skype)
Office: 808D DLOB Building
Phone: 979.845.4856
Email: mostafavi@tamu.edu
Skype: ali-mostafavi -- Twitter: Mostafavi_Ali

Teaching Assistant
Kambiz Rasoulkhani
Office Hours: Monday/Thursday 9:30AM to 11:00AM, or by appointment
Office: 601L DLEB Building
Email: kambiz.r@tamu.edu
Phone: (786) 612-6543

Course Prerequisites
CVEN 302 or registration therein; CVEN 322; or permission of the instructor

Class Schedule/Location
Time: Monday and Wednesday 4:10PM - 5:25PM
Room Location: HEB 137
Note: See Texas A&M University academic calendar for exceptions to the schedule

Course Description from the TAMU Catalog -2017-2018
Basic elements of management for civil engineering projects; roles of all participants in the process - owners, designers, contractors and suppliers; emphasis on contractual aspects of the process, estimating, planning and controls.

Course Objectives
This class is an introduction to construction project management. There are two main objectives of this class:

1) Provide the fundamentals of how construction projects are developed, organized, executed, and managed
2) Provide the basics regarding project origins, investment and financing decisions, and the various roles of the civil engineer.

More specifically, after taking this class students should be able to:
- Understand the relationship between civil engineering design, technical requirements, and construction
- Understand the principals and practices of project management
- Identify project stakeholders, roles, and responsibilities
- Identify and understand the steps of the project development process
- Evaluate the financial feasibility of a project
- Evaluate the effects of different financing schemes on project feasibility
- Understand the fundamentals of sequencing construction activities and tasks
- Build a project estimate at different levels of details
- Develop a simple construction schedule using the critical path method
- Understand the basics of project monitoring, controls, and safety requirements
- Identify and assess the potential impacts of uncertainty on project outcome

These objectives are expected to help graduating student achieve the following ABET outcomes:
- Ability to apply knowledge of basic mathematics, science, and engineering to solving civil engineering problems
- Ability to design a civil engineering system to meet desired needs while incorporating engineering standards and realistic constraints such as those based on economic, environmental, sustainability, constructability, ethical, health and safety, social, and political issues
- Ability to formulate and solve civil engineering problems
- Understand professional and ethical responsibility
- Ability to communicate effectively in oral and written forms
- Understand the impact of civil engineering solutions in a global/political/societal context
- Appreciation and knowledge of current civil engineering issues including professional practice issues such as procurement of work, bidding versus quality selection processes, interactions among design and construction professionals, and the importance of licensure
- Ability to use tools, techniques, and computation methods necessary for civil engineering practice
- Ability to apply probability, statistics, and economics in civil engineering decisions
- Project management proficiency that can carry-over to civil engineering sub-areas such as: coastal/ocean, construction, environmental, geotechnical, materials, surveying, structures, transportation, and water resources

Required Textbooks
   This e-book is available for free at: [http://www.ce.cmu.edu/pmbook/]
3. Other readings as assigned throughout the semester.

Course Policies and Procedures
Students are required to comply with all Texas A&M University policies, including concerning attendance and assignments, which includes “The university views class attendance as an individual student responsibility. Students are expected to attend class and to complete all assignments” (Section 7 of TAMU Student Rules).
Academic Integrity
“An Aggie does not lie, cheat, or steal or tolerate those who do.”

Students are expected to understand and abide by the Aggie Honor Code presented on the web at: http://student-rules.tamu.edu/aggiecode

Academic misconduct includes cheating, fabrication, falsification, multiple submissions, plagiarism, complicity, etc. Violations will be handled in accordance with the Aggie Honor System Office http://aggiehonor.tamu.edu/.

All materials generated for this class, which include but at not limited to syllabi, notes, quizzes, exams, in-class materials, review sheets, and additional problem sets are copyrighted. Students do not have the right to copy course material unless expressly granted permission in writing.

Electronic Course web page
Use of the CVEN 349 TAMU eCampus (http://ecampus.tamu.edu) Website is a requirement for this class. Orientation and tutorial material can be found at the eCampus Student Help Website (http://ecampus.tamu.edu/student-help.php).

Grading
The following grade breakdown will be used for this class:

- Assignments/quizzes/in-class exercises 30% of the final grade
- Examination # 1 20%
- Examination # 2 20%
- Final Examination 30%

The grade for each student will be determined according to the following scale:

- A = 90 – 100
- B = 80 – 89
- C = 70 – 79
- D = 60 – 69
- F < 60

Grading of Assignments
Assignments will be assigned at least 48 hours before they are due, and their length will vary. Assignments are always due before class on the due date. Assignments are graded on a scale of 0 to 100. Assignments are open-book, open-note unless otherwise specified. Late submissions within 24 hours will get half of the total credit. Submittals received more than 24 hours after the due date and time will receive no credit. Schedule adjustments for submittal deadlines and examinations for individuals are rarely granted. Requests for extensions of assignment submission deadlines or the rescheduling of an examination must be made at least 48 hours before the deadline or exam.

Exams
Examinations are closed book, closed notes unless specified otherwise. Calculators are allowed given that you haven’t programmed them with notes. The final examination is comprehensive. The other two examinations will cover portions of the class material. Both qualitative and quantitative elements will be tested. Make-up exams will be offered only for University approved absences approved well in advance of the exam.
Reading Assignments, Attendance, and Class Preparation
Reading assignments should be completed prior to the class for which they are assigned. Not all of the reading material is covered in class, students are responsible for assigned readings because homework and exams include this material. Class attendance and participation affects your grade. Attendance is required at all class sessions. Unexcused absences and late arrivals will be penalized. A class sign-up sheet will be circulated during each lecture and will become the record of each students’ attendance during the semester. The professor MUST be notified of any anticipated absences in writing (email). Students who are requesting an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code (See Rule 24). Otherwise, the absence will be noted as unexcused. Each student is allowed a maximum of two (2) unexcused absences. Three unexcused absences will result in one letter grade deduction (final grade). Four unexcused absences will result in a grade of “I” or “F” depending on whether or not the student is passing all other respects at the time of the fourth absence.

Requests for Re-grading
All questions about the grading of your assignments should first be addressed with the teaching assistant within 48 business hours of receiving the graded assignment. If, after understanding the basis for the grade assigned, you still feel that you have not received appropriate credit, see me to discuss what needs to reviewed accompanied by the unaltered submittal. You must clearly explain the portions of the submittal that are believed to be graded erroneously and justification for a different grade.

Refer to the Student Rules regarding Academics at http://student-rules.tamu.edu for further information on grading, etc.

ADA Statement
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex, 979-845-1637, http://disability.tamu.edu

Professor Travel Dates
A few class sessions might be affected due to business travels of the professor. The students will be notified in advance. In these cases one of the following scenarios might happen: (1) a guest lecturer will teach the class; (2) the class materials will be recorded by the professor and will be made available to the students; (3) a make-up session will be scheduled; or (4) the class time will be used for team activities related to term project of case study assignments.

Disclaimer
The syllabus is a plan. The professor reserves the right to make changes in the syllabus. Students will be notified accordingly.

Course Schedule
See the attached course schedule. The course schedule is subject to change throughout the semester and revisions will be noted in class as well as at eCampus.
<table>
<thead>
<tr>
<th>Class No</th>
<th>Week</th>
<th>Day</th>
<th>Month</th>
<th>Date</th>
<th>Topic</th>
<th>Perspective</th>
<th>Reading</th>
<th>Assign Out</th>
<th>Assign IN</th>
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<tr>
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<td>1</td>
<td>Mon</td>
<td>Jan</td>
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<td>Martin Luther King Holiday -- No Class</td>
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<tr>
<td>1</td>
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<td>Wed</td>
<td>Jan</td>
<td>17</td>
<td>Introduction/What is Project Management?</td>
<td>OEC</td>
<td>HA 1.1 - 1.9</td>
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<td>2</td>
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<td>Mon</td>
<td>Jan</td>
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<td>Lifecycle of Constructed Facilities and Capital Projects</td>
<td>OEC</td>
<td>HA 1.10 - 1.13</td>
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<td>3</td>
<td>2</td>
<td>Wed</td>
<td>Jan</td>
<td>24</td>
<td>Project Development Process</td>
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<td>HA 2.1 - 2.7</td>
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<td>4</td>
<td>3</td>
<td>Mon</td>
<td>Jan</td>
<td>29</td>
<td>Project Delivery Methods</td>
<td>OEC</td>
<td>HA 4.8 - 4.13</td>
<td>2 1</td>
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**INTRODUCTION**

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<td>Jan</td>
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<td>Construction Contracts and Risks</td>
<td>OEC</td>
<td>HA 4.1 - 4.18</td>
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<td>6</td>
<td>4</td>
<td>Mon</td>
<td>Feb</td>
<td>5</td>
<td>Project Risk Management</td>
<td>OEC</td>
<td></td>
<td>3 2</td>
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<td>7</td>
<td>4</td>
<td>Wed</td>
<td>Feb</td>
<td>7</td>
<td>Time Value of Money</td>
<td>OC</td>
<td>HA 11.1 - 11.10</td>
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<tr>
<td>8</td>
<td>5</td>
<td>Mon</td>
<td>Feb</td>
<td>12</td>
<td>Worth Analysis Techniques</td>
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<td>HA 11.15 - 11.21</td>
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<td>9</td>
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<td>Wed</td>
<td>Feb</td>
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<td>Alternative Selection and Feasibility Analysis</td>
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**PLANNING AND DESIGN**

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<td>Conceptual Cost Estimates/Bidding Process</td>
<td>OEC</td>
<td>HA 2.6 - 2.14</td>
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<td>Mon</td>
<td>Feb</td>
<td>26</td>
<td>Surety &amp; Bonds/Scheduling Basics</td>
<td>OC</td>
<td>HA 2.15 - 2.17</td>
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<td>13</td>
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<td>Mon</td>
<td>Mar</td>
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<td>Scheduling - Bar Charts &amp; Logic, Networks</td>
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<td>HA 8.7 - 8.12</td>
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<td>Mar</td>
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<td>HA 17.1 - 17.5</td>
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<td>Mon</td>
<td>Mar</td>
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<td>HA 17.6 - HA 17.10</td>
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<td>Wed</td>
<td>Mar</td>
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<td>Cost Control/Progress Measurement and Reporting</td>
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<td>HA 18.1 - 18.6</td>
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**PROCUREMENT/SCHEDULING**

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**CONSTRUCTION**

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<td>Apr</td>
<td>16</td>
<td>Project Equipment Productivity</td>
<td>OEC</td>
<td>HA 5.1 - 5.7</td>
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<td>25</td>
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<td>Apr</td>
<td>18</td>
<td>Project Reporting and Documentation</td>
<td>OC</td>
<td>HA 2.8 - 2.11 / 3.3-3.6</td>
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<td>26</td>
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<td>Mon</td>
<td>Apr</td>
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<td>Project Organizations</td>
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<td>27</td>
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<td>Why Do Mega-Projects Fail?</td>
<td>OEC</td>
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<td>Apr</td>
<td>30</td>
<td>Exam Review</td>
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**MISC**

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Readings: HA = Halpin, HE = Hendrickson, AR = Assigned Reading / Perspective: O = Owner, E=Engineer, C = Contractor
CVEN 349: Civil Engineering Project Management

Course Syllabus

SUMMER, 2018

Instructor
Ivan D. Damnjanovic, Ph.D., Associate Professor
Office Hours: TBD
Office: TBA
Phone: TBA
Email: idamnjanovic@civil.tamu.edu

Course Prerequisites
CVEN 302 or registration therein

Class Schedule
(see Study Abroad Schedule)

Course Description from the Catalog
Basic elements of management of civil engineering projects; roles of all participants in the process - owners, designers, contractors and suppliers; emphasis on contractual aspects of the process, estimating, planning and controls.

Course Objectives
This class is an introduction to construction project management. There are two main objectives of this class:

1. Provide the fundamentals of how a construction projects are developed, organized, and executed, and
2. Provide the basics of how to make smart investment and financing decisions.

More specifically, after taking this class students should be able to:

- Understand the relationship between civil engineering design, technical requirements, and construction
- Understand the principals and practices of project management
- Identify project stakeholders, roles, and responsibilities
- Identify and understand the steps in project development
- Evaluate the economic feasibility of a project
- Evaluate the effects of different financing schemes on project feasibility
- Understand the fundamentals of sequencing construction activities and tasks
- Build a project estimates at different levels of details
- Develop a simple construction schedule using critical path method
- Understand the basics of project monitoring, controls, and safety requirements
- Identify and assess the potential impacts of uncertainty on project outcome
These objectives are expected to help graduating student achieve the following ABET outcomes:

- Ability to apply knowledge of basic mathematics, science, and engineering to solving civil engineering problems
- Ability to design a civil engineering system to meet desired needs while incorporating engineering standards and realistic constraints such as those based on economic, environmental, sustainability, constructability, ethical, health and safety, social, and political issues
- Ability to formulate and solve civil engineering problems
- Understanding of professional and ethical responsibility
- Ability to communicate effectively in oral and written forms
- Understanding of the impact of civil engineering solutions in a global/political/societal context
- Appreciation and knowledge of current civil engineering issues including professional practice issues such as procurement of work, bidding versus quality selection processes, interactions among design and construction professionals, and the importance of licensure
- Ability to use modern tools, techniques, and computation methods necessary for civil engineering practice
- Ability to apply probability, statistics, and economics in civil engineering decisions
- Proficiency in at least four of the following civil engineering areas: coastal/ocean, construction management, environmental, geotechnical, materials, surveying, structures, transportation, and water resources

**Required Texts**


**Course Policies and Procedures**

Students are required to comply with all Texas A&M University policies, including concerning attendance and assignments, which includes “The university views class attendance as an individual student responsibility. Students are expected to attend class and to complete all assignments.” (Section 7 of TAMU Student Rules).

The Family Educational Rights and Privacy Act (FERPA) of 1974 provides safeguards on your privacy by preventing the dissemination of information about your performance in the course in any way that might make that information available to other students. Unfortunately, this effectively prevents returning graded submittals in class. Therefore, in the first assignment you will be offered the opportunity to allow your graded submittals to be returned to you in class by signing a form that you submit with your assignment. Revoking your FERPA rights for this course is optional. Those retaining their FERPA rights for this course will be required to meet with instructor, teaching assistant, or their designated representative to receive graded submittals.
Academic Integrity
One of the most important policies is the Aggie Honor Code. “An Aggie does not lie, cheat, or steal or tolerate those who do.” Students are expected to understand and abide by the Aggie Honor Code presented on the web at: http://www.tamu.edu/aggiehonor. No form of scholastic misconduct will be tolerated. Academic misconduct includes cheating, fabrication, falsification, multiple submissions, plagiarism, complicity, etc. These are more fully defined in the above web site. Some or all examinations will be closed book; “looking at another student's examination or using external aids (for example, books, notes, calculators, conversation with others, or electronic devices)” during these examinations is a violation of Texas A&M Aggie Honor Code, cheating, unless specifically allowed in advance by the instructor. Violations will be handled in accordance with the Aggie Honor System Process described on the web site. The handouts used in this course are copyrighted. “Handouts” means all materials generated for this class, which include but at not limited to syllabi, notes, quizzes, exams, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy the handouts unless I expressly grant permission in writing.

Course web page
TBD

Grading
The following grade breakdown will be used for this class:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>In-class Assignments</td>
<td>30%</td>
</tr>
<tr>
<td>Mid-term Examination</td>
<td>30%</td>
</tr>
<tr>
<td>Final Examination</td>
<td>40%</td>
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<tr>
<td>Total</td>
<td>100%</td>
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</tbody>
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The grade for each student will be determined according to the following scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
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<tbody>
<tr>
<td>A</td>
<td>90 – 100</td>
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<tr>
<td>B</td>
<td>80 – 89</td>
</tr>
<tr>
<td>C</td>
<td>70 – 79</td>
</tr>
<tr>
<td>D</td>
<td>60 – 69</td>
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<tr>
<td>F</td>
<td>&lt; 60</td>
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However, the minimum score needed to get a specific grade may be lowered at the discretion of the Professor. It will not be raised. The grades will not be curved.

Grading of Assignments
Assignments, also known as homeworks, will always be assigned at least 48 hours before they are due, and their length will vary. Assignments are always due before class on the due date. Assignments are graded on a scale of 0 to 100. Some portions of assignments may be graded for accuracy, others for completeness but not accuracy, others for general conformance with the requirements only, and others not graded. Assignments are open-book, open-note unless otherwise specified. Late unexcused submissions within 24 hours will get half of the total credit. Unexcused submittals received more than 24 hours after
the due date and time will receive no credit. **No exceptions.** Schedule adjustments for submittal deadlines and examinations for individuals are rarely granted. Requests for extensions of assignment submission deadlines or the rescheduling of an examination must be made in writing (no e-mail) at least 48 hours before the deadline or exam. Adjustments will be granted only for circumstances beyond the student’s control.

**Exams**
Examinations are closed book, closed notes. Calculators are allowed given that you haven’t programmed them with notes. The final examination will be comprehensive. Other two examinations will cover part of the class material. Both qualitative and quantitative elements will be tested. Make-up exams will be offered only for absences approved well in advance of the exam. This will generally include only University-approved absences, though you may talk with the instructor during office hours if you believe you have a legitimate reason for missing the exam that does not qualify as University-approved.

**Reading Assignments and Class Preparation**
Reading assignments should be completed prior to the class for which they are assigned. I will not cover all of the reading material in class but you will be responsible for assigned readings on homework and exams. Class attendance and participation will affect your grade. Please come to class prepared to ask and answer questions.

**Requests for Re-grading**
All questions about the grading of your assignments should first be addressed with the teaching assistant within 48 business hours of receiving the graded assignment. If, after understanding the basis for the grade assigned, you feel that you have not received appropriate credit, write a request for grading review to the instructor in a signed formal letter accompanied by the unaltered submittal (no emails). The letter must explain the portions of the submittal that are believed to be graded erroneously.

**ADA Statement**
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information visit http://disability.tamu.edu.
# Tentative Course Schedule

<table>
<thead>
<tr>
<th>Topic</th>
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<tbody>
<tr>
<td>Introduction. What is Project?</td>
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<tr>
<td>What is Construction Project Management?</td>
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<tr>
<td>Key Players and Construction Industry Management Levels</td>
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<tr>
<td>Project Life-Cycle</td>
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<td>Project Delivery Methods</td>
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<tr>
<td>Construction Contracts</td>
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<tr>
<td>Risk Analysis and Decision Tree</td>
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<tr>
<td>Decision Tree Example - to Bid or not to Bid?</td>
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<tr>
<td>Time Value of Money</td>
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<tr>
<td>Feasibility Analysis</td>
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<tr>
<td>Bidding Process</td>
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<td>Surety</td>
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<tr>
<td>Project Planning</td>
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<tr>
<td>Work Package Sequence</td>
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<tr>
<td>Scheduling - Bar Charts &amp; Logic</td>
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<tr>
<td>Scheduling - CPM</td>
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<tr>
<td>PERT Method</td>
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<tr>
<td>Resource Leveling</td>
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<tr>
<td>Overlapping Activities and Crashing Schedule</td>
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<tr>
<td>Cost Estimating</td>
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<tr>
<td>Cost Control</td>
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<tr>
<td>Earned Value Method</td>
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<tr>
<td>Construction Equipment</td>
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<tr>
<td>Equipment Productivity</td>
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<tr>
<td>Quality Control and Assurance</td>
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