COURSE DESCRIPTION

2) Hours Lecture (2) Hours Laboratory. Materials, assembly techniques and methods, and sequences of the commercial construction process. Emphasis on engineering and design, specifications, materials acquisition and the utilization of concrete, steel, masonry and wood in construction. Laboratory exercises relating to the application of the specific techniques relating to the engineering and design of concrete, steel and masonry structures: further application to strength characteristics including the resistance to bending and shearing loads, material hardness, concrete and timber compressive and tensile strengths.

Building Information Modeling (BIM) and project scheduling will be introduced throughout the course and in particular, as part of the SEMESTER PROJECT. It will be incorporated into the design and construction of formwork for concrete. More information will be presented as it is developed.

PROFESSOR

Dr. Gregory P. Wilson, P.E.
Assistant Professor
College of Science, Engineering, and Agriculture

CONTACT INFORMATION

Office: 218 AG/IT Bldg.
Office Hours: Posted
Telephone: 903-468-8115 (Direct)
Email: gregory.wilson@tamuc.edu

CLASS MEETINGS INFORMATION

MW 0800 – 0850 AGIT 118A
F 0800 - 0940 AGIT 125
Laboratory Exercises and Hours

1. Concrete Testing Exercise
2. Tensile, Stress/Strain Exercise
3. Concrete Mix Design Exercise
4. Brunell Hardness Testing Exercise
5. Truss Deflection Exercise
6. To Be Announced

Typically one laboratory exercise every other week including data gathering, reduction and presentation. More discussion during the first two weeks of the course.

COURSE REQUIREMENTS & DETAILS

This course demands that each student develops an understanding of the building construction process including the behavior of basic materials including wood, steel, concrete, and masonry products and the related engineering and mathematical relationships required.

Wood, steel, concrete, and their applications to the construction process are presented. Typical construction systems are discussed along with typical stresses and other engineering concepts along with their applicable calculations are part of the course. Numerical examples are presented as method of visualizing the concepts being presented to assist the student in understanding current concepts as well as preparation for future construction engineering topics.

MATHEMATICS REQUIREMENTS

Please note the mathematical physics pre-req’s for this course.

Please be advised that additional mathematical concepts will be presented to support the development of engineering principals and their required calculations.

COURSE OUTLINE & OVERVIEW

<table>
<thead>
<tr>
<th>Section</th>
<th>Topic</th>
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</thead>
<tbody>
<tr>
<td>Chapter 4 and Basic Course Introduction</td>
<td>Attendance, general course reqs. Review of syllabus. Afternoon laboratory time will be required. Please advise as to schedules so that appropriate times can be scheduled for everyone.</td>
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<tr>
<td>4.1 – 4.9 and Basic Course Introduction Load Resistance. Steel, Concrete and timber. Weeks, 1, 2, 3</td>
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<tr>
<td>BIM INTRODUCTION</td>
<td>Software introduction/TUTORIAL/Application to semester project/L3 projects/Competition</td>
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<tr>
<td>BIM/SYNCHRO INTRODUCTION</td>
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LABORATORY EXCERCISES

Presentation of specific laboratory equipment and exercises to gain knowledge of their operation and data.

Specific exercises will be performed throughout the semester. Afternoon laboratory time will be required. Please look at schedules.

<table>
<thead>
<tr>
<th>Section</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Chapt. 19 Concrete Construction Part 1</td>
<td>SEMESTER PROJECT INTRODUCTION</td>
</tr>
<tr>
<td>19.1 – 19.10 Week 6, 7,</td>
<td>Shoring, formwork design, reinforcing, splices, couplers; general principals and design practices</td>
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<tr>
<td>Chapt. 20 Concrete Construction Part 2.</td>
<td>Elevated concrete floors; precast concrete; beam supported concrete floors and slabs</td>
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<td>20.1 - 20.6 Weeks 8</td>
<td></td>
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<tr>
<td>Chapt. 21 Soils and Foundation Construction</td>
<td>Soil classification; earthwork and excavation; bracing and trenching; shallow foundations; deep foundations.</td>
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<tr>
<td>21.1 - 21.8 Weeks 9, 10,</td>
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<tr>
<td>Chapt. 22 Masonry Materials Part 1</td>
<td>Masonry, mortar, joint thickness, bricks, expansion joints</td>
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<tr>
<td>22.1 – 22. 8 Week 11</td>
<td></td>
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<tr>
<td>Chapt. 23, 24 Masonry Materials, Part 2.</td>
<td>Bond beams; CMU’s, size and shapes, shrinkage control; bearing walls, column beam systems; Vertical reinforcement</td>
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<tr>
<td>23. 1 – 23.5, 24.1 – 24.9 Week 12</td>
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<tr>
<td>Chapt. 1 Principals of Construction</td>
<td>Construction management; project description; how is a project delivered. Steps.</td>
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<tr>
<td>1.1 – Complete Chapter 1.2 Week 13</td>
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PRESENTATION OF SEMESTER PROJECTS

FINAL EXAM WEEK (AS SCHEDULED)

ASSESSMENT OF STUDENT OUTCOMES

Upon satisfactory completion of this course, the student:

1. Is prepared to demonstrate by examination that the student possesses and understand of basic material properties with respect to concrete.
2. Is prepared to demonstrate by examination that the student possesses and understand of basic material properties with respect to timber and wood.
3. Is prepared to demonstrate by examination that the student possesses and understand of basic material properties with respect to steel.
4. Is prepared to demonstrate by examination that the student possesses and understand of basic material properties with respect to soils.
5. Can evaluate, analyze and predict stresses in concrete and demonstrate by examination and understand the basic equations to do so.
6. Can evaluate, analyze and predict stresses in steel and demonstrate by examination and understand the basic equations to do so.
7. Can evaluate, analyze and predict stresses in **timber and wood** and demonstrate by examination and understand the basic equations to do so.

8. Can evaluate, analyze and predict stresses in **soils** and demonstrate by examination and understand the basic equations to do so.

9. Can evaluate, analyze and predict stresses in **masonry** and demonstrate by examination and understand the basic equations to do so.

10. Is prepared to demonstrate by examination that the student possesses and understand of basic material properties with respect to **masonry**.

11. Student can demonstrate through oral presentations and understanding

12. Understands and is prepared to discuss and demonstrate by calculation various loads on buildings including **live, dead, seismic, and wind**.

13. **HAS A SATISFACTORY KNOWLEDGE OF BIM/SYNCHRO SOFTWARE SYSTEMS AS INDICATED BY COMPLETION OF SEMESTER PROJECT.**

**COURSE TEXT**


**ATTENDANCE POLICY**

Every student is expected to attend every class. No effort will be made to track down missing students and/or assignments. Each student is responsible for turning in the assigned work **ALL POINTS ARE EARNED IN CLASS ON PROCTORED EXAMS AND QUIZZES.**

**COURSE GRADING**

Two (2) exams.  @ 150 Each  = 300 Points

CONCRETE FORMWORK DESIGN  = 300

Laboratory Exercises 4 @ 100 Pts.  = 400

**TOTAL POSSIBLE POINTS**  = 1000 Pts.

10 Point Percentage Grading Scale will be used throughout the semester.

<table>
<thead>
<tr>
<th>Points</th>
<th>Grade</th>
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<tbody>
<tr>
<td>90 – 100</td>
<td>A</td>
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<tr>
<td>80 – 89</td>
<td>B</td>
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<tr>
<td>70 – 79</td>
<td>C</td>
</tr>
<tr>
<td>60 – 69</td>
<td>D</td>
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<tr>
<td>&lt; 60</td>
<td>F</td>
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EXAMINATION DATES

The following dates have been established for the two examinations to be given in the spring, 2012. Every effort will be made to hold to this schedule to assist you in planning your work schedule, etc.

<table>
<thead>
<tr>
<th>Exam #1</th>
<th>Week 6</th>
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<tbody>
<tr>
<td>Exam #2</td>
<td>Week 12</td>
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</tbody>
</table>

Please note!! All exams are closed notes, closed book.

CLASSROOM POLICIES

Please turn off cell phones, pages, beepers, etc. during class times. The use of tobacco products during any class period will not be allowed.

ACADEMIC INTEGRITY

Academic dishonesty of any kind will not be tolerated. You run the risk of receiving a failing grade in the course in addition to expulsion from the University. Please refer to Code of Student Conduct in the Student Handbook for all details.

NOTE!

STUDENT BEHAVIOR

Members of the student body at Texas A&M University-Commerce are expected to obey all federal, state, and local laws in addition to the regulations of the University.

ADA

Each division within the University is aware of the needs of the disabled student and is ready and willing to work with each student to solve problems as they arise. The Supervisor of Services is located in the Student Services Building, 3rd floor, (903)- 886-5835. The Compliance Office for the Disabled is located in the Business Administration Building 2nd. Floor, room 296.
STUDENT SIGNATURE PAGE

Your signature on this page signifies that you have READ and UNDERSTAND the contents of this syllabus and have had ALL questions answered. Please Print out a copy of this page, sign and turn in.

______________________________
Student Signature

______________________________
Printed Name

______________________________
Date

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