

<b>COURSE TITLE BLACKBOARD SITE</b>	EME6553: Structural Stability Spring 2011 – <a href="http://my.ltu.edu">http://my.ltu.edu</a> and select CRN 3791
<b>INSTRUCTOR</b>	Dr. P. Sitaram Contact Information email: <a href="mailto:blore2000@hotmail.com">blore2000@hotmail.com</a> Cell phone 248-396-2219 Office Engineering Building, E158 Office hours to be determined (using Wimba Classroom)
<b>SCHEDULE</b>	January 10, 2010 – May 07, 2010  See <a href="http://www.ltu.edu/registrars_office/calendar_final_exam.index.asp">http://www.ltu.edu/registrars_office/calendar_final_exam.index.asp</a> for LTU academic calendar information.
<b>LEVEL/ HOURS PREREQUISITE</b>	Graduate Mechanical Engineering / 3 credit hours May not be enrolled in Professional Development Must be enrolled in a Graduate program
<b>REQUIRED TEXT</b>  (See Blackboard for additional resources)	Fundamentals of Structural Stability, George J. Simitses and Dewey H. Hodges, Elsevier, 2006, ISBN: 978-0-7506-7875-9  Available for online purchase through LTU Bookstore at: <a href="http://lawrence-tech1.bkstore.com/bkstore/TextbookSelection.do?st=489">http://lawrence-tech1.bkstore.com/bkstore/TextbookSelection.do?st=489</a>
<b>ADDITIONAL RESOURCES</b>	LTU Online student resources: <a href="http://www.ltu.edu/ltuonline/">http://www.ltu.edu/ltuonline/</a> Optional text: S.P. Timoshenko and J.M. Gere, Theory of Elastic Stability, McGraw-Hill, New York, NY; 1961.
<b>TECHNICAL SUPPORT</b>	Technical support for using Blackboard is provided by the Helpdesk. Visit <a href="http://www.ltu.edu/ehelp">www.ltu.edu/ehelp</a> or 248.204.2330 or <a href="mailto:helpdesk@ltu.edu">helpdesk@ltu.edu</a> . Send the Help Desk a form detailing any issues by clicking here <a href="http://tinyurl.com/3yqrvne">http://tinyurl.com/3yqrvne</a> .

## COURSE SCHEDULE FOR TRADITIONAL SEMESTER COURSES

This fully online course begins with a partial week online course orientation period to familiarize yourself with the online learning environment and to meet online or via the phone with your instructor. Each subsequent week starts on a Monday and ends on a Sunday.

Dates	Modules	Topics / Readings	Assignments Due
Prior to Semester Start and Jan 10 – Jan 12	Module 0	Overview of textbook Online Learning Orientation Course Orientation and online office hours established	Course orientation Discussion Board introduction Wimba Classroom Setup Wizard
Week of Jan 10 – Jan 16	Module 1	Introduction Overview Mechanical Stability Models	DB1&2 Initial Post
Week of Jan 17 – Jan 23	Module 2	Mechanical Stability Models (part 2)	DB1&2 Reply Post
Week of Jan 24 – Jan 30	Module 3	Buckling of Columns	DB3&4 Initial Post
Week of Jan 31 – Feb 6	Module 4	Buckling of Columns (part 2)	DB3&4 Reply Post
Week of Feb 7 – Feb 13	Module 5	Stability of Beam Columns	DB5&6 Initial Post
Week of Feb 14 – Feb 20	Module 6	Stability of Beam Columns (part 2)	DB5&6 Reply Post
Week of Feb 21 – Feb 27	Module 7	Buckling of Frames	<b>Exam 1</b> DB7&8 Initial Post
Week of Feb 28 – Mar 6	Module 8	Buckling of Frames (part 2)	DB7&8 Reply Post Midterm Evaluation
<b>Mid-semester Break – No Classes</b>			
Week of Mar 14 – Mar 20	Module 9	Energy Based Methods	DB9 Initial Post and Reply Post
Week of Mar 21 – Mar 27	Module 10	Numerical Based Methods	DB10 Initial Post and Reply Post
Week of Mar 28 – Apr 3	Module 11	Inelastic Buckling of Columns	DB11&12 Initial Post

Dates	Modules	Topics / Readings	Assignments Due
Week of Apr 4 – Apr 10	Module 12	Inelastic Buckling of Columns (part 2)	<b>Exam 2</b> DB11&12 Reply Post
Week of Apr 11 – Apr 17	Module 13	Buckling of Plates	DB13 Initial Post and Reply Post
Week of Apr 18 – Apr 24	Module 14	Torsional Buckling	DB14 Initial Post and Reply Post
Week of Apr 25 – May 1	Module 15	Buckling of Arches and Rings	DB15 Initial Post and Reply Post
Week of May 2 – May 7	Final Exams	Course Summary End of Course	<b>Final Exam</b> Final Evaluation

### STUDENT LEARNING ASSESSMENT

The course has ten Discussion Board topics totaling 100 points, ten Homework assignments totaling 100 points, two Tests totaling 500 points, and one Final Exam worth 300 points. Letter grades are awarded based on the total number of points achieved. Points are deducted for late assignments.

Assignments	Points	Percent
Homework	100	10
Discussion Boards	100	10
Exam 1	250	25
Exam 2	250	25
Final Exam	300	30
Total Points	1000	100

Percent	Letter Grade
96 and above	A
90 – 95	A-
87 – 89	B+
83 – 86	B
80 – 82	B-
77 – 79	C+
73 – 76	C
70 – 72	C-
61 – 70	D (Undergrad Only)
60 and below	E

*Note: Grades lower than a "B" fall below the LTU graduate standard*

## EDUCATIONAL GOALS

This course will cover: Stability of simple mechanical models using equilibrium, kinetic, and energy methods. Models of imperfect geometries. Elastic buckling of columns, beam columns, frames, arches, plates and complicated structural systems. Energy and numerical based methods. Inelastic buckling of columns. Torsional buckling.

## STUDENT LEARNING OBJECTIVES / OUTCOMES

*Modules 1 and 2*

*Modules 3 and 4*

*Modules 5 and 6*

*Modules 7 and 8*

*Module 9*

*Module 10*

*Modules 11 and 12*

*Module 13*

*Module 14*

*Module 15*

## PREREQUISITE SKILLS

Graduate Engineering degree status.

## INSTRUCTIONAL METHODS AND COURSE ORGANIZATION

The course is divided into ten topic areas. For each there will be a textbook reading assignment, two Discussion Board questions (one post for each, one reply to one classmate for each), a Homework assignment, and a recorded lecture. Two Tests and a Final Exam complete the course.

**Blackboard Learning Environment** – Blackboard at my.ltu.edu contains the syllabus, all assignments, reading materials, streaming videos, narrated PowerPoint mini-lectures, podcasts, written lecture notes, chapter quizzes, links to Web resources, and discussion forums. You will submit all assignments via Blackboard, and are expected to participate regularly in discussion topics. Please take time to familiarize yourself with the organization of the Blackboard site. You will want to check the site frequently for announcements reminding you of new resources and upcoming assignments.

**Student/Instructor Conversations** – Students keep in touch with the instructor via e-mail messages, telephone conference calls, and IM conversations.

**Required Reading** – Textbook chapters should be read according to the schedule outlined in the syllabus. Chapters will be discussed online.

**Assignments** – Each topic area will have an associated Homework Assignment.

## CLASS POLICIES AND EXPECTATIONS

*I plan to offer you a valuable learning experience, and expect us to work together to achieve this goal. Here are some general expectations regarding this course:*

Each student has a LTU email account. If you wish to use a different email address for this course, please **change your email address in Blackboard under “Blackboard Tools”, then “Personal Information”** and send an email to me so I can store your address in my email directory.

Readings, discussion forum participation, and written assignments must be completed according to the class schedule. It is important to contact the instructor as needed to discuss personal needs regarding course requirements and assignments.

It is essential that all students actively contribute to the course objectives through their experiences and working knowledge.

All assignments must be submitted on schedule, via Blackboard, and using Microsoft Office compatible software. If you need to submit an assignment via email, contact the instructor in advance.

Assignments must be completed to an adequate standard to obtain a passing grade. Requirements for each assignment are detailed in this syllabus.

Be prepared to log into Blackboard at least once each day. Please focus your online correspondence within the appropriate Blackboard discussion forums so that your colleagues can learn from you.

At midterm and at the end of the course, you will be invited to participate in a University evaluation of this course. Your feedback is important to the University, to LTU Online, and to me as an instructor, and I encourage you to participate in the evaluation process.

It is important for you as students to know what to expect from me as your instructor:

- I will be available to you via e-mail and phone, and will promptly reply to your messages.
- I will be available to you for face-to-face and Wimba appointments as requested.
- I will maintain the Blackboard web site with current materials, and will resolve any content-related problems promptly as they are reported to me.
- I will send out a weekly e-mail update to all class members to guide upcoming work and remind you of assignment due dates.
- I will return all assignments to you promptly, and will include individualized comments and suggestions with each assignment.
- I will hold our personal written or verbal communications in confidence. I will not post any of your assignments for viewing by the class without requesting your approval in advance.
- I will treat all members of the class fairly, and will do my best to accommodate individual learning styles and special needs.
- If any of these points need clarification, or when special circumstances arise that require my assistance, please contact me so that we can discuss the matter personally.

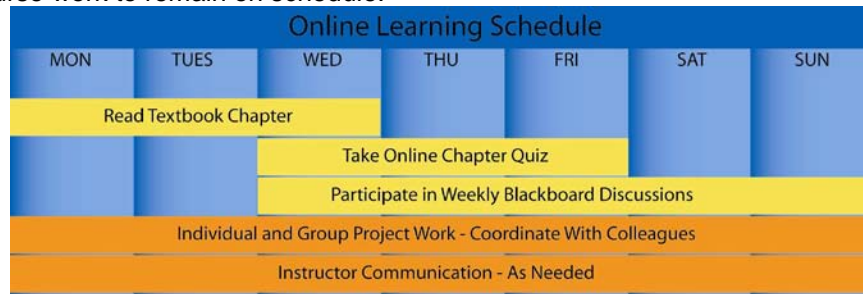
## **PRACTICAL GUIDELINES FOR CLASS LOAD EXPECTATIONS**

A three-credit course generally requires at least nine hours per week of time commitment. Here are some practical guidelines to help schedule your time commitments for this online course:

- A 14-week semester (the Summer semester is compressed into 10 weeks) would require at least 126 hours of time commitment to successfully complete all readings, activities, assignments, and texts as described in this syllabus.
- You should reserve at least 6 hours per week to read the required textbook chapters and resources, participate in online discussions, review presentation materials, and work through online quizzes. This effort will total at least 84 hours over the course of the semester.
- You should organize your remaining time to roughly correspond with the point value of each major assignment. This means that you should plan to spend at least:

- 8-9 hours preparing your case study review;
- 24-40 hours working with your group on the three parts of your semester-long project;
- 8-9 hours working on the various components of your reflective consolidation (final exam).

These guidelines may not reflect the actual amount of outside time that you – as a unique individual with your own learning style – will need to complete the course requirements. The number of hours each week will vary based on assignment due dates, so please plan ahead to insure that you schedule your academic, work, and personal time effectively. The following graphic can be used to guide you in planning your weekly course work to remain on schedule:



## ASSIGNMENT DETAILS

Course assignments and evaluation criteria are detailed below. Please review these requirements carefully. See the section Academic Resources / Assessment Guidelines for information about assessment of written and oral presentations.

Details for all assignments are shown below. All assignments are submitted using the Blackboard “Assignments” or “SafeAssign” function. Some assignments are also posted to the Blackboard Discussion Forum for student comments.

### Homework Assignments (100 Points)

**Overview** – Describe the specific requirements of the assignment here. Then list the specific student deliverables below:

First requirement  
Second requirement  
Etc.

**Proposal** – If students need to propose a specific topic or approach, outline how the proposal is made in this section.

**Deliverables and Evaluation** – Describe how student submit their assignment deliverables in this section.

Describe in specific terms how the student’s work will be evaluated. An example follows:

Your case study document (up to 5 points)  
Nominal three page case with title and team member names – 2 points  
Organization and overall writing quality – 2 points  
Assignment submitted on time – 1 point  
Your critique (up to 3 points)  
Use of either a “lessons learned” or “best practices” approach – 2 points  
Overall critical thinking and writing quality – 1 point  
Your citations (up to 3 points)  
Use of at least three citations from trade or academic journals – 2 points

- Use of APA citation formatting – 1 point
- Your Blackboard discussion forum posting and response to questions (up to 4 points)
- Posting your document and a brief “executive summary” – 1 point
- Posting one or two focused questions for follow-up discussion – 1 point
- Responses to questions from class members – 2 points

### **Discussion Board (100 points)**

Each student is expected to actively participate in online activities. Class participation is evaluated to a maximum of nnn points based on:

- Up to nnn points – Reading the required text chapters and working through the online practice quizzes according to the class schedule; and
- Up to nnn points – Actively participating in Blackboard discussion forums, responding to questions posted by the instructor, and interacting positively with other students.

### **Tests (500 points)**

Each student is expected to actively participate in online activities. Class participation is evaluated to a maximum of nnn points based on:

- Up to nnn points – Reading the required text chapters and working through the online practice quizzes according to the class schedule; and
- Up to nnn points – Actively participating in Blackboard discussion forums, responding to questions posted by the instructor, and interacting positively with other students.

### **Final Exam (300 points)**

Each student is expected to actively participate in online activities. Class participation is evaluated to a maximum of nnn points based on:

- Up to nnn points – Reading the required text chapters and working through the online practice quizzes according to the class schedule; and
- Up to nnn points – Actively participating in Blackboard discussion forums, responding to questions posted by the instructor, and interacting positively with other students.

### **SYLLABUS ADDENDA**

Please see the LTU Online “Current Students” web site <http://www.ltu.edu/ltuonline/> for comprehensive information about Lawrence Tech’s academic services, library services, student services, and academic integrity standards. The content of this web site is explicitly included as syllabus requirements.

The LTU Online “Current Students” web site also includes grading rubrics used by your instructor to evaluate written assignments, discussion forum participation, and group assignments. Please note that the SafeAssign anti-plagiarism product will be used for written assignments submitted for this course. Please see the instructions included on the LTU Online web site regarding the use of the SafeAssign product.