University of Texas at Arlington
Department of Civil Engineering
CE 4365: Structural Wood Design
Spring 2014

Catalog Data	CE 4365: Structural Wood Design
Credits	3
Catalog Description (2010-2011)	Covers material grade, properties of wood, design criteria using structural lumber, glue laminated lumber and structural panels. Design of bending and compression members, trusses and shear diaphragms. Building codes, National Design Specifications (NDS), material specifications, test methods, and recommended practice. Credit not granted for both CE 4365 and CE 5307.
Prerequisites	Passing grade in CE 3341 Structural Analysis. The prerequisite will not be waived.
Class Schedule	***Lecture:*** T - Th 9:30 am – 10:50 am; Room 203 NH ***Tutorial:*** ***TBD***
Instructor	Nur Yazdani, Ph.D., P.E., CE Professor Office: 430 NH Office hours: M - W: 2 PM – 4 PM I may be available in my office at other times, except before class periods. Alternately, you may schedule an appointment by e-mail. Phone: (817) 272-0676 (Office) FAX: (817) 272-0371 E-mail: Yazdani@uta.edu
Teaching Assistant	Md. Istiaque Hasan, Graduate Assistant Office: Room 265 ELB Office hours: TBD E-mail: mdistiaque.hasan@mavs.uta.edu
Course Material	***Required Material:*** • "Design of Wood Structures" by D. E. Breyer, K. J. Fridley, K. E. Kobeen and D. G. Pollock, McGraw Hill Book Company, 6th Edition. • "Wood Design Package", by American Wood Council, Washington, D.C., 2005 Edition. • International Building Code, 2012 Ed., International Code Council. • Lecture notes: available on Blackboard (http://www.uta.edu/blackboard)
Computer Accounts	• Class e-mail will be sent to your UTA account through the Blackboard course web site. If you use another primary e-mail account, you need to regularly check your UTA e-mail for important information. • Lecture notes, lecture slides, this syllabus, assignments, assignment solutions, term project details, grades, etc. will be available on Blackboard (http://www.uta.edu/blackboard/).
Course Rationale	In your previous courses, you have acquired proficiency in various areas, such as mechanics of materials (finding stresses and strains in structures) and structural analysis (finding reactions, moments, shears and deflections). The previous courses laid the groundwork for your transformation into a structural designer. This course will build upon your knowledge base from your previous courses, and will provide you with the

	skills needed to analyze and design real life basic wood structural elements. Timber is one of the most widely used materials in buildings worldwide, and its use in bridges is expanding. Responsibly sourced wood is a renewable, beautiful building material, which helps tackle climate change. It is also durable, versatile and can be cost-effective. The production and processing of wood uses much less energy than most other building materials, giving wood products a significantly lower carbon footprint. The versatility, adaptability, appearance and cost of timber are unparalleled. This course will enable you to become familiar with the basic techniques needed to design real life timber structures using latest specifications, methods and software. The course instruction will be heavily practice and technology oriented, with broad emphasis on practical applications and methodology. Material you learn in this course is critical to your becoming a successful and valued structural engineer in today's marketplace.
Student Responsibility	***Deadlines and Instructions*** Following professional conduct that you will encounter in practice, the course contains strict deadlines and instructions. Please read instructions carefully and schedule your activities accordingly to meet schedules. You should check your e-mail and the Blackboard course web page regularly, and note other announcements, on-line and in class. DE students should make a note about the published test and presentation dates and be available on those dates. They are required to travel to the campus in order to appear in these events during class time. ***Class Participation*** Class participation can be achieved in two ways. I shall ask you questions in class on the previous lectures, and on the material currently being discussed. You should be prepared to answer these questions, and should also participate by asking questions, suggesting ideas, and performing in-class group activities that I assign. I prefer an interactive class-room where the instructor and the students freely participate in active learning. Of course, you cannot participate in class unless you attend it! DE students are exempt from class participation. ***Group Work*** You must work in groups of three (if possible) for the following activities: homework, class projects and term project. The groups should represent diversity in terms of student background and academic performance. You should participate in all group activities and make a fair contribution to the group effort. DE students are exempt from group participation, unless they specifically request it. ***Homework*** Required homework will be due at the beginning of the period on the due date - one solution set per group. Use engineering paper if possible, one side of each paper, and box the solution. On the inside, put the name of the group leader, all other participating group members, the date, and the assignment number. If a student's name appears on a solution set, it certifies that he/she has participated in solving some of the problems and understands all the solutions. If this turns out not to be the case, both the student in question and the group leader will be considered to have cheated and will be dealt with accordingly. Please keep a copy of your homework before it is submitted in case the homework is lost or misplaced. Late homework will be accepted for up to two weeks after the due date. A penalty of 20% for each 24 hours will be assessed on late homework. However, if a group abuses this privilege on a regular basis, it will be withdrawn. One group member should be designated the leader for each homework. The

	leader will be responsible for coordinating the work and making sure everyone in the group understands all the problem solutions before they are handed in (Hint: Try to set up each problem individually, then get together to work out the details). After being a group leader, an individual may not be leader again until everyone else in the group has held the position. DE students are exempt from group homework submission, unless they specifically request it. ***Tutorial Class Attendance*** Two tutorial sessions per week will be arranged outside the regularly scheduled class period. Although the tutorial class is not mandatory, it is highly recommended. The tutor will provide you with helpful hints on the homework, solve additional problems, help you with your term project and software usage. ***Term Project*** A group term project is required as a part of this class. The topic will be practice oriented, will require code usage, latest design software and drafting applications. The instructor will supply the class with the project concept during the second week of classes. A written proposal oral final presentation and written final report are required. The project grade will be determined as follows: Proposal: 30% Oral presentation: 30% Final report: 40% You must be able to understand, explain and execute your group project work. About half of the group project grade will be based on group activities, and the other half based on your individual contribution. Therefore, when asked, you should be able to explain and clearly identify your own contribution. DE students are exempt from group participation in the term project, unless they specifically request it.	
Professional Component of the Course	The course will teach graduate level civil engineering students how to efficiently analyze and design real life buildings made of wood, using the latest available professional codes, methods and tools. Professional level group term projects are also involved.	
Topics/ Tentative Time Schedule/ No. of Sessions	**Course Topics**	**No. of Sessions**
	Introduction	1
	Wood Buildings and Design Criteria: Types of timber buildings, building codes and design criteria.	2
	Properties of Timber: Grading of structural lumber, species and species groups, cellular makeup, moisture content and shrinkage, durability of wood, size categories and stress grades, load duration effect.	3
	GLULAM: Size of glulam members, glulam fabrication, grades and stress adjustments.	1

	Project proposals due	02/11/2014
	Axial Forces: Axial tension members, columns, slenderness ratio, built-up columns, combined bending and axial force.	3
	Beam Design: Bending, lateral stability, allowable bending stresses, shear, deflection, bearing, analysis and design of sawn lumber beams, analysis and design of glulam beams, support conditions.	5
	Test 1	03/01/2014
	Plywood: Plywood makeup and dimensions, veneer grades, exposure conditions, roof sheathing, floor sheathing, wall sheathing.	3
	Horizontal and Vertical Diaphragms: Basic diaphragm action, shear resistance, diaphragm chords, diaphragm deflections, shear walls.	3
	Wood Connections: Types of connections, nails, stress and spacing requirements, bolts, design problems.	4
	Guest Lecture (tentative)	1
	Field Trip	1
	Test 2	04/29/2014
	Project Presentations	05/01/2014
	Optional Final Test (comprehensive)	05/08/2014; 10:30 am
Grading Criteria	The overall course grade will be based on the performance of each student in the following categories: homework, tests, term project, and lecture participation. The following is the published grade percentage distributions for in-class students (section 001): Homework: 19% Two tests: 27% each Term project: 20% Class participation: 7% The following is the published grade percentage distributions for DE students (section 002): Homework: 20% Two tests: 29% each Term project: 22% A weighted grade of 90 or above overall is guaranteed an A, 80 or above at least a B, 70 or above at least a C, and 60 or above at least a D.	

COURSE POLICIES

Examinations: There will be two regular tests during the semester and one optional final examination. The instructor understands that students may have a down day once in a while, which may affect their test grades. As a compensation for extenuating circumstances affecting your test grades, you may take the optional comprehensive final examination, which will be scheduled during the final examination week. If you take this optional test, the grade from this test will substitute the grade from one of the regularly scheduled tests. If you miss any test for emergency reasons, a cumulative make-up test will be scheduled during the last week of classes. All students missing any test will be given the opportunity to take this make-up test. The student must submit admissible evidence of emergencies that prevented them from taking the regularly scheduled examination.

Attendance: The universities require attendance in all classes, and it is very important to your learning. It is important that you make every effort to attend all lectures, if possible. DE students may show participation through submitting quiz answers based on class lectures. The instructor may cover material from outside the text-book which will be useful supplementary material. The instructor will also use visual aids, practical cases, class interaction and thoroughly worked out example problems to enhance classroom learning. In the instructor's opinion, keeping attendance record is a poor and inefficient practice. However, students attending lectures will be indirectly credited through group activities (see grading policy and group activities). In emergency situations, absence may be excused with appropriate documentation. You should let the instructor know in advance, when possible, and submit the documentation. You should make up any materials missed due to absence.

Technology and Practice: The course work will be heavily geared towards technology and practice. Students will be asked to contact outside sources such as design/construction industry and timber vendors in order to obtain information. Problems in the class and homework will be designed to utilize this information. Commercial software similar to the ones used by industry design offices will be demonstrated in the classroom. Students will be able to use the software from the college computer labs. In addition, students will be supplied with spreadsheet programs, and will be asked to write their own. It is expected that at least one field trip to a construction sites will be arranged during the semester, where you can obtain valuable practice oriented knowledge as complementary to the classroom knowledge. Guest speakers from the industry will be invited to speak to the students.

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance**. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (http://wweb.uta.edu/aao/fao/).

Final Review Week: A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Grade Grievance Policy: Grade grievances will be handled according to the policy described in the College of Engineering portion of the Catalog.

"X" Grade: Excerpts from UTA Undergraduate Catalog: " A grade of X (incomplete) may be assigned for a course if, in the opinion of the instructor, there are extenuating circumstances which prevent the student from completing the required work within the semester of enrollment for the course. The incomplete must be removed by the end of the final examination period of the following semester, excluding the summer session, for the student to receive credit for the course. If the incomplete is not removed during the allotted time period, it will revert automatically to an F. As long as the grade is carried as an X, it will not be used in the calculation of the student's grade point average. Consistent with these policies, an incomplete grade will only be assigned at the instructor's discretion only under the following circumstances:

- The optional final test is missed with an accepted excuse. In this case, you must make up the final test during the first two weeks of the following semester.
- Due to an extended illness or other extraordinary circumstances, with accepted documentation, the student is unable to participate in class for an extended time. In this case, arrangements must be made to make up the missed work prior to the end of the following semester.

An 'X' grade will not be given as a remedy for poor work.

Americans with Disabilities Act: The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the *Americans with Disabilities Act (ADA)*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Academic Integrity: Students enrolled in this course are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.
I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

UT Arlington faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents' Rule* 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University.

Professional Ethics: You will gain confidence in your ability to design and analyze timber structures only when you do the work yourself. However, you will also learn a lot through discussions with your peers. In order to balance the two goals, the following guideline is provided:

- *Things you may not do*: You should not copy work from others. This includes directly copying homework, tests, project materials, etc., and submitting it as your own work. Furthermore, you should assure that others cannot copy your work. Allowing copying of your material will only hinder the learning of the parties involved.
- *Things you may do*: You may discuss specific problems related to analysis/design steps, Code usage, efficient design, and project issues with others.

Plagiarism: Plagiarism is representing another's work or any part thereof, be it published or unpublished, as one's own. For example, plagiarism includes failure to use quotation marks or other conventional markings around material quoted from any source. Failure to document properly is also considered plagiarism. Copying someone else's work and turning it in as if it was your own work, is also considered plagiarism.

Student Support Services: UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at www.uta.edu/resources.

Electronic Communication: UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is

no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at http://www.uta.edu/oit/cs/email/mavmail.php.

Student Feedback Survey: At the end of each term, students enrolled in classes categorized as "lecture," "seminar," or "laboratory" shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit http://www.uta.edu/sfs.

Emergency Exit Procedures: Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, which is located at the east/west ends of the first floor of Nedderman Hall. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist handicapped individuals.

Syllabus Change Policy: This syllabus is a guide for the course and is subject to change with advance notice.