

UPDATED 8/01/2016

Fall 2016
Concepts and Exercises in Engineering Practice

SYLLABUS
(Subject to Minor Modifications including Assignment Due Dates)

Instructor:	David A. Wetz, Ph.D. Clint Gnegy-Davidson (GTA) Caroline Westenhover (GTA) Charles Nybeck (GTA)
Office:	Engineering Lab Building 124/126
Office Hours:	Open Door (M-F 9am – 5pm)
Office Phone:	817-272-0719
Email:	wetz@uta.edu clintgd@uta.edu (GTA)
Course Time:	Monday and Wednesday 12:30 P.M. – 2:00 P.M.
Course Location:	NH 130
Course website:	http://www-ee.uta.edu/hpi/EE_4340/
Section Information:	EE4340 - 002
Instructor website:	http://www.uta.edu/ee/powerlab
Course Prerequisites:	COMS 3302, ECON 2305, EE 3444, EE 3318, EE 3308, EE 3330, EE 3310, and Professional Standing in EE Program
Required Textbook:	No textbook
Course Description:	Integration of technical knowledge and skills with project planning, teamwork, and communication skills (written and oral). A project-oriented approach is used including the preparation of literature-based research reports, research proposals, product development proposals, and project management plans. Supporting topics: technical information resources, ethics, safety, intellectual property. Students will begin their engineering capstone design experience, including team formation, project selection, background research, and preparation of a preliminary project plan.
Learning Goals:	This course is intended to provide a set of skill developing experiences similar to what might be encountered in an industry environment and also to provide preparation for the Senior Design Project course. Emphasis is placed on management of individual activities as well as those of small teams. Students are expected to demonstrate an increased ability to explain their work (orally and written), and to propose/manage a time- and cost-effective plan for carrying out system-level and other development activities.

- Policies:** Most of this document deals with what you can expect from me and from this course. In addition, I strongly recommend that each of you adopt the following policies in order to optimize your experience in the course (and to maximize your chances for obtaining the best possible grade!):
1. Treat everyone involved with respect,
 2. Come to class and come on-time, nearly *all the time*,
 3. Remain in the class for the duration of the class,
 4. Make efforts with other classmates to fill in gaps for the occasional class that circumstances force you to miss,
 5. Read carefully and follow instructions accurately,
 6. Work to improve not only your understanding of the subject matter, but also your learning skills,
 7. Take careful notes,
 8. Review material outside of class between classes,
 9. Ask questions about things you don't understand,
 10. PARTICIPATE
 11. Use good judgment when speaking; speak in a voice that is loud and clear enough for everyone to hear,
 12. Have a *good learning attitude*, and
 13. Be academically honest: No plagiarizing or cheating. Penalties range from receiving a grade of zero for an assignment to being dropped from the course and reported to university officials.
- Drop Policy:** As per University guidelines. See the UTA website for drop dates. University policies will be adhered to with regard to grade determination (e.g., W or F). A grade of incomplete (X) will be given only in unusual cases that can be well justified. Students should submit a written request stating the justification.
- SDP Policy:** EE4340 and EE4349 (Senior Design Project, or SDP) are linked courses. As part of EE4340, you will receive your SDP assignment (project and team members). You will also begin work on your SDP. It is therefore required that you agree to enroll in EE4349 in the next spring or fall semester. Should you successfully complete EE4340 and then not enroll EE4349 in the immediately next long semester, you will affect your assigned SDP team. You will be required to participate in a significant way in the EE4340 offering that takes place immediately prior to the semester that you plan to take EE4349. You will be assigned to a new team and a new project and you will be required to participate in any EE4340 assignments related to that SDP. Your performance in the phases of the SDP that occur during EE4340 will be evaluated and will impact your grade in EE4349.
- Computer Usage:** You will use web-based resources, library resources, and e-mail extensively. Word processing and Microsoft (or equivalent) drawing tools for use in the preparation of presentation materials. Spreadsheet tools for presentation of budgets, basic resource allocation optimizations, and general documentation of engineering projects.
- List Server:** At present, there are no plans to use a List Server for course communications. Periodic e-mail distributions are planned.

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Topics: (these dates are tentative and subject to change)

Session	Date	Class Topic	Assignments
1	29-Aug	Introduction (Overview, syllabus, etc.)	Form RP Groups
		Differences in research and product development	Individual RP Abstracts Assigned
		Senior Design Project discussion	Senior Design Project Selection Forms Handed Out
2	31-Aug	Description of funding agencies	
		RP Abstract discussion	
		Design of experiments	
		Technical references	
XX	5-Sep	LABOR DAY - NO CLASS	Individual RP Abstracts due via Blackboard by Midnight
XX	6-Sep		SDP choice sheet due by midnight to Blackboard
3	7-Sep	Planning a research effort	Group RP Assigned
		Team Roles	
		Proposal formatting	
4	12-Sep	Data collection, analysis, and presentation	
		Proposal formatting	
5	14-Sep	Budgets	
		Organizational skills, oral and written explanation of ideas	
6	19-Sep	Presentation skills	Individual PDP Abstracts Assigned
		Example RP presentations	
		PDP Abstract Discussion	
7	21-Sep	Design and prototyping	
		Simulation and analysis	
		Simulation and analysis	
8	26-Sep	Cost recovery plan	Individual PDP Abstracts due via Blackboard by beginning of class
		Senior Design Project discussion	
XX	28-Sep	Job fair day - No class	Group RP Presentations due to Blackboard by Midnight
9	3-Oct	RP Presentations	RP Group Evaluations due via Blackboard by midnight
		SDP Group Work Day	Group PDP Assigned
10	5-Oct	RP Presentations	
XX	7-Oct	Non Class Day	Group RP Papers due by midnight to Blackboard
11	10-Oct	Datasheets	SDP V1 overview presentation due by midnight to blackboard
		Intellectual Property	
12	12-Oct	SDP Update	
13	17-Oct	Example PDP presentations	
14	19-Oct	Application design example 1	
15	24-Oct	Application design example 1	
16	26-Oct	PCB Design	
XX	27-Oct		Group PDP Presentations due by midnight to Blackboard
17	31-Oct	PDP Presentations	PDP Group Evaluations due via Blackboard by beginning of class
18	2-Nov	PDP Presentations	SDP Groups assigned
XX	4-Nov	Non Class Day	Group PDP Papers due via Blackboard by beginning of class
19	7-Nov	Example SDP Presentations	
20	9-Nov	Equipment & Ethics	
21	14-Nov	SDP Group Work Day	
22	16-Nov	SDP Group Work Day	
XX	18-Nov	Non Class Day	SDP V2 overview presentation due by midnight to blackboard
23	21-Nov	SDP V1 Overview Presentations	
XX	23-Nov	No Class - Take off early for Thanksgiving :-)	
24	28-Nov	EE 4349 Procedures	
25	30-Nov	Lab Notebooks / Wiki pages	
XX	1-Dec	Non Class Day	Senior Design v3 Presentations due via Blackboard by beginning of class
26	5-Dec	SDP v2 Presentations	
		SDP v2 Presentations	
27	7-Dec		Senior Design Group Evaluations due via Blackboard by midnight
			Senior Design Report due via Blackboard by beginning of class

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Grading

Attendance (it matters!) 10%

Research Proposal (Team of 4)

- Abstract 5%
- Written Document 10%
- Oral Presentation 10%

(Individual grades to be assigned. See below.*)

Product Development Proposal (Team of 4)

- Abstract 5%
- Written Document 10%
- Oral Presentation 10%

(Individual grades to be assigned. See below.*)

Senior Design Project Plan (Team of 3 or 4)

- Abstract 5%
- V1 Oral 12.5%
- Written 10%
- V2 Oral 12.5%

(Individual grades to be assigned. See below.*)

Detailed descriptions of each assignment, along with checklists used in grading, will be posted on the class web site. You should use checklists to evaluate your assignments prior to submission!

*Team and Individual Grades: Even though all assignments are team assignments, each student will receive an individual grade. Looking across all assignments, individual grades will be determined based on a combination of evaluations by the instructor, by the class as whole (for oral presentation components), and by a given student's team members. Given the nature of the assignments and relatively unique aspects of the grading process utilized, details of grading deserves your careful consideration.

Team grades will be determined for assignments by the instructor using input from the GTA, grading checklists (which will be initially completed by the GTA and then reviewed by the instructor when the instructor reviews the submitted materials), and instructor evaluation of submitted materials. Team members will also evaluate their teammates and these evaluations will be used to determine a "contribution factor" using an objective formula based on the statistical average and variance of team member performance evaluations. This factor will typically range from about 0.5 to 1.25 (0.5 indicates a very weak contribution, 1.25 indicates a strong contribution). Using the method established, it is *possible* for all team members to receive a contribution factor of 1.0. The final individual written and oral grades are determined by multiplying the respective team grade by the contribution factor for a given team member. Note that your evaluations of your team members are considered as "inputs" to my grading process. I ultimately am responsible for all grades and I reserve the right to over-ride evaluation of team members, at my sole discretion, if I perceive anything but a sincere and honest evaluation process. (Based on experience, this has been necessary only for a small percentage of cases.)

Assignments with an Oral Presentation Component: For assignments including an oral presentation aspect, each member of the class not involved in a given presentation will complete an evaluation form for each oral presentation. In addition, the instructor will also evaluate each presentation. The final grade for a given oral presentation will be based on a combination of the class and instructor evaluations.

Given the basic grading process for oral presentations, it is essential that all class members be present for all oral presentations. To encourage this, an additional component to the oral presentation grading process is incorporated. Specifically, YOUR ORAL PRESENTATION GRADE will be "adjusted" based on the number

of other oral presentations that you were present to evaluate. An adjustment factor will be determined based on the number of oral presentations (other than your own) that you DO NOT evaluate as follows: 1 missed: 98%, 2 missed 95%, 3 missed – 90%, 4 or more missed – 85%. For example, if the grade for your oral presentation (determined as described above) was 83 – and you did not submit oral presentation evaluations for two other oral presentations, your final oral presentation grade would be $83 \times 0.95 = 78.9$. The instructor reserves the right to over-ride this requirement based on special circumstances (e.g., documented medical situations).

Final Letter Grade Determination: A cumulative score will be computed based on the scores for individual course assignments. The cumulative score will then be adjusted (a constant, never more than 9.9 pts, will be added to the cumulative score for each student; the same value is used to adjust all students) and a final letter grade will be determined (A, B, C, D, or F) using the standard mapping of numerical scores to letter grades (i.e., $\geq 90 = A$, etc.). The adjustment constant will be made based on overall class performance and expectations of class performance on a criteria referenced scale determined from previous course offerings. Note the impact of the adjustment factor: An adjustment of 8 pts to the cumulative score is equivalent to adding 40 pts to a single assignment that contributes 20% of the cumulative score. Details regarding requirements for each of the assignments listed above are provided via the course web site.

The instructor reserves the right to reduce the adjustment factor that is added to the cumulative score based on attendance or frequent tardiness that is disruptive to the class (see “Attendance” below).

Late Assignments:

Late assignments may be accepted without penalty only in the case of medical emergencies and if the instructor is informed as soon as practically possible (prior to due date is best). Even in this instance, assignments must be submitted prior to the return of graded assignments.

In all other instances, late assignments will be accepted up to four class meetings beyond the due date, with a 10 point (out of 100%) penalty assessed per class session. For example, submitting an assignment on the next class after the due date will result in a 10 pt penalty (i.e., the assignment will first be graded normally and then 10 pts will be subtracted to determine the final grade). No assignments will be accepted between class sessions. **NOTE:** Assignments are “due” at the beginning of class on the stated date. Thus, assignments submitted after the beginning of class – on the due date – are considered late by one class period. The same threshold applies to assignments submitted late by more than one class period.

Due to the need to compute and submit final grades, the last assignment must be submitted no more than 48 hours after the due date and will be subject to a “one class late” penalty. Any submissions beyond that limit will receive a grade of zero unless the student contacts the instructor to discuss the possibility of receiving an overall course grade of “incomplete”.

Attendance:

Attendance: At The University of Texas at Arlington, taking attendance is not required. Rather, each faculty member is free to develop his or her own methods of evaluating students’ academic performance, which includes establishing course-specific policies on attendance. As the instructor of this section, attendance is expected. It will be randomly checked both formally and informally. Poor attendance will be taken into account as described above in final letter grade determinations. Attendance for certain class sessions (e.g., oral presentations) is considered MANDATORY and procedures are incorporated such that missing those classes will have a direct impact on your grade associated with specific assignments.

Policy Regarding EE4340 and EE4349:

EE4340 and EE4349 (Senior Design Project, or SDP) are linked courses. As part of EE4340, you will receive your SDP assignment (project and team members). You will also begin work on your SDP. It is therefore required that you, along with your designated team members, agree to enroll in EE4349 in the next spring or fall semester. Should you successfully complete EE4340 and then not enroll EE4349 in the “immediately next” long semester, you will adversely impact your assigned SDP team. You will be required to participate in a significant way in the EE4340 offering that takes place immediately prior to the semester that you plan to take EE4349. You will be assigned to a new team and a new project and you will be required to participate in any EE4340 assignments related to that SDP. Your performance in the phases of the SDP that occur during EE4340 will be evaluated and will impact your grade in EE4349.

Writing Center:

The Writing Center, 411 Central Library, offers individual 40 minute sessions to review assignments, *Quick Hits* (5-10 minute quick answers to questions), and workshops on grammar and specific writing projects. Visit <https://uta.mywconline.com/> to register and make appointments. For hours, information about the writing workshops we offer, scheduling a classroom visit, and descriptions of the services we offer undergraduates, graduate students, and faculty members, please visit our website at www.uta.edu/owl/.

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>.

Americans With Disabilities Act:

The University of Texas at Arlington is on record as being committed to both the spirit and letter of federal equal opportunity legislation; reference Public Law 93112 – The Rehabilitation Act as amended. With the passage of new federal legislation entitled Americans with Disabilities Act – (ADA), pursuant to section 504 of The Rehabilitation Act, there is renewed focus on providing this population with the same opportunities enjoyed by all citizens.

As a faculty member, I am required by law to provide “**reasonable accommodation**” to students with disabilities, so as not to discriminate on the basis of that disability. Student responsibility primarily rests with **informing faculty at the beginning of the semester and in providing authorized documentation through designated administrative channels.**

Title IX: The University of Texas at Arlington (“University”) is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated. For information regarding Title IX, visit www.uta.edu/titleIX or contact Ms. Jean Hood, Vice President and Title IX Coordinator at (817) 272-7091 or jmhood@uta.edu.

Academic Dishonesty:

It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic

dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University.

“Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part of another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.” (Regents’ Rules and Regulations, Part One, chapter VI, Section 3, Subsection 3.2, Subdivision 3.22).

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.

Student Support Services Available:

The University of Texas at 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. These resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals to resources for any reason, students may contact the Maverick Resource Hotline at 817-272-6107 or visit www.uta.edu/resources for more information.

Electronic Communication Policy:

The University of Texas at Arlington has adopted the University “MavMail” address as the sole official means of communication with students. MavMail is used to remind students of important deadlines, advertise events and activities, and permit the University to conduct official transactions exclusively by electronic means. For example, important information concerning registration, financial aid, payment of bills, and graduation are now sent to students through the MavMail system. All students are assigned a MavMail account. ***Students are responsible for checking their MavMail regularly.*** Information about activating and using MavMail is available at <http://www.uta.edu/oit/email/>. There is no additional charge to students for using this account, and it remains active even after they graduate from UT Arlington.

To obtain your NetID or for logon assistance, visit <https://webapps.uta.edu/oit/selfservice/>. If you are unable to resolve your issue from the Self-Service website, contact the Helpdesk at helpdesk@uta.edu.

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 on the laboratory door. 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.

The IDEAS Center:

(2nd Floor of Central Library) offers **free** tutoring to all students with a focus on transfer students, sophomores, veterans and others undergoing a transition to UT Arlington. To schedule an appointment with a peer tutor or mentor email IDEAS@uta.edu or call (817) 272-6593.

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The English Writing Center (411LIBR):

The Writing Center Offers free tutoring in 20-, 40-, or 60-minute face-to-face and online sessions to all UTA students on any phase of their UTA coursework. Our hours are 9 am to 8 pm Mon.-Thurs., 9 am-3 pm Fri. and Noon-6 pm Sat. and Sun. Register and make appointments online at <http://uta.mywconline.com>. Classroom Visits, workshops, and specialized services for graduate students are also available. Please see www.uta.edu/owl for detailed information on all our programs and services.

The Library's 2nd floor Academic Plaza offers students a central hub of support services, including IDEAS Center, University Advising Services, Transfer UTA and various college/school advising hours. Services are available during the library's hours of operation. <http://library.uta.edu/academic-plaza>

Librarian to Contact: <http://www.uta.edu/library/help/subject-librarians.php>

Library: The Library's website address is <http://www.uta.edu/library>.

The following is a list of commonly used library resources:

Library Home Page	http://www.uta.edu/library
Subject Guides	http://libguides.uta.edu
Subject Librarians	http://www-test.uta.edu/library/help/subject-librarians.php
Database List	http://www-test.uta.edu/library/databases/index.php
Course Reserves	http://pulse.uta.edu/vwebv/enterCourseReserve.do
Library Catalog	http://discover.uta.edu/
E-Journals	http://utalink.uta.edu:9003/UTAlink/az
Library Tutorials	http://www.uta.edu/library/help/tutorials.php
Connecting from Off- Campus	http://libguides.uta.edu/offcampus
Ask A Librarian	http://ask.uta.edu