UTDesign Student Guidelines

1. INTRODUCTION

Every engineering and computer science senior at UT Dallas is required to work on a team-oriented capstone project (senior design course).

UTDesign is a program designed to provide our students with a meaningful industrial experience while working on their capstone project. UTDesign partners with the industry to bring the students the opportunity to work on real life problems.

The objective of this course is for the students to:

- Apply the design process
- Apply principles of project management, budget, and scheduling
- Apply problem solving skills
- Integrate knowledge learned in previous courses
- Function effectively in a team
- Effectively communicate orally and in writing

The departmental courses are as follows:

	BE	CS	EE, CE, TE	ME
Semester 1	BMEN 4388	CS 4385	EE/CE/TE 4388	MECH 4381
Semester 2	BMEN 4389	n/a	EE/CE/TE 4389	MECH 4382

2. COURSE FORMAT

In this course, you will have the opportunity to develop your professional skills by working as a part of a team on an open-ended project with a significant scope. You will focus on preparing a detailed design that is suitable for fabrication (engineering) and meets the objectives of your assigned project. In the subsequent class your team will build a proof-of-concept prototype to evaluate the design you developed. To make this a more realistic experience, most (if not all) of the projects in this course will be proposed by the industry. For these projects, a company has provided a problem that they need for the team to solve. The goal is to combine the technical material you have learned in previous and current classes with the new skills you will acquire in this course to successfully complete the project. Additionally, the format of the course will provide you with an introduction to the environment typically found in the computer science/engineering profession.

There will be interim deliverables throughout the semester. Because technical communication skills are vitally important in the profession, the course assignments will emphasize both written and oral communication.

This course will likely be different from any one you have taken previously. The projects are challenging and achieving success will require the very best efforts of each team member. However, be assured that the department, faculty, and the industry partners are here to help you be successful in this endeavor. The extra effort put forth in this course will be rewarded by the sense of accomplishment you will feel when you deliver an outstanding prototype and report to your sponsor. Additionally, your work in this course will be a distinguishing activity to put on your resume and discuss in a job interview

3. ROLES AND RESPONSIBILITIES

Throughout this course, you will be interacting with a number of individual and groups. A description of the key roles of those involved in the course is as follows:

Sponsor: The company, organization, or individual that provides the project for a student team. You should view the sponsor as your "client" for the project.

UTDesign: An organization within the Jonsson School of Engineering and Computer Science Dean's Office that engages companies for the purpose of providing sponsored projects for students in senior design courses.

Corporate Mentor: An individual within the partner company that will be the technical point of contact for the team. The industry mentor will represent the company's interests and assist the team as they work on the project.

Faculty Advisor: A faculty member that will provide guidance and support to a team as they execute their project. Each team will be assigned a faculty advisor that has expertise specific to their project topic.

Course Coordinator/Course Instructor: The faculty member listed as the instructor of record for the course. The course coordinator and a few guest lecturers will deliver the course instructional material. The course coordinator will also assign grades (with input from the industry mentors and faculty advisors) and will have final authority over all decisions related to matters in the course.

Team: The group of students assigned to a particular project.

Team Leader: A member of the team that is selected to serve in a leadership role. The main responsibility of the team leader will be to communicate on behalf of the team.

The Role of the Faculty Advisor

The faculty advisor supervises the team from the start to the end of the project (one semester for computer science, two semesters for engineering). In order to help the team achieve success, the faculty advisor must:
- Guide the team during the design process, ensuring a project deliverable.
- Connect the team to technical resources and experts necessary to understand and solve the project.

- Help the team to establish and meet benchmarks.
- Facilitate the student-corporate relationship.
- Foster teamwork and team's self-confidence.

The faculty advisors should advise and guide the students, but not solve the problem for them. Faculty advisors are permitted to provide technical advice, but should minimize contributions of intellectual property to the project.

The Role of the Corporate Mentor

The role of the corporate mentor is very important in the learning process of our students and the success of the sponsored project. In order to help the team achieve success, the corporate mentor needs to:

- Mentor the team throughout the project so students can get a corporate experience.
- Mentor the students with new technology used in their company.
- Guide the team to meet benchmarks.
- Foster teamwork.
- Foster high quality communication and professionalism.

Teams

It is recommended that each team designates a team leader. The main role is to serve as communication point on behalf of the team.

Some conflict on teams is normal. When this occurs, teams should first attempt to resolve these issues internally. If that measure is unsuccessful, then the matter should be brought to the attention of the team's faculty advisor.

All members of a team are typically assigned the same score unless there is evidence of unequal team member contributions. The individual score is derived from assessments of a student's performance by others involved in the project and peer evaluations performed throughout the semester.

4. PROJECT BIDS

Projects for the course will be presented to students at the beginning of the semester. These presentations will provide you with the information you need to select your preferred projects and submit your bids for those projects.
Following the sponsor project presentations, students will be asked to select and rank several preferred projects.

The formation of teams and selection of projects may differ from one department to another. You will have more information regarding this topic by your course instructor.

5. PROJECT KICKOFF MEETING

After projects are assigned, the teams will be expected to immediately schedule a kickoff meeting with their corporate mentor. Preferably, the kickoff meeting should be held at the sponsor's location so that team members can see any relevant hardware and equipment. The faculty advisor should also attend the kickoff meeting with the team. This meeting will provide an opportunity for the faculty advisor to meet the corporate mentor and learn more about the project.
The outcomes of the kickoff meeting are the following:

(1) Build relationship between all project personnel,
(2) Understand the background and context of the design problem, and
(3) Define the project scope, objectives, and deliverables.

Teams should take extensive notes of all discussions at this meeting.

If possible, it is recommended to schedule this meeting no later than the third week of class (second week for CS students).

6. INTELLECTUAL PROPERTY (IP) AND NON-DISCLOSURE AGREEMENT (NDA)

Project results are owned by corporate partners. They secure the rights to intellectual property resulting from the project by entering into a mutually acceptable agreement with the UTDesign students of their team. The agreement signed (IP) is between the company and the students.

Students must be aware and committed to a Non-Disclosure agreement. Usually, the NDA is incorporated into the IP agreement.

We expect students to have all these documents signed by no later than the 5th week of class.

7. MEETINGS

Teams are expected to maintain regular contact with the corporate mentor throughout the duration of the project. Teams should set a schedule for regular in-person meetings, teleconferences, etc. with the corporate mentor according to his/her preferences and availability.

Teams should also arrange a regular meeting schedule with their faculty advisor that allows for at least one meeting per week unless instructed otherwise by the advisor.

Since most of the work in this course occurs in teams, students will need to meet and work together frequently throughout the course. Teams will be expected to develop a meeting schedule that suits their team and project needs. It is important to realize that not all project work has to be completed in a group setting. Teams should consider dividing the project work into appropriate tasks that can be completed by individual members (or sub-groups) and only meet as a whole team at strategic times.

8. COMMUNICATION

At the beginning of the project, the team should ask the corporate mentor and faculty advisor about their preferred method(s) of communication. Generally, this will be email with telephone calls used when necessary. Only contact these individuals using the agreed upon method(s). Consult with your faculty advisor if special arrangements need to be made for long distance phone calls, conference calls, or other special types of communication.

When communicating with faculty advisors and the corporate mentors, it is important to keep in mind that these individuals have many responsibilities, and so you should not expect immediate responses. If you feel that your team is not receiving responses in a timely manner, bring this to the attention of your faculty advisor.

The team leader will serve as the communication point between the team and the faculty advisor and the corporate mentor. To avoid misunderstandings, all communication (email and phone calls) between the team and the faculty advisor and the corporate mentor should be directed through the team leader. The faculty advisor must be copied on all emails exchanged with the corporate mentor.

All team communication with the corporate mentor, faculty advisor, and other industry professionals is expected to be conducted in a professional manner. Make sure that emails are concise, written in complete sentences, and free from spelling and grammatical errors. Informal emails are not acceptable for communication with anyone outside of your team. Be particularly careful of how your word choice may be perceived by the reader. When in doubt, have a team member review the message before sending it.

9. PROFESSIONALISM

Many of the activities in this course involve interactions between students and industry professionals (industry mentor, sponsor personnel, vendors, etc.). These interactions may occur in many forms including written documents, emails, telephone conversations, and in-person meetings. Students are expected to conduct themselves professionally at all times and remember that they are ambassadors for the UTDesign Program, your department, your school, and the university. Appropriate dress is required at all events in which sponsors are present. Additionally, attendance and punctuality are important aspects of professionalism. Many project sponsors view senior design projects as a major recruiting opportunity, so be sure that your actions reflect positively on you at all times!

10. UTDESIGN STUDIO

The UTDesign Studio is a state-of the-art facility designed to support the UTDesign program and the senior design capstone experience. It is located at the Synergy Park North Center (3000 Waterview Parkway, Richardson, TX), and it provides more than 30,000 square feet of dedicated space for the students to work on their projects.

The SPN building is open Monday through Friday from 7:30 am to 6:00 pm. Students registered in a senior design course get access to the building and the studio 24 hours a day, 7 days a week by passing a set of training courses.

Each engineering team is provided with a project station for the duration of the project. Each project station is furnished with a computer and storage area.

The studio has four conference rooms and the Cisco TelePresence room, which are available for students to reserve for their weekly meetings with corporate mentors, faculty advisors, and team.

All these rooms are available for reservation through the UTDesign website.

The studio also has a computer lab equipped with zero clients and Apple computers. The computer lab is accessible through a badge reader.

There is a CAD station in the open lab. Students requiring to use CAD software need to contact JC Clark for access to the station.

Students are welcome to use the machine shop with supervision of the machine shop manager and after going through some training. The machine shop is open M-F from 9:00 am to 6:00 pm.

Four types of printers are available: laser jet, color printer, 3-D, and a plotter. Students will have some restrictive access to the printers and plotter. Students will be deducted 4 cents per black and white print and 10 cents per color print from their $10.00 semester quota assigned by the School of Engineering and Computer Science.

To use the 3D printer students must submit their 3D model to Gene Woten in .STL format. Students will receive a cost estimate that must be reviewed and approved by the team's faculty advisor before the actual printing process can be started.

11. BUDGET AND PURCHASE PROCESS

Each team has a project budget of $2,000 ($1,000 for CS). Funds may only be used for supplies and hardware to design and build the project.

If your budget will surpass the allotted money, the corporate mentor must agree to pay the extra expenses.

The UTDesign purchase process document contains important information for acquiring project parts and supplies, a must read document for all students.

Students must complete and submit the UTDesign procurement request form for ordering parts and supplies. No procurement form will be processed without the faculty mentor authorization.

12. PROJECT

Working with projects proposed by industry gives the students a challenging and meaningful experience, and they should expect to spend a significant amount of time working for the project if they want to succeed in the course.

Here are few things teams should know:

1. When choosing a project, choose what excites you. Make sure you have an acceptable background for the project. Do not choose a project because your friends are choosing that project.
2. Students working on UTDesign will be asked to sign a nondisclosure agreement (NDA) and intellectual property (IP) agreement with the partnering company the first few weeks of class.
3. Designate a team leader. That student should be the contact point between the team, the corporate mentor, and faculty advisor.
4. Teams should meet their faculty advisor and corporate mentor **no later than the third week of class**. It is expected to have a kickoff meeting by then, where the whole team and mentors participate. This is a very important meeting because it is here where the team learns details of the project such us specifications, requirements, and deliverables.
5. Once the team has all the information needed to start working on the project, it is advisable to have weekly meetings with its mentors, have a clear agenda for those meetings, and send them weekly reports if asked.
6. Plan wisely for all deliverables: preliminary design presentation, preliminary design report, proposal, final design, UTDesign Expo, prototype, documentation. Follow due dates.
7. Plan on purchasing items early in the semester. Long lead times, lost goods in shipping, or backorders are very possible.
8. If any issue arises that the team feels may affect the performance of the project, it should be communicated **immediately** to the faculty advisor. If the faculty advisor is unable to help, take the concern to the course instructor or UTDesign staff.
9. Act professionally at all times. Be on time, don't miss meetings or deadlines. Remember, this is a 15/30 week interview, which can land you a job.

13. SCHEDULE

Following a well-defined schedule is paramount to having a successful project. At least two considerations must be taken: follow the schedule required by the syllabus given by the course instructor, and consider the project sponsor's needs for deliverables. Discuss any differences in schedule with the course instructor prior to agreeing to different course required due dates.

Visit the Project Schedule page in the UTDesign website for a closer look to the schedule.

14. UTDESIGN EXPO

Toward the end of your capstone experience, your team will participate in the UTDesign Expo.

UTDesign Expo consists of the team's formal oral and/or poster presentations. It is required for all teams. All corporate mentors, faculty, and students are invited to the expo, and many other people from the local industry are also invited. This is a great opportunity for students to explain the results of their projects to the guests.

15. Tips for Success

To have a successful project and a satisfying experience during the course students should

- Expect to work more hours than in a regular project. These are real and challenging world problems. It is expected for the team to put an average of 600 hours per semester, which is about 10 hours per student per week.
- Have a flexible schedule. The team will frequently meet with the corporate mentor and faculty advisor outside class hours. Plan your schedule accordingly.
- Communicate regularly with your mentors. Weekly meetings are recommended.
- Have an agenda for your meetings, for example what was accomplished last week, what are the plans for the future week, what barriers need to be discussed.
- Work as a team.