UTDesign Faculty Advisor Guidelines

Thank you for agreeing to be a faculty advisor for a UTDesign team. Your role is very important for the learning process of our students and to ensure the success of their design project.

Every engineering and computer science senior at UT Dallas is required to work on a team-oriented capstone project (senior design course). This final project will allow them to fully engage in the design process, teamwork, and project management as well as use their problem solving skills. The departmental courses are as follows:

<table>
<thead>
<tr>
<th>Semester</th>
<th>CS</th>
<th>BE</th>
<th>EE, CE, TE</th>
<th>ME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 1</td>
<td>CS 4485</td>
<td>BMEN 4388</td>
<td>EE/CE/TE 4388</td>
<td>MECH 4381</td>
</tr>
<tr>
<td>Semester 2</td>
<td>n/a</td>
<td>BMEN 4389</td>
<td>EE/CE/TE 4389</td>
<td>MECH 4382</td>
</tr>
</tbody>
</table>

The following summarizes the key roles of those involved in UTDesign:

- **UTDesign department director**: The department faculty member who works with corporate sponsors to outline projects, recruits faculty advisors, assigns students to teams, and oversees the smooth work of all projects.
- **UTDesign faculty advisor**: The faculty member who, using their expertise and interests specific to the project topic, provides guidance to the team as they execute their project.
- **UTDesign corporate mentor**: An individual from the sponsoring company, who serves as the technical point of contact for the team, represents the company’s interests, assists the team as they work on the project, and facilitates technology transfer during the project.
- **UTDesign course coordinator**: The department faculty member listed as the instructor of record for the senior design course. The course coordinator oversees all activities including instruction, posts final grades, and frequently also serves as the department director.

Any time faculty advisors have questions regarding UTDesign, the project direction, or any student or team issue, they should contact the department director.

- Todd Polk, Bioengineering
- Miguel Razo, Computer Science
- Marco Tacca, Electrical Engineering
- Robert Hart, Mechanical Engineering

The Role of the Faculty Advisor

The Faculty Advisor is the primary contact for the student team while working on the project. The faculty advisor supervises the team from the start to the end of the project (one semester for computer science, two semesters for engineering). The UTDesign faculty advisor complements the mentoring done by the corporate mentor.

In order to help the team achieve success, the faculty advisor must:

- Guide the team during the design process, ensuring project deliverables.
- 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.

One of the most difficult tasks for the faculty advisor is to find the right balance of supervision when helping with the project. Students should come up with their own solutions. The faculty advisor’s role is to be more of a coach and less of a team member. In this role, they 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 (if there is an IP agreement in place between the students and the sponsoring company).

**Expectations of the Faculty Advisor**

Faculty advisors should expect to spend an average of two hours per week working with each team. Some projects may require more time. A summary of the tasks expected are listed below:

- **Be familiar with confidentiality requirements**
  The Faculty Advisor must abide by the requirements of an NDA, if requested by the sponsor. All Faculty NDAs are reviewed and approved by the university. Individual Faculty members should not negotiate or sign these agreements personally. The Faculty NDA will be an agreement separate from the student NDA. The Faculty Advisor should however help the students understand and remain in compliance with the requirements of their individual NDAs.

- **Ensure the project’s scope remains realistic throughout the project**
  The Course Instructor has worked with the sponsors to define the projects so that they are appropriate for the course. However, the Faculty Advisor may find it necessary to help the team further refine the scope, especially taking into account team capabilities and the time remaining to complete the work. If the scope is too large, the students won’t be able to deliver and they will likely become frustrated. If the scope is too small, the students won’t be challenged and may not consider the project important. Additionally, the Faculty Advisor should ensure that the project contains sufficient activities to meet the course objectives (i.e., design, analysis, prototype building, and testing content). In cases where sponsors modify project requirements, it is important to ensure that the scope of the project remains realistic.

- **Hold regular team meetings**
  During the course of the project, the Faculty Advisor should meet regularly with the team. Weekly meetings are recommended, especially at the beginning of the project. It will be left up to the Faculty Advisor’s judgment to set a specific meeting schedule that meets the needs of the team and project. Experience shows that meeting with the team on an as-needed basis or waiting on the team to initiate meetings are not good strategies. In addition to discussing the technical details of the project, these meetings should be used as a time to discuss project progress, project management, resource allocation, soft skills development, etc.
• **Maintain open communication with the sponsor**
  The Faculty Advisor should establish communication as soon as possible with the Corporate Mentor, preferably prior to the project kickoff meeting. This will provide an opportunity to discuss the technical aspects of the project and how the student team will be managed. Maintaining open lines of communication throughout the project and working as partners to help the team learn and succeed establishes a good foundation for a successful project outcome. The Faculty Advisor should also ensure that the team maintains regular contact with the Corporate Mentor through meetings and/or teleconferences.

• **Attend meetings between team and sponsor**
  The Faculty Advisor should try to attend the project kickoff meeting with the student team. This is an important meeting as it is the first opportunity for the team to gather information about the project background, requirements, and specifications. The Faculty Advisor should guide the team as necessary during this meeting to make sure that adequate information is obtained. The Faculty Advisor should try to participate in other meetings with the team and Corporate Mentor when possible.

• **Develop an effective team.**
  The Faculty Advisor should help the team function effectively by encouraging them to share their work in a manner that takes advantage of individual strengths, skills, and interests. Most importantly, the Faculty Advisor should be alert for issues related to team conflicts and workload sharing. When these are detected, the Faculty Advisor should intervene early and attempt to resolve them. As this is likely the first time students have worked on a project of this size, the Faculty Advisor may need to be encouraging and mentor students in managing their time and workloads.

• **Advocate for the team**
  The Faculty Advisor should be an advocate for the team and help them obtain the information and resources needed to be successful. Faculty Advisors should connect the team to experts, vendors, etc. when required and step in to get things done when they get difficult for the team (e.g., deal with difficult vendors, parking issues, etc.). The Faculty Advisor should also identify barriers and help the team develop solutions. In particular, the Faculty Advisors should watch out for technical problems, unrealistic objectives, infeasible solutions, and safety issues.

• **Help the team to establish and meet benchmarks**
  The Faculty Advisor should monitor the team’s progress toward each deliverable. One of the most important roles of the Faculty Advisor is to ensure that the team is making steady progress and intervene when appropriate to help the team overcome obstacles.

• **Guide the team through the process of preparing reports and presentations**
  Written and oral communications are emphasized in this course. The team will benefit from the Faculty Advisor’s expertise and assistance when preparing these deliverables. The Faculty Advisor should review the team’s weekly progress report and provide feedback on positive and negative aspects of the team’s work.
• **Encourage professionalism**
  The Faculty Advisor should encourage professional behavior in all team activities. Students should be encouraged to use this course as an opportunity to practice and develop the professionalism that is expected of a practicing engineer. Remind students to demonstrate professionalism including punctuality, well-written emails, appropriate dress, effective communication, etc.

• **Participate in assessments.**
  The Faculty Advisor will be asked for input that will determine a portion of each student’s grade. Faculty Advisors should pay attention to the engagement and contributions offered by each student over the course of the semester. UTDesign also needs the faculty advisors’ input to improve its program. This feedback will be collected through a survey at the end of each semester.

**Project Schedule**

The following flow diagram is a good representation of the course deliverables.

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**Schedule of Deliverables for Engineering Projects**

- **Deliverables**
  - Internal: for class
  - External: for class and sponsor

- **Senior Design I**

- **Senior Design II**

- **Project Definition**
  - Preliminary Design Review
  - Project Plan

- **Critical Design Review**
  - Detailed Design Report

- **Formal Design Presentation**
  - Test Plan
  - Mandatory First Prototype
  - EXPO
  - Final Project Report

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* Each department follows schedule per course syllabus
We hope these guidelines will help you understand your role as a faculty advisor and succeed as such. We look forward to working with you and are open to any suggestions to improve the faculty guidelines.