Faculty Course Self-Assessment

Instructor: ___________ Tandon________________________
Course: _______CMPE 493 – Senior Capstone: Senior Design II_________
Term: ____________Spring 2024_________________________________
Enrollment: ____________24__________________________

Text: none

Course Summary:

Technical development and completion of a capstone design project. Continuous feedback from project clients, teammates, and instructor. Introduction to Scrum methodology. Mock U.S. Patent application, and completion of a technical journal article. Satisfies the capstone requirement.

Course Learning Outcomes:

☐ Successfully complete a major capstone design project satisfying requirements of project clients.
  • Disseminate project results through a technical journal article, mock U.S. patent application, and oral presentation in front of project clients.
  • Experience working with project clients and team members.
  • Understanding of the broad societal and ethical impacts of a project.
  • Develop teamwork skills for project implementation and completion.

PLO 3 An ability to communicate effectively with a range of audiences.

Summary of Student course performance:

Students overall did relatively well. The breakdown of grades was as follows:
8 As
8 Bs
7 Cs
1 D

This course has no prerequisites for graduation so all students passed the class and will be able to move on. The goal of the class was to build an embedded system computer in a group setting. A large part of building the project requires students to communicate what they have built. This is done as part in a written journal article, also as a group presentation. Students work as individuals to complete an ethics writing assignment.

During the course of the class, the students implemented design projects in groups of 4-5 students. The students practiced working together to develop an implementation plan with a fair and reasonable division of labor. Two student groups completed their entire project as originally proposed with only minor points missing from the original proposal. One group managed to complete the majority of their design tasks but had two or three missing tasks. Two final groups had major issues with their projects that required re-engineering their designs to fix serious issues. Since requesting a new build was not possible, we had the students build prototypes using off-the-shelf hardware.

The written group written assignment assessed the students ability to communicate a technical journal. The journal article follows the standard format of any science lab report which has six general sections: intro, hypothesis, experiment, results, discussion, and conclusion. Students were required to include a references section as well. Students were scaffolded with a rough draft assignment which they received full credit for if they made an honest effort to turn in. After
making several criticisms, students were graded on their final assignment turn-in. Many student groups were able to cover all the essential topics but two groups missed to include a comprehensive explanation of their hypothesis and experiment sections.

The individual written assignment assessed the ability of students to think critically about, and communicate effectively with regards to, ethics in engineering. Students were given ambiguous situations to review and then were asked to make a judgement call on correct behaviors in difficult situations. Two students missed this assignment. All but 2 had logical flow in their ethics assignment to support their conclusions. Interestingly, students had contradictory conclusions.

**Student comments:**

- The class was knowledgeable and challenging because it deals with design. I hope some videos were available to help refresh the idea learned in class instead of just the lecture slides. However, overall the class was interesting, hard and challenging but useful.
- There is no problem with Tandon's approach to teaching at all; he makes sure his students understand the concepts.
- Great teaching style, provided lots of insightful help. Clear goals and deadlines. Overall very enjoyable experience and just the right amount of challenge.

**Summary of student comments and course evaluations:**

Students were generally favorable of the experience although no individual comments were made directly pertaining to PLO3.

**Summary of Faculty experience & observations:**

Students have a significant difficulty with writing in the engineering discipline and view it as a formality. Requiring students to complete written reports is very much necessary. A written document that spells out exactly what the expectations are may help the students.

**SUMMARY OF ACHIEVEMENT OF COURSE OUTCOMES**

**RECOMMENDED CHANGES**

**Recommended changes based on student course performance:**

Prepare a clear list of requirements to students so they know what is necessary to receive a good grade on their project journal article. Students left of significant pieces of information that made reading their work difficult. Although key pieces of information were included, the journal articles can become very difficult to understand without proper context in the class.

**Recommended changes based on student evaluations and comments:**

Student comments were too positive to make changes based on comments.

**Recommended changes based on faculty experience & observations:**

See above “recommended changes based on student course performance.”
Other comments and recommended changes:

None

Summary of Recommended Changes

<table>
<thead>
<tr>
<th>Change</th>
<th>No change</th>
<th>Change</th>
<th>No change</th>
</tr>
</thead>
<tbody>
<tr>
<td>☒</td>
<td>☒ Prerequisites</td>
<td>☒</td>
<td>☒ Course equipment/apparatus</td>
</tr>
<tr>
<td>☒</td>
<td>☒ Syllabus</td>
<td>☒</td>
<td>☒ Course field trips/site visits</td>
</tr>
<tr>
<td>☒</td>
<td>☒ Text</td>
<td>☒</td>
<td>☒ Guest speakers</td>
</tr>
<tr>
<td>☒</td>
<td>☒ Homework</td>
<td>☒</td>
<td>☒ Pacing and relative emphasis</td>
</tr>
<tr>
<td>☒</td>
<td>☒ Laboratories</td>
<td>☒</td>
<td>☒ Course materials/handouts</td>
</tr>
<tr>
<td>☒</td>
<td>☒ In class exercises</td>
<td>☒</td>
<td>☒ Blackboard &amp; lecture notes</td>
</tr>
<tr>
<td>☒</td>
<td>☒ Exams</td>
<td>☒</td>
<td>☒ Grading</td>
</tr>
<tr>
<td>☒</td>
<td>☒ Projects</td>
<td>☒</td>
<td>☒</td>
</tr>
</tbody>
</table>

Other

| ☒       | ☒       | ☒       | ☒       |
| ☒       | ☒       | ☒       | ☒       |
| ☒       | ☒       | ☒       | ☒       |