
I WISH YOU WERE MORE SELF-REFLECTIVE.
CARTOONSTOCK
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STAHLER.
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Larson
"Well, here we go again. ... Did anyone here *not* eat his or her homework on the way to school?"


Writing a self-review isn't the worst thing in the world. That's what going to the dentist is for.
grammarly

30 revisions, are you a perfectionist?

No, I'm just stuck in a formative self-evaluation feedback loop.

freshspectrum.com

"My image consultant wants me to look in a mirror."

MECH 328 Reflection

Dr. Sheldon Green

“The unexamined life is not worth living”

Socrates

- Today we will reflect back on the course – what went right, what needs improvement, what have we learned, what will stay with us (deep learning), etc.

Motivation and Objectives

- Learn from instructors, and independently from students, what they consider the key learning outcomes of MECH 328
- Identify possible changes to MECH 328

Feedback from Students

What do you think are the top 5 learning objectives?

- Dealing with poor teammates, delivering unfinished work, rubric hunting, project management, communication.
- Time management, team work, problem defining, task allocation, documentation
- How to scope a project, how to manage time in a project, how to design for failure modes, how to document work, how to present your work
- Project management, conceptualizing ideas, applying physics for analysis, evaluating needs and trade offs, managing expectation of client/supervisor
- The design process, focusing on the conceptual portion and documentation
- Turn original stakeholder statements into engineering needs, prioritization and setting a scope, **justification of engineering decisions**, time management organization, group team work
- Dr. McKesson's life story, time management, managing expectations, pushing paper, multitasking in lecture
- Documentation, project management, dfmea
- Learn how to work in a team, practice project management skills, practice engineering design, effective communication, learn about more elements in the design process
- Requirements and Baselines, LCA, Project Specifications, DFMEA, and Design against failure
- Project management, stress management, time management, the design process, delivering an incomplete product in style
- teamwork? project management? time management?

Feedback from Students

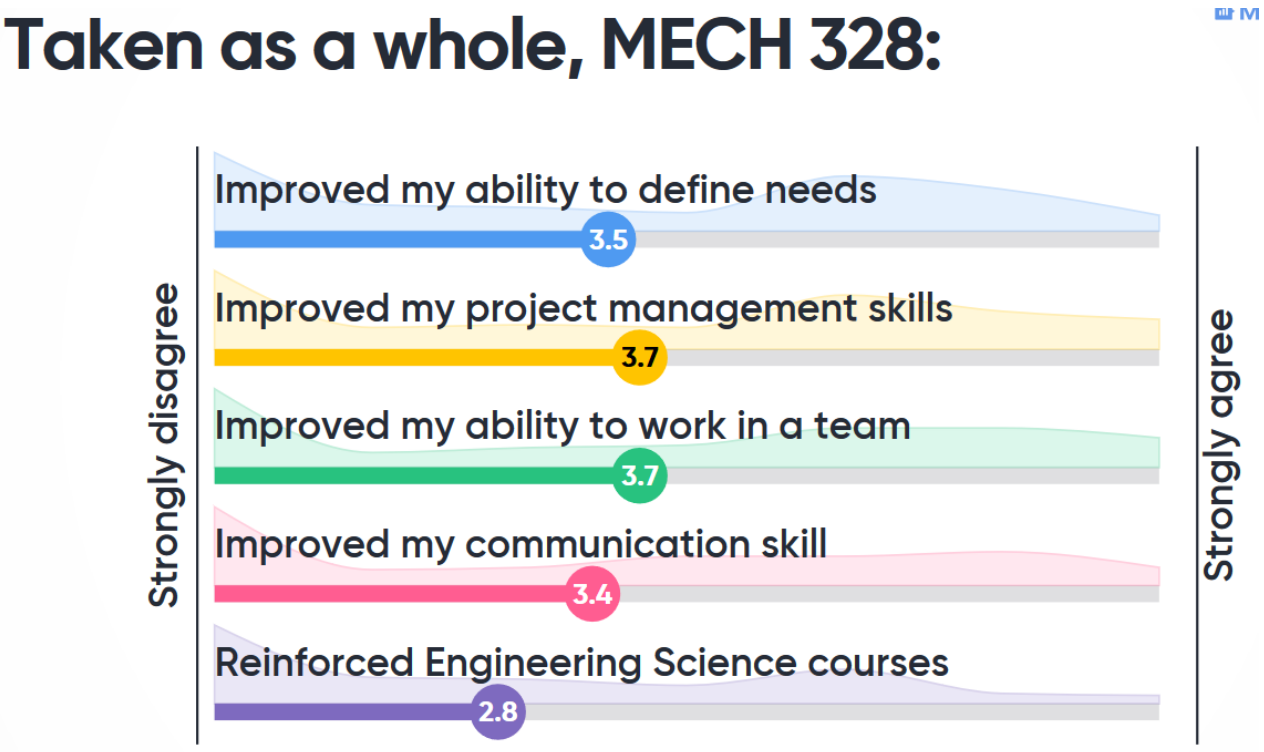
- very nice
- Honestly, I have no idea.
- Project management, project management, project management, design, report writing
- Team work, documentation, applying theoretical concepts we've learned, working with a client, determining scope/needs.
- anything about going through the design process (needs/requirements, FMEA, LCA...)
- Learn design process and **how to make justified design decisions**
- project goals definition, project planning, engineering analysis, engineering design process, teamwork
- Learn how to work without guidance and with different expectations (difference TAs and profs have such conflicting expectations that this is the largest struggle by far and I'm really hoping it's supposed to be a learning experience); learn how to create a project scope; gain experience with project management; prepare for capstone/real world challenges; and develop design in detail skills
- Learn how to formalize needs from vague needs statements, Present a week's worth of work briefly, Manage time
- Designing with vague guidelines, iterating, time management, determining stakeholders and their needs.

Summary:

Identification of needs/scope
Project management
Time management
Teamwork
Communication
Justified design decisions (logical thinking)

In Class Survey

- Go to www.menti.com and use the code 88 84 27
- https://www.mentimeter.com/s/93aafb80e199eb6554b609c973abbeaa/11b4b93a15ea



Feedback from Instructors

Q: What do you think are the top five learning objectives for MECH 328?

A: (McKesson) "Design the Project, just as thoroughly as you design the Product"
A: (Fengler)
1. Problem definition isn't your client's or your boss's job - it's yours.
2. Time improves understanding of the problem and the constraints - manage changes in requirements and development targets accordingly.
3. Your boss is not going to script how you should do a project. You can't afford to blindly accept a project as-is when you (should) know that resources are limited.
4. Gee, there is a whole lot I don't know about technology X (and school isn't going to teach me, so I'd better make a plan to learn...).
5. Identifying needs is easily said but much harder to do (correctly).
6. Clients are always right, unless they are wrong.

Feedback from Instructors

Q: What do you think are the top five learning objectives for MECH 328?

A: (Hodgson)

1. Learning that real life projects are messy and it's not as easy as it sounds to carry out the various design steps
2. Allocating time should be done with the reward structure in mind, while still not overlooking or skimping on necessary things
3. With coordinated effort, much more can be done than you could achieve on your own, although coordinating effort takes work
4. Documentation should not be deferred, and therefore must be succinct
5. Even if someone is telling you what to do, you have a responsibility to come to your own conclusions about what's important
6. What you've learned about physics and math needs to be used to make the best possible design, but no-one will tell you what to calculate - you have to figure that out on your own
7. Justifying statements and conclusions is more involved than simply asserting them

Sheldon's Observations

- MECH 328 is part of our design sequence.
  - MECH 223 is "tightly constrained" design
  - MECH 328 is "loosely constrained" design – a key part is figuring out the needs.
  - Owing to time constraints, MECH 328 does not, unfortunately, include a design cycle with prototyping and testing
  - MECH 45X is similar to 328, but includes the design cycle phase

- From this perspective, I think the number one learning objective of MECH 328 should be **needs identification** (client interaction, putting needs into engineering language)
- Secondary, but still highly valuable learning objectives for MECH 328:

  Project Management
  Time Management
  Experience working in a Team
  Communication experience (very high quality presentations!)

  Systematic, logical, justification of design decisions
  Utilization of Engineering Science knowledge in a design context

Feedback from Instructors

Q: What aspects of the course do you think went particularly well?

A: (McKesson) “Fengler’s enthusiasm, commitment, and good judgment”
A: (Fengler):
1. Teams engaged and embraced the project.
2. We have a hands-on project with a real artifact that students can study.
3. We have a real client who behaves like a real client (gives conflicting and unclear needs) yet works within the course constraints.
4. This year's teams generally embraced the idea of reducing scope - few teams dared to do this in the past.
5. The project has sufficient space for students to apply analyses and mechanical design taught in related courses.

A: (Hodgson):
6. 1, 2 and 3 above
7. Good range of solutions presented
8. Good engagement with TA-led sessions

Feedback from Instructors

Q: What aspects of the course are in greatest need of improvement?

A: (McKesson) variability in TA experience
A: (Fengler):

1. Getting students to embrace initial analyses to contribute to problem definition/understand how something works - it is surprising how consistently students fail to apply what they (should have) learned in other courses. This carries over from 223 and shows up again regularly in 45x.
2. Getting students away from "fulfilling perceived deliverables" i.e. blindly applying tools from the 223 textbook primarily in an attempt to gain marks, providing BS comparisons between incomplete concepts, producing a meaningless Gantt chart, etc.
3. Getting students to explain ideas using images, particularly showing use cases or defining the problem(s)
4. Teaching assistant competency varies greatly
5. Getting students to appreciate the need to step back from the immediate project to recognize important themes and to see the "big picture".

Feedback from Instructors

Q: What aspects of the course are in greatest need of improvement?

A: (Hodgson):

1. Students didn't fully embrace utility of classes
2. Continuing perception that there's too much documentation
3. I found the feedback forms at the CSR and in the final oral presentation difficult to fill out in real time
4. Perhaps insufficient opportunity for students to actually critique one another's designs
5. Some situations in which the TA was disengaged during part of the session
6. Some designs still ended up not being sufficiently sensible - I saw some apparently poor choices that didn't become obvious until the final presentation. Perhaps we could require students to maintain on a weekly basis an updated "top candidate" sketch that the prof can quickly review (at least, after the CSR).
7. Some teams spent more time than others
8. We missed some team meetings that might have made a difference in balancing out expectations across the teaching team
9. Some inconsistency in instructions about CSR

Sheldon's Observations

- I emphasize this is my first time co-teaching MECH 328, so my observations are based on only a single experience
- Overall, I think this year's MECH 328 was quite good:
  - Interesting project
  - Realistic client (vague and sometimes conflicting needs expressed)
  - Excellent project/time management and teamwork experience
  - Good additional experience with written and verbal communication
  - I was generally impressed by student's ability to seek information independently (e.g. consulting with physiotherapists, disabled groups) – "Lifelong Learning" Graduate Attribute of CEAB
  - Utilization of Engineering Science knowledge in a design context
  - Systematic, logical explanation for design decisions

Sheldon's Observations

- I emphasize again that this is my first time co-teaching MECH 328, so my observations are based on only a single experience

- Potential Areas for Improvement:
  - Once project is selected, engage instructors of associated Engineering Science courses (e.g., MECH 360) to give a relevant guest lecture
  - Assign greater weighting in marking rubric to utilization of Engineering Science analysis. Estimation was often a problem.
  - Find TAs with specific design competition or similar experience
  - Have Technical Communication specialists provide feedback to teams (e.g., at CSR stage)
  - Give teams the opportunity to critique the work of other teams

Overall

- My overall impression is that students learned a lot
- Well done!
- Good luck on the final exam