

## ENE 68700: Mentored Teaching in Engineering<sup>1</sup>

Spring 2023 (1/1/23)

---

### Instructors

**Matthew W. Ohland**, Dale and Suzi Gallagher Professor of Engineering Education

Preferred Pronouns: he/him/his

Office hours by appointment.

E-mail: [ohland@purdue.edu](mailto:ohland@purdue.edu)

Phone: 765-496-1316

I have multiple roles at Purdue, in the School of Engineering Education, and externally, as I'll discuss when I introduce myself in the first class. That can make it challenging to get my attention. E-mail can be a reliable way to reach me, but it is critical that you include ENE 687 in the subject line so that I can prioritize student contact. If your email can be answered quickly, I'll answer it from my phone, but longer responses usually wait until I am at my computer. If you don't get a response within in a day, you are welcome to send a reminder. My office number forwards to my mobile, but you'll need to leave a message the first time you call, since I don't usually answer calls from numbers I don't recognize. My phone is silenced between 11pm-6am. In-person meetings can be challenging to arrange, especially if I'm traveling, but video conference (e.g., Zoom), is a good option.

### Course Overview and Purpose

This course enables graduate students enrolled in any engineering program to deepen their understanding of college teaching and learning through a semester-long teaching experience with reflection, feedback, and mentoring. The course topics complement and supplement topics in the other courses in the Teaching and Learning in Engineering Graduate Certificate program. The mentoring component could be structured to meet a requirement for the Certificate of Practice in College Teaching (CPCT) offered by the campus's Center for Instructional Excellence. This course fulfills a requirement of the Teaching & Learning in Engineering Graduate Certificate program.

The overarching purpose of ENE 687 is to help participants advance student learning through effective teaching. Effective teaching, as a **scholarly** and **professional** practice, requires adherence to **ethical standards** and engagement in **informed reflection on student learning**, supported through **collaboration** and **mentoring**.

---

<sup>1</sup> ENE 687 was developed by Professor Michael Loui. We acknowledge and appreciate his contributions, and especially his generosity in sharing all the course materials. It was updated by Karl Smith and Nathan Hicks during the 2019-2020 academic year, by Karl Smith and Dayoung Kim during the 2020-2021 academic year, and by Karl Smith and Moses Olayemi during the 2021-2022 academic year. Matthew Ohland joined the team in Spring 2022 and made a few contributions that term.

**Classes:** Mondays, 4:30 to 5:20 p.m. ET in ARMS 3109

**Instructional Modality:** Synchronous in-person

### **Credit**

One credit. The three-credit version that includes a Scholarship of Teaching and Learning (SoTL) project is available upon consultation with and approval of the instructor.

### **Course Web Site**

<https://purdue.brightspace.com/d2l/le/content/705345/Home>

### **Prerequisites**

Registration in or completion of ENE 50600 (Content, Assessment, and Pedagogy) or ENE 68500 (Educational Methods in Engineering); or permission of the instructor. Significant concurrent responsibility for teaching an engineering course (e.g., instructor of record, assigned teaching assistant) or instructor approval of mentored teaching plan.

### **Course Themes and Objectives**

The enduring outcomes for ENE 687 are (1) **teaching is a scholarly practice**, and (2) **teaching is a professional practice**. We will take a scholarly and professional approach to the teaching of engineering. Because teaching is a scholarly practice, you will relate your teaching activities to the research literature. Because teaching is a professional practice, your teaching experience should resemble an engineering internship. As in other internships, you will work with a mentor to improve your skills. Like practicing engineering professionals, engineering instructors have the ethical obligations that we will explore during the course.

We will emphasize ongoing reflection to connect the readings with your concurrent teaching experiences. Through the assignments and discussions, in-class sessions and online, you will have the opportunity to learn to:

1. Think critically about the relationships between your teaching experiences and the readings in this course and in the prerequisite courses
2. Use reflection, mentoring, and student feedback to learn from teaching experiences
3. Assemble a course teaching portfolio that shows the quality and scholarship of your teaching in a public form, for possible peer review
4. Explain the reasons for your choices of teaching methods
5. Analyze evidence of student learning
6. Identify and address ethical issues in teaching situations
7. Develop a scholarly approach to mentoring
8. Identify and refine your core teaching values

### **Required Texts**

- Svinicki, M. & McKeachie, W. J. (2014). *McKeachie's teaching tips: Strategies, research, and theory for college and university teachers*, 14th ed. Belmont, CA: Wadsworth. The 13th edition (2011) is similar and often less expensive; it will be acceptable.
- Additional readings as assigned. Available in Brightspace.

## **Mentoring**

Mentorship is a professional, working alliance in which individuals work together over time to support the personal and professional growth, development, and success of the relational partners through the provision of career and psychosocial support.<sup>2</sup>

We encourage you to choose a teaching mentor in your department/school. The mentor should be an experienced instructor such as a professor or a more advanced graduate student. If you are a teaching assistant for a course, the course's instructor of record could serve as your teaching mentor.

Your mentor may serve as your class session observer if it is convenient, or you may choose someone else to serve as your observer (see assignments for details on class observation).

## **Class Sessions**

In section 001, class sessions will comprise discussions of the reflections, readings, and cases, and a few short lectures. This will include summary and discussion of the participant reflections, including learning activities, assessments, etc. that they're trying in their classes as well as questions about practical teaching problems, to which we can apply knowledge from the readings and assignments. Through this, we can share the wisdom gained from our diverse experiences.

## **Course Requirements**

1. Attend all classes. If you must miss a class, please let me know and make arrangements with other participants for a summary and review.
2. Read/skim all assigned materials by the assigned time.
3. Actively participate in class discussions.
4. Contract for a grade of A or B
5. Submit all assignments on time and at the contracted level of quality.
6. Participate in ongoing assessment of the class.
7. Complete and submit a course evaluation.
8. Review and adhere to the Purdue University policies (see links below).

## **Grading**

Grades will be determined based on learning contracts. A specified minimum amount of work at a specified quality level is expected of all students. Submissions that don't meet the minimum quality level will be returned for revision and resubmission.

Final grades are based on a combination of Quantity and Quality of work. Quality is more important. All work must meet the standards of acceptable performance. On the final day of classes, participants must submit a written statement of the contract they are working to fulfill (if all requirements are not met).

---

<sup>2</sup> National Academies of Sciences, Engineering, and Medicine. 2019. *The Science of Effective Mentorship in STEMM*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/25568>.

The alternative learning contracts are:

Grade B: Meet course requirements (see above) plus

1. Complete the Student Information Survey before the second class session ([https://purdue.ca1.qualtrics.com/jfe/form/SV\\_8euBmrTRnGM55hI](https://purdue.ca1.qualtrics.com/jfe/form/SV_8euBmrTRnGM55hI)).
2. Complete and submit at least seven (7) reflections by the weekly deadline.
3. Meet with the instructor for a 20 minute one-on-one conversation at least once during the semester.
4. Work with a partner to review, summarize, and lead the discussion of one week's reflections
5. Complete and submit at least two learning activities, assessments, etc. to Weekly Reflections, and include them in your Course Portfolio.
6. Complete one classroom observation.
7. Complete an initial and final draft of a course portfolio that meets the B quality level (see description below). Post initial and final draft to the course Brightspace site. Assignment details are listed below and in a separate detailed handout.
8. Complete an initial and final draft of a course synthesis that meets the B quality level (Assignment details are listed below and in a separate detailed handout).

Grade A: Meet Grade B requirements plus

1. Complete and submit at least ten (10) reflections by the weekly deadline.
2. Complete a second classroom observation.
3. Complete an initial and final draft of a course portfolio that meets the A quality level (see description below). Post initial and final draft to the course Brightspace site.
4. Complete an initial and final draft of a course synthesis essay that meets the A quality level (see description below).

## **Assignments**

Course assignments are designed to help you achieve the objectives of the course. Brief descriptions of the assignments follow. Detailed instructions and grading rubrics will be provided when each assignment is given. Unless otherwise specified, all written assignments must be submitted in Brightspace. Tentative due dates are specified in the Course Schedule section below. Due dates will be revised as needed.

## **Weekly Reflections**

Each week, you will write an informal individual reflection of about 300 words on your current teaching experiences. Writing prompts will be provided. Some prompts will invite you to connect your actual experiences in the classroom with the academic readings in ENE 687 and the prerequisite courses. Two reflections will respond to the feedback that you will receive from your mentor (see below). One reflection will respond to early feedback that you will collect from students. One reflection can result from observing an experienced instructor conduct a class session. Each reflection should take no longer than one hour to complete.

You will post each weekly reflection in the Discussions area in Brightspace. The individual reflection will be due at **noon each Sunday**. Read other participant's reflections and, if appropriate, respond by posting a comment. Although there will be 12 opportunities for reflections and comments, 10 reflections are needed to meet the A contract and 7 for the B.

## **Class Observation and Feedback**

You need to identify someone who will serve as a class observer and provide feedback. The observer may be, but does not need to be, a mentor. You will meet individually with your observer four times: before and after the first classroom observation by your observer, and before and after the second classroom observation by your observer (for the A contrac). Each meeting should take about 30 minutes. During the meetings before the observations, you will discuss your goals for the forthcoming class sessions and review your lesson plans. During the meetings after the observations, you will receive feedback from your observer. After these meetings, you will write a reflection on the class sessions and on what practices you might change in the future. You may meet your observer and/or mentor additional times, as well.

## **Course Portfolio**

You will assemble a benchmark course portfolio, a short version of a teaching portfolio. This portfolio will show the quality and scholarship of your teaching. Your portfolio will include artifacts to demonstrate your instructional decisions and effectiveness and to prompt reflection. This may include copies of a syllabus, assignments, quizzes, other assessments, or lesson plans that you develop or help to develop, examples of anonymized student work with your feedback (grading), anonymized email chains with students, or summaries of feedback from your observations—anything you feel demonstrates your instructional decisions or effectiveness. You will then write two essays that

1. Justify the choices of teaching methods and activities, with references to the readings
2. Analyze evidence of student learning

Each essay is expected to run from 1,000 to 1,500 words. A detailed description of the assignment is posted on the course website.

The course portfolio will be due at the **beginning of Finals Week**. Please think of the course portfolio as part of a teaching portfolio that you might submit if you apply for an academic position.

## **Course Synthesis**

At the end of the semester, you will examine how this course has influenced your teaching (including your core teaching values) and your plans for an academic career. Expected length: 1,000 to 1,500 words. A detailed description of the assignment is posted on the course website.

## **Expected Time Commitment**

As should be expected for a 1-credit course, the readings and assignments will require an average of two to three hours per week outside of class sessions.

## **Course Policies**

We will follow all standard campus policies on accommodations for disabilities and religious practices, academic integrity, student conduct, and nondiscrimination:

<http://www.purdue.edu/drc/students/accommodations.html>

[http://www.purdue.edu/studentregulations/regulations\\_procedures/classes.html](http://www.purdue.edu/studentregulations/regulations_procedures/classes.html)

<http://www.purdue.edu/odos/osrr/academic-integrity/index.html>

<https://www.purdue.edu/provost/teachinglearning/honor-pledge.html>

[http://www.purdue.edu/studentregulations/student\\_conduct/index.html](http://www.purdue.edu/studentregulations/student_conduct/index.html)

[http://www.purdue.edu/purdue/ea\\_eou\\_statement.html](http://www.purdue.edu/purdue/ea_eou_statement.html)

## **Mental Health Statement**

If you find yourself beginning to feel some stress, anxiety, and/or feeling slightly overwhelmed, try [WellTrack](#). Sign in and find information and tools at your fingertips, available to you at any time. If you need support and information about options and resources, please see the [Office of the Dean of Students](#), for drop-in hours (M-F, 8 am- 5 pm). If you're struggling and need mental health services: Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of mental health support, services are available. For help, such individuals should contact [Counseling and Psychological Services](#) (CAPS) at (765) 494-6995 during and after hours, weekends and holidays, or by going to the CAPS office on the second floor of the Purdue University Student Health Center (PUSH) during business hours.

## **Academic Guidance in the Event you are Quarantined/Isolated**

If you become quarantined or isolated at any point in time during the semester, in addition to support from the Protect Purdue Health Center, you will also have access to an Academic Case Manager who can provide you academic support during this time. Your Academic Case Manager can be reached at [acmq@purdue.edu](mailto:acmq@purdue.edu) and will provide you with general guidelines/resources around communicating with your instructors, be available for academic support, and offer suggestions for how to be successful when learning remotely. Importantly, if you find yourself too sick to progress in the course, notify your academic case manager and notify me via email or Brightspace. We will make arrangements based on your particular situation. The Office of the Dean of Students ([odos@purdue.edu](mailto:odos@purdue.edu)) is also available to support you should this situation occur.

## **Attendance**

Purdue University expects that students will attend classes for which they are registered. At times, however, either anticipated or unanticipated absences can occur. The student bears the responsibility of informing the instructor in a timely fashion, when possible. Although attendance will not be recorded, you are expected to participate actively in class sessions and online. When students share ideas, all students benefit. In class sessions, you will collaborate to analyze readings and cases, and to review each other's draft papers.

## **Late Submission Policy**

You are expected to submit assignments on the due dates. Because graduate students have many important responsibilities outside this course, there are no penalties for submitting assignments late, with the exception of the weekly reflections. You should use this late submission policy only when warranted, and you should tell the instructor about your intention to submit late. You should submit all late assignments by the final class session.

## **Emergencies**

For any emergency, call 911. If we hear an indoor fire alarm, we will evacuate to Stadium Mall outside the Student Health Center. If we hear an outdoor emergency siren, or if we receive an emergency notification to shelter in place, we will proceed as follows. For a tornado, we will move to the basement of Armstrong Hall. For a civil disturbance, we will remain in the classroom or in an interior hallway.

**Course Schedule** (See Brightspace Weekly Announcement for Details and Updates)

| Date               | Assignments due  | Readings due  | Classroom activities  |
|--------------------|--|---|---|
| Week 1<br>(Jan 9)  |  |   | Course Overview<br>Seven Principles;                              |
| Week 2<br>(Jan 16) |  | <b>No class – MLK Day of Service</b>  |   |
| Week 3<br>(Jan 23) | Student Information Survey, Reflection summary signup, Minute Paper Reflection | <b>Svinicki &amp; McKeachie</b> <ul style="list-style-type: none"> <li>• Ch. 1 - <i>Introduction</i></li> <li>• Ch. 2 - <i>Countdown for course preparation</i></li> <li>• Ch. 3 - <i>Meeting a class for the first time</i></li> </ul> <b>Streveler &amp; Smith</b><br><i>Course Design in the Time of Coronavirus: Put on your Designer's CAP</i><br><b>Hicks, Mentoring Handout</b><br><b>Enerson, et.al., An Introduction to Classroom Assessment Techniques</b><br><b>Bernstein et al.</b> <ul style="list-style-type: none"> <li>• Ch. 2 - <i>Capturing the intellectual work of teaching: The benchmark portfolio</i></li> </ul> | Mentoring;<br>Classroom Assessment;<br>Teaching portfolios        |
| Week 4<br>(Jan 30) | Reflection #2  | <b>Svinicki &amp; McKeachie</b> <ul style="list-style-type: none"> <li>• Ch. 11 - <i>Motivation in the college classroom</i></li> <li>• Ch 17 - <i>Teaching with Technology</i></li> </ul> <b>Motivation scenarios</b>  | Student motivation especially in remote/distance settings         |
| Week 5<br>(Feb 6)  | Reflection #3  | <b>Svinicki &amp; McKeachie</b> <ul style="list-style-type: none"> <li>• Ch. 13 - <i>Different students, different challenges</i></li> </ul> <b>Classroom Incivility Scenarios</b>  | Different students, different challenges.<br>Classroom incivility |
| Week 6<br>(Feb 13) | Reflection #4  | <b>Svinicki &amp; McKeachie</b> <ul style="list-style-type: none"> <li>• Ch. 7 - <i>Assessing, testing, and evaluating</i></li> </ul> <b>Lewis</b> <ul style="list-style-type: none"> <li>• <i>Using midsemester feedback and responding to it</i></li> </ul>   | Assessment;<br>Early feedback                                     |
| Week 7<br>(Feb 20) | Reflection #5  | <b>Svinicki &amp; McKeachie</b> <ul style="list-style-type: none"> <li>• Ch. 9 - <i>Good designs for written feedback for students</i></li> <li>• Ch. 10 - <i>Assigning grades</i></li> </ul> <b>Grading Handout</b>  | Construct and critique grading rubrics                            |

| Date                  | Assignments due | Readings due   | Classroom activities   |
|-----------------------|-----------------|--|--|
| Week 8<br>(Feb 27)    | Reflection #6   | <b>Svinicki &amp; McKeachie</b> <ul style="list-style-type: none"> <li>• Ch. 5 - <i>Facilitating discussion</i></li> <li>• Ch. 15 - <i>Experiential learning</i></li> <li>• Ch. 19 - <i>Laboratory instruction</i></li> </ul> <b>Frederick</b><br><i>The dreaded discussion (supplemental)</i> | Engaged learning   |
| Week 9<br>(Mar 6)     | Reflection #7   | <b>Svinicki &amp; McKeachie</b> <ul style="list-style-type: none"> <li>• Ch. 14 – <i>Active learning: Group-based instruction</i></li> <li>• Ch. 12 - <i>Teaching culturally diverse students</i></li> </ul>   | Interactive learning;<br>Individual differences, valuing diversity             |
| Week 10<br>(Mar 13)   |                 | <b>No class – Spring Break</b>   |  |
| Week 11<br>(Mar 20)   | Reflection #8   | <b>Shirley Malcolm's Foreword</b> to <i>Talking about leaving revisited</i> , titled <i>Talking about leaving revisited: A return to the scene of the "crime."</i><br><b>Grant Eldridge Case</b>   | Individual differences, valuing diversity                                      |
| Week 12<br>(March 27) | Reflection #9   | <b>Svinicki &amp; McKeachie</b> <ul style="list-style-type: none"> <li>• Ch. 20 - <i>Teaching students how to become more strategic and self-regulated learners</i></li> <li>• Ch. 21 - <i>Teaching thinking</i></li> </ul> <b>Ambrose</b><br><i>Metacognitive vignettes</i>                   | Promoting metacognition  |
| Week 13<br>(April 3)  | Reflection #10  | <b>Svinicki &amp; McKeachie</b> <ul style="list-style-type: none"> <li>• Ch. 22 - <i>The ethics of teaching</i></li> </ul> <b>Murray et al.</b> <ul style="list-style-type: none"> <li>• <i>Ethical principles for college and university teaching in Fisch</i></li> </ul>                     | Ethics scenarios from Keith-Spiegel et al., <i>The ethics of teaching</i>      |
| Week 14<br>(April 10) | Reflection #11  | <b>Hanson</b> <ul style="list-style-type: none"> <li>• Between apathy and advocacy: Teaching and modeling ethical reflection in Fisch</li> </ul> <b>Rodabaugh</b> <ul style="list-style-type: none"> <li>• Institutional commitment to fairness in college teaching in Fisch</li> </ul>        | More ethics scenarios from Keith-Spiegel et al., <i>The ethics of teaching</i> |



| Date                | Assignments due  | Readings due  | Classroom activities                   |
|---------------------|------------------|---|--|
| Week 14<br>(Apr 17) | Reflection #12   | Drafts of course portfolio essays due   | Peer review of course portfolio essays |
| Week 15<br>(Apr 26) | Course synthesis | <b>Svinicki &amp; McKeachie</b> <ul style="list-style-type: none"> <li>• Ch. 23 - <i>Vitality and growth throughout your teaching career</i></li> </ul> <b>Benton &amp; Cashin</b> <ul style="list-style-type: none"> <li>• <i>Student ratings of teaching: A summary of research and literature</i></li> </ul> | Teaching evaluations                   |

### References and Supplemental Readings

- Benton, S. L., & Cashin, W. E. (2012). *Student ratings of teaching: A summary of research and literature*, IDEA Paper #50. Manhattan, KS: The Idea Center.  
[http://www.ideaedu.org/Portals/0/Uploads/Documents/IDEA%20Papers/IDEA%20Papers/PaperIDEA\\_50.pdf](http://www.ideaedu.org/Portals/0/Uploads/Documents/IDEA%20Papers/IDEA%20Papers/PaperIDEA_50.pdf)
- Bernstein, D., Burnett, A. N., Goodburn, A., & Savory, P. (2006). *Making teaching and learning visible: Course portfolios and the peer review of teaching*, Bolton, MA: Anker.
- Chickering, A. W., & Gamson, Z. F. (1991). Seven principles for good practice in undergraduate education. *New Directions for Teaching and Learning*, 47, 63–69.
- Dewar, J., Bennett, C., & Fisher, M. A. (2018). *The scholarship of teaching and learning: A guide for scientists, engineers, and mathematicians*. New York: Oxford University Press.
- Enerson, D. M., Plank, K. M., & Johnson, R. N. (2007). An introduction to classroom assessment techniques.  
[http://www.schreyerinstitute.psu.edu/pdf/Classroom\\_Assessment\\_Techniques\\_Intro.pdf](http://www.schreyerinstitute.psu.edu/pdf/Classroom_Assessment_Techniques_Intro.pdf)
- Fisch, L., ed. (1996). *Ethical dimensions of college and university teaching: Understanding and honoring the special relationship between teachers and students*. *New Directions for Teaching and Learning*, 66. San Francisco, CA: Jossey-Bass.
- Frederick, P. (1981). The dreaded discussion: Ten ways to start. *Improving College and University Teaching*, 29(3), 109–114.
- Keith-Spiegel, P., Whitley, B. E., Balogh, D. W., Perkins, D. V., & Witting, A. F. (2002). *The ethics of teaching: A casebook*, 2nd ed. Mahwah, NJ: Lawrence Erlbaum.
- Lewis, K. G. (2001). Using midsemester feedback and responding to it. *New Directions for Teaching and Learning*, 87. San Francisco, CA: Jossey-Bass (pp. 33–44).
- Malcolm, Shirley. (2019). Foreword to *Talking about leaving revisited*, titled Talking about leaving revisited: A return to the scene of the "crime." <https://link.springer.com/content/pdf/bfm%3A978-3-030-25304-2%2F1.pdf>
- National Academies of Sciences, Engineering, and Medicine. 2019. *The Science of Effective Mentorship in STEMM*. Washington, DC: The National Academies Press.  
<https://doi.org/10.17226/25568>.