

**Division of Engineering and Mathematics
School of Science, Technology, Engineering, and Mathematics
University of Washington Bothell**

**B ME 483 - Fundamentals of Engineering Mechanical Exam Preparation
2 credits of Credit/No-Credit**

Instructors: Steven W. Collins, PhD, PE, with ME Faculty
Email: swcollin@uw.edu
Office: Discovery Hall 452-M, Phone: (425) 352-5356

Meeting online Fridays, 9:30 - 11:30 am at <https://canvas.uw.edu/courses/1393490>

Course Description

This course supports Mechanical Engineering majors in beginning their preparation for the Fundamentals of Engineering (FE) Exam, the first step in becoming a licensed Professional Engineer (PE). Students review the subjects covered on the exam and practice fast-paced problem solving under conditions similar to those of the exam. Credit/no-credit only.
Prerequisite: minimum grade of 2.0 in B ME 343.

Learning Objectives

At the end of this course, students will be able to:

1. Apply concepts and problem solving skills learned in pre-major and major courses to solve problems like those that appear on the Fundamentals of Engineering (FE) Mechanical Exam.
2. Navigate the FE Exam Reference Handbook and use it as their only resource in solving problems.
3. Understand the rules and procedures that govern the administration of the FE Mechanical Exam.

Course Materials

The following, in purple font, are required.

Michael R. Lindeburg, FE Mechanical Review Manual (PPI, 2014)

This manual reviews all topics covered on the FE Mechanical Exam. It can be ordered from PPI at <https://ppi2pass.com/fe-mechanical-review-manual-femerm-package.html>

The eTextbook version is recommended, since it is much cheaper than the hardcopy (\$59 vs \$149) and can be downloaded immediately.

NCEES, FE Reference Handbook 10.0

This handbook is available free as a downloadable pdf from the website of the National Council of Examiners for Engineering and Surveying (NCEES). To access it, create an account at the NCEES login page at <https://ncees.org/supplemental/launch-login/>, then navigate to <https://account.ncees.org/reference-handbooks/> and click on “FE Reference Handbook 10.0.” The Handbook is the only resource allowed during the actual exam. Since the exams are now computer-based, a searchable pdf version of the Handbook appears on the testing screen. Examinees are encouraged to practice using only the pdf version of the Handbook on their computers in order to gain skill at looking up information quickly.

NCEES Examinee Guide, November 1, 2019

This guide is a free download from the NCEES website. It contains rules, guidelines, and what to expect on all NCEES exams. Download at <https://ncees.org/exams/examinee-guide/>

NCEES-Approved Calculator

A limited number of calculators have been approved for examinees to use in exams. Obtain one of the Casio, HP, or TI calculators listed here: <https://ncees.org/exams/calculator/>

The following are recommended but not required:

NCEES, FE Mechanical Practice Exam: <https://account.ncees.org/exam-prep/380>

This is probably the single best practice exam, since it’s published by the organization that writes the actual exams. Many examinees use it as the final step in their preparation to get a feel for what the exam will be like. It’s best to work all the problems timed and in one sitting, just as if you were taking the real exam on exam day.

Michael R. Lindeburg, FE Mechanical Practice Problems (PPI, 2014):

These problems supplement the *FE Mechanical Review Manual* listed above. The book is only in hardcopy.

How to Study for the Mechanical FE Exam:” <https://medium.com/@jkauwale/how-to-study-for-the-mechanical-fe-exam-pass-the-first-time-around-305703dcd1c2>

Good advice from Justin Kauwale, PE.

Engineering Pro Guides Mechanical FE Exam Tools: <https://www.engproguides.com/fe-mechanical-exam-prep.html>

Good resources, reasonably priced.

Mechanical PE Exam Prep: <https://www.youtube.com/channel/UCI0twE6lRXqBhOcNPzy7o7A>

Good resources from Dan Molloy, PE, geared for the Mechanical PE Exam but good to check out to get a sense for what the PE Exam will be like.

Evaluation Details

Grading is credit/no-credit. The course consists of modules organized by the FE Exam topic according to the numbering scheme in the Lindeburg text. Each module consists of an assigned reading in the Lindeburg text, an instructor presentation via Zoom/Canvas, practice problems assigned by the instructor for students to work in class (independently or in breakout groups), and an online Canvas quiz students take after class that is due the following Wednesday evening at 11:59 pm.

Canvas quizzes done after class will be set up so that students can work each problem as many times as necessary to obtain the correct answer. Students must complete the quiz with a perfect score to receive credit for the module.

At the end of the course, students must write a self-assessment that identifies their areas of strength and weakness based on their work in the course. Include discussion of what you will do to overcome weaknesses and continue your preparation for the taking the exam. If you have a definite plan and/or date for taking the exam, let us know that too. Of course, whether you follow through and actually take the exam is up to you, but we hope you will do so, and we're here to help as best we can! This self-assessment should be around 3-5 pages in length, double-spaced, and submitted in Canvas by 11:59 pm Wednesday, June 10.

Credit for the class will be given for students who complete the quizzes for all modules and submit their self assessment.

Policies and Campus Resources

For questions related to Zoom, Canvas, and the online course experience for students, see <https://www.uwb.edu/it/student-continuity>

A complete list of policies and resources available to students can be found here: <http://www.uwb.edu/getattachment/stem/about/stem-policies/classroom-policies-stem-fc-1-12-17.pdf>.

Schedule

(Readings are from the Lindeburg text, which is organized by topics.)

Date	Topic	Instructor	Reading
4/3	Intro, Ethics, Engineering Economics	Collins	XIV and XV
4/10	Statics	Bridge	VI
4/17	Fluid Mechanics	Mourad	III
4/24	Mechanics of Materials	Bridge	VIII
5/1	Thermodynamics	Collins	IV
5/8	Dynamics, Kinematics, and Vibrations	Yoon	X
5/15	Heat Transfer, Electricity and Magnetism	Collins	V and IX
5/22	Measurements, Instrumentation, Controls	Yoon	XII
5/29	Materials Properties and Processing	Bridge	VII
6/5	Mechanical Design and Analysis	TBA	XI
6/10	Self-Assessment Report Due		

Notes:

1. Reading should be done before the class meets online.
2. After each class meeting, a Canvas quiz will open on the topic covered in the just-completed class meeting. Students complete the quiz by 11:59 pm Wednesday after the class meeting.
3. Mathematics (Topic I in the Lindeburg text) and Probability and Statistics (Topic II) should be studied independently. These are significant subject areas on the FE Exam (9-14% of all questions), but time doesn't allow their inclusion in the course.
4. For each topic, the instructor will place materials for the day's class session in a Canvas folder for students to use during and after class to aid in their study.