

Syllabus

EGR403 – FE EXAM (1 unit)

Section A

Instructor/Moderator:

Dr. Emmanuel Stimphil

Course Credit:

1 credit

Class Meetings:

Tuesday 2:30 -3:30 p.m.,

Office Hours**Phone:**

951-552-8197

Email:

estimphil@calbaptist.edu

Office: TEGR 321

Office Hours:

Tue: 12:00PM – 2:00PM

Wed: 12:00PM – 2:00PM

Thurs: 12:00PM – 2:00pm

Fri: 12:00PM – 2:00pm

Purpose of the Course:

This is a preparation course to help engineering seniors to pass the practice FE exam as part of graduation requirements.

Course Description:

As a first step in preparing you for getting a professional license, you are required to take and pass the practice Fundamentals of Engineering Exam in order to graduate from the CBU Gordon and Jill Bourns College of Engineering. The newly revised FE exams are specifically designed with your major in mind. Results will be used to compare the performance of your



graduating class with students across the nation as part of departmental and college assessment.

Pre/co-requisites

Senior Status.

Recommended Book(s)

ECE: Lindeburg, M.R. FE Electrical and Computer Review Manual, PPI.

Lindeburg, M.R. FE Electrical and Computer Practice Problems, PPI.

<https://ppi2pass.com/fe-exam/electrical-computer/study-materials>

ME: Lindeburg, M.R. FE Mechanical Review Manual, PPI.

Lindeburg, M.R. FE Mechanical Practice Problems, PPI.

<https://ppi2pass.com/fe-exam/mechanical/study-materials>

CE: Lindeburg, M.R. FE Civil Review Manual, PPI.

Lindeburg, M.R. FE Civil Practice Problems, PPI.

<https://ppi2pass.com/fe-exam/civil/study-materials>

Required Materials

NCEES FE Reference Handbook 10.1

Register or log in to MyNCEES (<https://account.ncees.org/login>) to download your free copy of the *FE Reference Handbook*. You will find it on the dashboard under Common Tasks/Useful Documents/View reference handbooks.

Students will need to bring an NCEES-approved calculator to each class. See:

<http://ncees.org/exams/calculator/>. Also, students are required to have their FE Reference Handbook (hardcopy of pages relevant to the exam topic or electronic format on computer) during the class time.

Topics covered:

EGR403 covers 4 topics common to all majors: Mathematics, Statistics, Ethics, Economics, as well as 6 discipline-specific topics:

ECE: Circuit Analysis and Linear Systems; Electronics; Signals and Control Systems; Digital Logic; Computer Systems; Software Development.

ME: Statics; Mechanics of Materials; Dynamics, Kinematics, & Vibrations; Fluid Mechanics; Thermodynamics; Heat Transfer.



CE: Statics; Mechanics of Materials; Structural Engineering; Water Resources and Environmental Engineering; Geotechnical Engineering; Construction Engineering.

Engineering Student Learning Outcomes

EGR 1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics

EGR 2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors

EGR 3. an ability to communicate effectively with a range of audiences

EGR 4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

EGR 5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

EGR 6. an ability to develop and conduct appropriate experiments, analyze and interpret data, and use engineering judgment to draw conclusions

EGR 7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

EGR 8. an ability to articulate a Christian worldview on personal, professional, technical, and societal issues

EGR 9. an ability to develop attributes of leadership in an innovation-driven environment

This particular course contributes to the student learning outcomes of #1 and #4 outlined above.

Class format

All review lectures are pre-recorded and students are required to watch the video(s) on the topic of the week before coming to class. For the discipline-specific topics, videos are only available for ECE major. ME and CE students are required to study the FE review materials instead of watching videos.

Except for the first day of class, there will be a 30-minute exam with 10 multiple-choice problems during the first half of every class, followed by group discussion on the exam problems. Topics on the exams are shown in the course schedule at the end of syllabus. From 9/23 to 10/28, students in different majors will be given different exams. For



example, on 10/18, ECE students will take an exam on Digital Logic, ME students will take an exam on Fluid Mechanics, while CE students will take an exam on Water Resources and Environmental Engineering. Students will then be divided into three groups based on their major and will be provided exam solutions for group discussion.

Class preparation

Successful passing of the Practice FE Exam requires consistent preparation. You will need to review content you've learned throughout the duration of your program as well as some additional FE-specific content. It is strongly suggested you dedicate 3-5 hours per week outside of your courses during your senior year. It is also strongly recommended to study in a community for many of those hours. In fact, it is common - and encouraged - at CBU for engineering student clubs to form study groups for this purpose.

Technological Support

This course will be supported by Blackboard. Check in frequently for announcements and assignments.

Course Information on Blackboard:

Many materials associated with this course will be posted on Blackboard. Please check it on a regular basis. In addition, you are expected to check your CBU e-mail at least once every 24 hours during the work week (Mon-Fri).

Grading Policy:

The final grade is 75% based on attendance and 25% based on exam grades. For each unexcused absence, your overall grade will drop 4%. The exam portion of your course grade will be calculated as:

$$25\% \times \frac{\text{\textit{\# of correct problems}}}{70}$$

Note that you will be given a total of 110 problems on the 11 exams throughout the semester, so you will be able to get an A (93%) if you answer 50 problems correctly and do not have any unexcused absence.

The only exception to this grading policy is that an automatic A will be given to any student who takes and passes the official NCEES FE Exam for their major and can provide supporting documentation.

Note: To graduate, you must still pass the practice FE exam offered by your department or the official NCEES FE Exam if that's what you prefer.

Grading scale: The following grading scale will be used:

93%-100% : A

90%-92% : A-

87%-89% : B+

83%-86% : B

80%-82% : B-



77%-79% : C+

73%-76% : C

70%-72% : C-

67%-69% : D+

63%-66% : D

60%-62% : D-

Below 60 : F

Student absences from class:

If you must miss a class for any reason, email Dr. Stimphil in advance, if possible. In case of emergency, written notice via email must be provided within 24 hours after the missed class. All students are advised to be familiar with CBU's policy regarding the make-up of work missed due to excused absences. This policy may be found in the Student Handbook. All students who miss class will be required to make up the in-class exam during the group discussion time of the class in the following week.

This class is for your benefit in preparing for the FE Exam. Attendance is mandatory. Not attending will also hurt your preparation for the exam.

Generative Artificial Intelligence (AI) Use Policy

In this course, the use of generative AI tools (e.g., ChatGPT, Copilot, Claude, etc.) can be valuable for **learning support**, such as:

- Exploring alternative explanations of course concepts.
- Generating practice problems or study questions.
- Checking your understanding of digital logic principles.
- Assisting with brainstorming design ideas for labs or homework.

However, there are important limitations and responsibilities:

- **Exams:** The use of AI tools is **strictly prohibited** during all exams.
- **Professional Responsibility:** Engineers are expected to use tools responsibly. Use AI as a **study aid**, not as a substitute for doing the work yourself.

Bottom line: AI can be a helpful supplement to your learning if used responsibly, but it cannot replace your own critical thinking and problem-solving.

Practice FE EXAM Process:

Passing practice FE exam is one of the graduation requirements. CBU's College of Engineering has approved the following exam process effective fall of 2014.

1st practice FE exam: Typically, the first exam is a paper (or online) exam administrated by each department. Be aware that some departments will require you to use a hard copy of the FE Reference Handbook.

2nd practice FE exam: Students who did not pass the 1st practice FE exam register at ppi2pass.com and purchase the access to the Learning Hub covering the exam date (to be determined by the department chair). It is suggested you purchase for even a longer period so you have enough practice before the exam and sometime after the exam to contest any database mistakes might occur during the exam. The minimum cost is \$149 (2021 price) for



monthly access. The FE exam will be computer based with exam problems from this database administered by the department chair of your major. All FE exam rules apply per NCEES. This practice FE exam will last 2 hours for 40 problems for most of CoE programs.

3rd exam and beyond: Students must take additional exams at their extra personal expense and this may include taking and passing the official FE Exam administrated by NCEES (passing criteria determined by NCEES, approximate registration fee: around \$175). Exact process is determined by the appropriate department chair.



| EGR403 FA25 Course Schedule | | | | |
|-----------------------------|-------|--|--|---|
| Week | Date | Topics | Assignment Before Class | Recommended Homework After Class |
| 1 | 9/02 | Syllabus | | Open an NCEES account and download the reference handbook |
| 2 | 9/09 | Pre-calculus and Calculus | Watch 2 recorded review lectures for the content | Practice problems for the content |
| 3 | 9/16 | Differential Equations and Linear Algebra | Watch recorded review lecture for the content | Practice problems for the content |
| 4 | 9/23 | ECE: Circuit Analysis and Linear Systems ME & CE: Statics | ECE: watch recorded review lecture for the content ME & CE: read review materials for the content | Practice problems for the content |
| 5 | 9/30 | ECE: Electronics ME & CE: Mechanics of Materials | ECE: watch recorded review lecture for the content ME & CE: read review materials for the content | Practice problems for the content |
| 6 | 10/07 | ECE: Signals and Control Systems ME: Dynamics, Kinematics, & Vibrations CE: Structural Engineering | ECE: watch recorded review lecture for the content ME & CE: read review materials for the content | Practice problems for the content |
| 7 | 10/14 | ECE: Digital Logic ME: Fluid Mechanics CE: Water Resources and Environmental Engineering | ECE: watch recorded review lecture for the content ME & CE: read review materials for the content | Practice problems for the content |
| 8 | 10/21 | ECE: Computer Systems ME: Thermodynamics CE: Geotechnical Engineering | ECE: watch recorded review lecture for the content ME & CE: read review materials for the content | Practice problems for the content |
| 9 | 10/28 | ECE: Software Development ME: Heat Transfer CE: Construction Engineering | ECE: watch recorded review lecture for the content ME & CE: read review materials for the content | Practice problems for the content |



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| 10 | 11/04 | Ethics and Professional Practice | Watch recorded review lecture on Ethics | Practice problems for the content |
| 11 | 11/11 | Probability and Statistics | Watch 2 recorded review lectures for the content | Practice problems for the content |
| 12 | 11/18 | Engineering Economics | Watch 2 recorded review lectures for the content | Practice problems for the content |
| 12 | 11/25 | No Class (Thanksgiving break) | | |
| 14 | 12/02 | No Class (Final Exam Week) | | |