Point Loma Nazarene University
EGR120: Computational Methods for Engineers & Scientists II (1 unit) Fall 2017

Department of Physics and Engineering

Instructor: Dr. Paul D. Schmelzenbach	Meeting: 9:30-11:25 TR (RS219)
e-mail: PaulSchmelzenbach@pointloma.edu	Office Phone: 849-2933
Office Hours: 8:30-9:45; 12:15-1:15 MWF, by appt.	Office Location: RS 207

Materials – Student version of MATLAB.

Description – Engineering and scientific computing utilizing MatLab software. Examples and applications taken from the fields of engineering, physics, chemistry, and biology. Three hours laboratory each week. Offered on a Quad basis.

Learning Outcomes – This course supports the overall learning objectives of the physics and engineering programs to: apply physical principles, mathematical reasoning, and computational techniques to solve real-world problems and effectively communicate complicated technical information

Within these broader outcomes, in this course you will

1. acquire skills to learn how to develop solutions for certain kinds of physics and engineering problems using computational techniques
2. become proficient at using MATLAB including writing .m files and correcting or modifying existing code.

Projects – Through the semester you will be completing six different projects plus a final project. These projects are to be submitted each week by Thursday evening Projects are a major component of this course and are worth 40% of your total grade. Late homework will not be accepted unless their is a documented emergency.

Collaboration: I expect and encourage collaboration between you and your peers while working on your homework. (Most good ideas come out of discussions with colleagues. This skill is highly valued by employers, and virtually all science and engineering takes place within groups or teams.) That being said, your work should be your *own original solution.* Allow adequate time to work and think about problems by yourself first before you work together with your peers or ask questions of me. The guideline is that you should have no trouble explaining or repeating work that you turn in.

Exams – Two tests will be given during this quad. Tests consist of written problems and applications of your knowledge using MATLAB to perform certain tasks or solve certain problems. These two examinations are worth 30% of your final grade. The first exam is on November 7, and the second is the written portion of the final examination on Tuesday, December 12 at 10:30 am. Exams cannot be made up, unless under extreme circumstances discussed and arrangements made with the professor before the exam.

Quizzes – Through the semester there will be several quizzes that will be announced at a minimum of the previous class period. Quizzes cannot be made up, unless under circumstances discussed and arrangements made with the professor before the quiz. The lowest quiz score will not be included in the quiz portion of the grade.

Final Grades – The grade you earn in this course is based on the scale shown to the right. The points you receive during the course are weighted accordingly:

- Projects: 40%
- Tests (2): 30%
- Quizzes: 15%
- Final: 15%

A	100 - 91.0
A-	91.0 - 89.5
B+	89.5 - 87.5
B	87.5 - 81.0
B-	81.0 - 79.5
C+	79.5 - 77.5
C	77.5 - 71.0
C-	71.0 - 69.5
D+	69.5 - 67.5
D	67.0 - 61.0
D-	61.0 - 57.0

University Mission: Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service is an expression of faith. Being of Wesleyan heritage, we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

Department Mission: The Physics and Engineering Department at PLNU provides strong programs of study in the fields of Physics and Engineering. Our students are well prepared for graduate studies and careers in scientific and engineering fields. We emphasize a collaborative learning environment which allows students to thrive academically, build personal confidence, and develop interpersonal skills. We provide a Christian environment for students to learn values and judgment, and pursue integration of modern scientific knowledge and Christian faith.

Attendance– Attendance is expected at each class session. In the event of an absence you are responsible for the material covered in class and the assignments given that day. Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the student is absent from more than 10 percent of class meetings, the faculty member can file a written report which may result in de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university drop date or, after that date, receive the appropriate grade for their work and participation. See http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Class Attendance in the Undergraduate Academic Catalog.

Academic Honesty – Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog. See http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Academic Honesty for definitions of kinds of academic dishonesty and for further policy information.

Academic Accommodations –If you have a diagnosed disability, please contact PLNU's Disability Resource Center (DRC) within the first two weeks of class to demonstrate need and to register for accommodation by phone at 619-849-2486 or by e-mail at DRC@pointloma.edu. See Disability Resource Center for additional information. For more details see the PLNU catalog: http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Academic Accommodations. Students with learning disabilities who may need accommodations should discuss options with the instructor during the first two weeks of class.

Class Enrollment – It is the student's responsibility to maintain his/her class schedule. Should the need arise to drop this course (personal emergencies, poor performance, etc.), the student has the responsibility to follow through (provided the drop date meets the stated calendar deadline established by the university), not the instructor. Simply ceasing to attend this course or failing to follow through to arrange for a change of registration (drop/add) may easily result in a grade of F on the official transcript.

Credit Hour – In the interest of providing sufficient time to accomplish the stated course learning outcomes, this class meets the PLNU credit hour policy for a 1 unit class delivered over 8 weeks. Specific details about how the class meets the credit hour requirements can be provided upon request.

Final Exam – The final exam date and time is set by the university at the beginning of the semester and may not be changed by the instructor. This schedule can be found on the university website and in th course calendar. No requests for early examinations will be approved. Only in the case that a student is required to take three exams during the same day of finals week, is an instructor authorized to consider changing the exam date and time for that particular student.

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	Topics	Due
10/19	Introductions	
10/24	Intro to MATLAB	Quiz 1
10/26	Intro to MATLAB	Project 1
10/31	Basic MATLAB	Quiz 2
11/2	Basic MATLAB	Project 2
11/7	Scripting Basics	Quiz 3
11/9	Scripting Basics	Project 3
11/14	Exam 1	
11/16	Random numbers	Project 4
11/21	Visualizations 1	Quiz 4
11/23	Thanksgiving	
11/28	Visualizations 2	Project 5
11/30	Animations and Chaos	Quiz 5
12/5	Animations and Chaos	Project 6
12/7	Final Project	Quiz 6
12/12	Final Exam Tuesday at 10:30-1 pm	