

ETRO 305: Engineering Computing, Fall 2018
4 Credits, 6 hours (Lecture/Lab)

Instructor: Dr. Jung Park

Phone: (808) 984-3423

Class room & Hours: Ike Lea 113, Tuesday & Thursday 9:00am –11:45am

Office Hours: Monday & Wednesday, 11:30 am – 14:3 pm or by appointment

Office: Ike Lea 143

Email: parkjung@hawaii.edu

Course Description & Overview:

The course will expose the students to computer programming and describe the capabilities of MATLAB and its applications to obtain numerical solutions to problems in engineering and science. This course will cover elementary applied mathematics, basic numerical methods, computer programming, and problem solving methodology.

Course Objectives, Core Competencies, and Learning Outcomes:

Students are expected to achieve an effective level of understanding of concepts and technology, and demonstrate practical skills and competencies.

Learning will take place through faculty lectures; interactive discussions in the classroom; regular in-class exercises; hands-on lab activities; and review and reinforcement of critical knowledge and skills through oral presentations and/or written reports.

Objectives

- To introduce the student principles and techniques in order to solve engineering design problems.
- To introduce the student to engineering problem solving using MATLAB, including such topics as graphing, built-in and user-defined functions, formatted input/output, function m-files, script m-files, repetition structures, and decision structures.
- To develop the mathematical modeling of electronics and optical engineering problems.
- To introduce mathematical tools, methods, and techniques to analyze electronics and optical engineering systems.

College-wide Learning Outcomes

Standard 1 - Written Communication

Gather information and document sources appropriately. Express a main idea as a thesis, hypothesis, or other appropriate statement.

Standard 2: Quantitative Reasoning

Demonstrate mastery of mathematical concepts, skills, and applications, using technology when appropriate. Define quantitative issues and problems, gather relevant information, analyze that information, and present results.

Standard 3: Information Retrieval and Technology

Use electronic information technology ethically and responsibly. Recognize changing technologies and make informed choices about their appropriateness

Standard 4: Oral Communication

Standard 5: Critical Thinking

Apply problem-solving techniques and skills, including the rules of logic and logical sequence. Evaluate a problem, distinguishing between relevant and irrelevant facts, opinions, assumptions, issues, values, and biases through the use of appropriate evidence.

Standard 6: Creativity

Demonstrate qualitative and graphical analysis of electrical engineering problems.

Prerequisites: ETRO 212 and ICS 111 both grade C or better; or consent.

Reference:

1. David M. Smith, Engineering Computation with MATLAB, 3rd, ISBN: 978-0-132568708
2. Getting Stared Guide, Hand-out materials:
http://www.mathworks.com/help/pdf_doc/matlab/getstart.pdf
3. William J. Palm III, "A Concise Introduction to MATLAB", McGraw-Hill, 2008.
4. Brian Hahn and Dan Valentine, "Essential MATLAB for Engineers and Scientists", 4th ed, Academic Press, 2010.
5. D. M. Etter, "Engineering Problem Solving with MATLAB", 2/E, Prentice Hall, 1996, ISBN 0133976882, 9780133976885
6. Coombes, Hunt, Lipsman, Osborn, and Stuck, Differential Equations with MATLAB, 2nd Edition, Wiley ISBN: 978-0-471-71812-3.
7. David M. Smith, "Engineering Computation with MATLAB", Addison Wesley, ISBN: 0-321-48108-9.
8. Gerald Recktenwald, "Numerical Methods with MATLAB", Prentice Hall, ISBN: 0-201-30860-6.

Evaluation and Grading:

Engineering Computing is a 3-credit course. Students can expect to spend approximately 3-4 hours a week on average in completing home assignments in reading, problem solving and lab report writing. Students will also be assessed throughout the semester with regular in-class exercises, quizzes and examinations.

Grading:

The grading range for the course is A-F, with weighting as follows:

Examinations (written)	60%
Exam I	15%
Exam II	20%
Final	25% Tuesday, Dec. 11, 2018, 9:00am – 11:45am
Classroom Activities/Projects	25%
Homework/Quiz	15%
	100%

Final grades will be given according to the following scale:

90 -100%: **A** 80 – 89%: **B** 70 -79%: **C** 60 – 69%: **D** < 60%: **F**

☺ Extra Credit: Amateur Radio License

Tech: +5 %, General: +10, Extra: +15 added to your final percentage

- Maui Amateur Radio License Examination Schedule
- **Ref)** : www.kh6rs.org Maui Amateur Radio Club

Class Schedule:

Week	Date	Topics
1	08/21	Administrative matters Introduction to software environments
	08/23	Matrices and Magic Squares
2	08/28	Graphics: Overview
	08/30	Graphics: Plotting Functions
3	09/04	Graphics: Plotting Functions
	09/06	Plotting Image Data
4	09/11	Vector & Scalar
	09/13	Numerical integration and differentiation
5	09/18	Numerical integration and differentiation
	09/20	Numerical integration and differentiation
6	09/25	Numerical integration and differentiation
	09/27	Exam I
7	10/02	Programming/Flow Control
	10/04	Data Structures
8	10/09	Scripts and Functions
	10/11	Data Analysis
9	10/16	Data Analysis
	10/18	Summarizing Data
10	10/23	Visualizing Data
	10/25	Modeling Data
11	10/30	Exam II
	11/01	Simulink
12	11/06	No class (Electrion Day)
	11/08	Simulink
13	11/13	Curve Fitting
	11/15	GUI (Graphical User Interface)
14	11/20	Project/GUI
	11/22	No class (Thanksgiving Day)
15	11/27	Project/GUI
	11/29	Cybersecurity and AI at the Edge
16	12/04	Cybersecurity and IoT
	12/06	Review of Final Exam (Last day of Instruction)
17	12/11	Final Exam All Chapters covered. All material assigned to date.

Note: This is a **tentative schedule**. Expect the lecture to run slightly ahead or slightly behind on any particular day. Revisions will be announced in class.

Fall 2018 Academic Calendar

August 20	FIRST DAY OF INSTRUCTION
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August 20	Late Registration Begins: Students registering for classes at any University of Hawaii Institution for the first time on or after this date will be charged a \$30 late registration fee. A \$5 change (add/drop) fee
August 20	Registration for UH Faculty and Staff requesting a tuition waiver.
August 24	Last day to DROP from full-semester length courses with 100% tuition refund. (full-semester length courses or 16 week courses). *Note: Students who register and decide not to attend, must officially withdraw by the 100% refund date. Failure to officially withdraw will result in a financial obligation to the UH System and may also result in a failing grade. Failure to attend classes does not constitute dropping and may result in academic penalties.
September 3	HOLIDAY: LABOR DAY
September 3	Last day for 50% refund (full-semester length courses or 16 week courses) Last day to withdraw without a "W" grade Erase Period ends - full-semester length courses dropped by this date do not appear on transcript
September 1	Last day for 50% refund (full-semester length courses or 16 week courses) Last day to withdraw without a "W" grade Erase Period ends - full-semester length courses dropped by this date do not appear on transcript
October 29	Last day to withdraw from full-semester length courses with a "W" grade. Last day to change to CR/NR or Audit Option, Deadline for making up Spring 2018 and Summer 2018. Not all courses are eligible for the credit/no credit option. Incomplete "I" grades. Complete withdrawals can now be done online and no longer need to be in person. Financial Aid, VA or international student should check with the respective offices when dropping any courses.
November 5	Registration begins for the Spring 2019 Semester
November 6	HOLIDAY: ELECTION DAY
November 12	HOLIDAY: VETERANS DAY
November 22	HOLIDAY: THANKSGIVING
November 23	HOLIDAY: NON-INSTRUCTIONAL DAY
December 6	Last day of instruction
December 8	Final Evaluation
December 14	End of the Semester
December 21	*Grades available via MyUH or STAR

UH Policy on e-mail communication

The electronic communications policy adopted in December 2005 establishes the University of Hawai'i Internet service as an official medium for communication among students, faculty, and staff. Every member of the system has a hawaii.edu address, and the associated username and password provide access to essential Web announcements and e-mail. You are hereby informed of the need to log regularly in to UH e-mail and Web services for announcements and personal mail. **Failing to do** so will mean missing critical information from academic and program advisors, instructors, registration, and business office staff, classmates, student organizations, and others.

Exam Policy

Permission to take exams on other dates than scheduled will **not** be given, except for extreme medical emergencies. In general, there will be no make-up tests.

Homework

Homework will be assigned as appropriate to support the lecture topics. Assignments not submitted when due are late and will have a letter grade deducted for each day they are late.

Late Policy

No late submission will be accepted.

Attendance

Regular attendance to the lecture is strongly advised. You will be responsible for all the material presented in class, regardless of whether or not you were present. If you are habitually absent from class you will not be allowed to take the examinations. Students who exceed **4** absences will be withdrawn in accordance with the College's Withdrawal Policy.

Academic Integrity:

We encourage full group and class collaboration on most aspects of this course: in-class work, lab experiments and reports, projects or research. However, individual assignments, such as homework, are to be done individually, in the own words of the student. Non-original work will be disqualified.

DECORUM:

Your classroom behavior must not disrupt the learning experience of the other students. In particular: **no eating, no drinking, no reading of newspapers or magazines, no "private conversations, no beeping pages, no rings cell phones.**

Suggestions:

Find at least one or two other students from the class with whom you can regularly do homework and prepare for exams. Your classmates are perhaps the least used and arguably your best resource. An efficient and effective studying group will streamline homework and study time, reduce the need for attendance at office hours. When you encounter an unsolvable problem, don't give up too soon on it. Being stumped is an opportunity for mathematical growth and insight, even if you never solve the problem on your own. If you seek help prematurely, you will never know if you could have solved a tough problem without outside assistance. Spend at least two to four hours on each home assignment. This affords you extra time to work on challenging homework problems and helps you organize your thoughts, questions, and ideas. The more time you spend on your homework, the more likely you are to articulate clear, concise questions to your classmates and teachers. The more time you spend on homework, the less time you will spend on frantic, last-minute preparation for exams.

Academic Probation Policy (APP)

All University of Hawai'i Maui College students must maintain a cumulative **GPA of 2.0 of higher**. Failure to do so could result in the following: Warning, Probation, Suspension, and Dismissal. For more information go to http://maui.hawaii.edu/?s=student&p=ac_policy or contact your academic counselor.

Disability Statement

- 1) If you have a disability, have not voluntarily disclosed the nature of your disability and you need support, you are invited to contact Catherine A. Taylor, Disability Services Counselor at (808)984-3227 or Telecommunication Device (TTY) at (808)984-3741. You can also access information of DS services at the website: <http://maui.hawaii.edu/counseling-advising/disability-services/>
- 2) Reasonable accommodations will be provided for students with documented physical, sensory, systemic, cognitive, learning and psychiatric disabilities. If you believe you have a disability requiring accommodations, please notify Catherine A. Taylor, Disability Services Counselor at 984-3227 or Telecommunication Device (TTY) at (808)984-3741. The Disability Services Counselor will verify your disability and provide the course instructor with recommendations for appropriate accommodations. You can also access information of DS services at the website: <http://maui.hawaii.edu/counseling-advising/disability-services/>

Assessment

A sample of your work may be anonymously used to assess student achievement of the program learning outcomes for the BAS degree in Electronics Engineering Technology.

My Success is an early alert system currently available for student support. If your instructor feels you may be struggling, they may refer you to this service.

The Learning Center (TLC) offers services designed to help students improve their overall academic performance. Workshops and tutoring sessions are structured to promote effective learning and academic management. TLC also provides instructions on using Laulima, UH Portal, Brainfuse, Turnitin, Pearson and other websites. Go to <http://maui.hawaii.edu/tlc/> to access our hours and other online resources, stop by TLC, or call [808-984-3240](tel:808-984-3240) for more information.

Academic Honesty and Plagiarism

Academic dishonesty and plagiarism undermine the efforts of honest students, the value of a UHMC degree, and the integrity of the university as an institution. Cheating or plagiarism in any part of the course may lead to failing the course and suspension or dismissal from the University. What is plagiarism? In short, it is presenting someone else's work as your own. Examples would include using text from a published source or from the web without attribution, copying another student's written homework assignment, or allowing your own work to be copied. You are encouraged to discuss homework problems with fellow students, but your collaboration must be at the level of ideas and concepts only. Your homework, project reports, etc. must be written in your own words. Legitimate collaboration ends when you "lend", "borrow", or "trade" written solutions to problems, or in any way share in the act of writing your answers.

The official UHMC policy concerning academic integrity, including disciplinary procedures and student rights and responsibilities, can be found at

http://maui.hawaii.edu/programs/catalog/2009/p71_College%20Regulations.pdf

* Treat each other with respect and courtesy. Discrimination and harassment have no place in this learning environment. To this end, I reserve the right to manage the class as appropriate. If you feel that you are being harassed or discriminated against, please contact MCC's **Equal Employment Opportunity/Affirmative Action** Coordinator — **Robyn Klein** at 984-3345 or 281-3332 for assistance

UHMC Lamakuhi Initiative:

As part of UHMC's Lamakuhi student success initiative, you may be referred to various campus resources to assist you. You will be notified by your instructor of your inclusion in the program and

you may be contacted by other campus resources such as a college academic counselor, the Learning Center, academic support specialists or program coordinators.
Your Starfish Implementation Team: Kulamanu Ishihara, Kealii Ballao, Kahele Dukelow, Kristine Korey Smith, Cathy Bio.

Title IX: Sex or Gender Based Discrimination– Educational Amendments of 1972

UHMC strives to provide an environment that emphasizes the dignity and worth of every member of its community and that is free from harassment and discrimination. Such an environment is necessary to a healthy learning, working, and living atmosphere because discrimination and harassment undermine human dignity and the positive connection among all members in our UHMC community. UHMC can help to provide valuable information. Examples of behavior that may be considered sex or gender- based discrimination may include, but is not limited to, the following: sexual harassment, harassment of LGBTQ students, sexual assault, stalking, and domestic and dating violence.

If you or someone you know is experiencing sex or gender- based discrimination, or if you have any questions regarding UHMC's process or policies, please feel free to contact the UHMC Title IX Coordinator via email at:

debran@hawaii.edu , or you can visit the UHMC Title IX website for more information at:
<http://maui.hawaii.edu/title-ix/>.

Student Code of Conduct

UHMC supports a positive educational environment that will benefit student success. In order to ensure this vision, UHMC has established the UHMC Student Code of Conduct to ensure the protection of student rights and the health and safety of the UHMC community, as well as to support the efficient operation of all UHMC programs.

All currently enrolled students at UHMC are required to abide by UHMC's Student Code of Conduct. A copy the of the most current Student Code can be found on UHMC's website at:

<https://maui.hawaii.edu/student-conduct-code/>

Non- Discrimination Statement

The University of Hawai'i System Executive Policy E1.202, declares and reaffirms its commitment to the University's equal education and employment opportunity policy. The University is committed to a policy of nondiscrimination on the basis of race, sex, age, religion, color, national origin, ancestry, handicap, marital status, arrest and court record, sexual orientation, gender identity, and veteran status.

This policy covers admission and access to, and participation, treatment, and employment in the University's programs and activities. If you feel that you are being discriminated against, contact debran@hawaii.edu or the UH Equal Employment Opportunity and Affirmative Action Office at 956 7077.