



Important Note: Every effort will be made to avoid changing the course schedule but the possibility exists that unforeseen events will make syllabus changes necessary. It is your responsibility to check emails from the instructor and Brightspace for corrections or updates to the syllabus. Any changes will be clearly noted in course announcement or through email.

MEC 102 Engineering Computing and Problem Solving

Credit Hours: 2

Prerequisite: Level 3 or higher on the mathematics placement examination; MEC, GME, CIV or GCV major or permission of the department

INSTALL MATLAB ON YOUR PERSONAL COMPUTER BEFORE STARTING THE COURSE:

<https://it.stonybrook.edu/help/kb/download-and-install-matlab-software>

Weekly meeting times:

Lecture: Tuesday 1:15-2:10 PM (in-person at FREY104)

Class exercise: Thursday 1:15-2:10 PM (online & synchronous via zoom)

You must register in advance for the online sessions:

<https://stonybrook.zoom.us/meeting/register/tJwrce2qqjItHdUXWcZTA3AEOTOFk6qety0q>

After registering, you will receive a confirmation email containing the information to join the zoom meetings

Instructor: Carlos Colosqui

Email: carlos.colosqui@stonybrook.edu

Office Hours (virtual conferencing via Zoom)

Tuesdays: 11:45AM - 1:00PM

Thursdays: 3PM – 4:30 PM

Join via Zoom Meeting

<https://stonybrook.zoom.us/j/97838743063?pwd=RXdEdmFlemk0WnZIRERxOXpER01rUT09>

Meeting ID: 978 3874 3063

Passcode: 013107

Teaching assistants:

Yanming Cai

Email: yanming.cai@stonybrook.edu

Office hours: TBD

Austin Dick

Email: austin.dick@stonybrook.edu

Office hours: TBD

Course Description: Students with no significant experience on programming will learn to use MATLAB for problem solving and analysis in science and engineering. The course will cover the basic use and capabilities of MATLAB and its application to concrete problems in engineering.

Tentative Schedule:

Week 01	Introduction to Matlab
Week 02	Fundamental operations
Week 03	Linear Algebra
Week 04	Plotting (1D, 2D, 3D)
Week 05	Control Structures
Week 06	Functions
Week 07	Input & Output
Week 08	No Class (Spring Recess)
Week 09	Midterm & Introduction to Object-Oriented Programming
Week 10	Statistical analysis
Week 11	Numerical Calculus
Week 12	Engineering Applications I
Week 13	Engineering Applications II
Week 14	Introduction to Machine Learning
Week 15	No Class, Final Project Due.

Required Course Textbook and Materials:

Software: MATLAB_R2018b or newer version installed in your personal computer and/or access at SINC sites.

Hardware: Laptop for hands-on sessions during lectures.

Recommended Readings/Bibliography:

Textbook: MATLAB Programming for Engineers (5th or 6th Edition). Author: Stephen J. Chapman. Publisher: CENGAGE Learning.

Course Delivery Mode and Structure:

The weekly lecture is in-person and the hand-on exercise and tutorial is delivered via zoom in the Blackboard learning management system (LMS). Both the lecture and class-exercise take place during the assigned meeting times. Students must be mindful of all course expectations, deliverables and due dates. All assignments and course interactions will utilize Blackboard. See "Technical Requirements" section for more information.

How We Will Communicate:

The preferred method to contact the instructor outside class is via the email address listed at the top of this syllabus. Allow between 24 to 48 hours for a reply. Your Stony Brook University email must be used for all course related communications. You must have an active Stony Brook University e-mail account and access to the Internet. *All instructor correspondence will be sent to your SBU e-mail account.* Please plan on checking your SBU email account regularly for course related messages. To log in to Stony Brook Google Mail, go to <http://www.stonybrook.edu/mycloud> and sign in with your NetID and password.

Technical Requirements:

This course uses Blackboard for the submission of assignments, and posting of grades. The Blackboard course site can be accessed at <https://blackboard.stonybrook.edu> If you are unsure of your NetID, visit <https://it.stonybrook.edu/help/kb/finding-your-netid-and-password> for more information. You are responsible for having a reliable computer and Internet connection throughout the term. **Caution! You will be at a disadvantage if you attempt to complete all coursework on a smart phone or tablet.** *It may not be possible to submit the files required for your homework assignments.*

The following list details a minimum recommended computer set-up and the software packages you will need to have access to, and be able to use:

- PC with Windows 10
- Macintosh with OS 10.13 or higher
- Latest version of Chrome, Firefox or Explorer; Mac users may use Chrome, Firefox or Safari. (A complete list of supported browsers and operating systems can be found on the My Institution tab of the [Blackboard website.](#))
- 8 GB RAM
- High speed internet connection
- Printer
- Word processing software (Microsoft Word, Pages, etc.)
- Speakers (either internal or external) or headphones
- Ability to download and install free software applications and plug-ins (note: you must have administrator access to install applications and plug-ins).
- Adobe Flash player with the latest update is crucial for playing multiple videos throughout the course

Technical Assistance:

If you need technical assistance at any time during the course or to report a problem with Blackboard you can:

- submit a help ticket on the web at <http://it.stonybrook.edu/services/itsm>)
- call (631) 632-9800 (technical support, log-in issues, computer support, wifi, software & hardware)
- call (631) 2-CELT [631-632-2358]

Course Learning Objectives and Assessments

Learning Objectives and Activities:

Upon completion of the course, students will be able to:

1. ***Understand fundamentals of Matlab scripting***
2. ***Use Matlab for numerical linear algebra***
3. ***Use Matlab for numerical solution of ordinary differential equations***
4. ***Use Matlab for numerical data analysis (statistics, graphing, and data fitting)***
5. ***Understand the fundamentals of object-oriented programming and basic machine learning techniques***

How to Succeed in this Course:

- Attend the lectures
- Attend the class exercises online for each week
- Solve on your own the assigned homework assignments

Grading, Attendance, and Late Work Policies

Assessment & Grading:

- ***30% Homework assignments***
- ***30% Midterm Exam***
- ***40% Final project***

Letter Grades:

Final grades assigned for this course will be based on the percentage of total points earned and are assigned as follows:

Letter Grade	GPA/Points	Performance
A	4.0	Excellent Work
A-	3.7	Nearly Excellent Work
B+	3.3	Very Good Work
B	3.0	Good Work
B-	2.7	Mostly Good Work
C+	2.3	Above Average Work
C	2.0	Average Work
C-	1.7	Mostly Average Work
D+	1.3	Below Average Work
D	1.0	Poor Work
F	0.0	Failing Work

Late Work Policy:

Late Work Policy: Late work submitted after the deadline will not be graded. You will be able to request via email up to 2 deadline extensions for homework assignments during the semester. The extension request must be made before the deadline.

Course and University Policies

Disability Support Services (DSS) Statement:

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services, ECC (Educational Communications Center) Building, Room 128, (631)632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential.

Academic Integrity Statement:

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty are required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at http://www.stonybrook.edu/commcms/academic_integrity/index.html **Important Note:** Any form of academic dishonesty, including cheating and plagiarism, will be reported to the Academic Judiciary.

Critical Incident Management:

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of University Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.

Understand When You May Drop This Course:

It is the student's responsibility to understand when they need to consider disenrolling from a course. Refer to the Stony Brook Academic Schedule for dates and deadlines for registration: http://www.stonybrook.edu/commcms/registrar/calendars/academic_calendars

Incomplete Policy:

Under emergency/special circumstances, students may petition for an incomplete grade. Circumstances must be documented and significant enough to merit an Incomplete. If you need to request an incomplete for this course, contact me for approval as far in advance as possible.

Course Materials and Copyright Statement:

Course material accessed from Blackboard, SB Connect, SB Capture or a Stony Brook Course website is for the exclusive use of students who are currently enrolled in the course. Content from these systems cannot be reused or distributed without written permission of the instructor and/or the copyright holder. Duplication of materials protected by copyright, without permission of the copyright holder is a violation of the Federal copyright law, as well as a violation of Stony Brook's Academic Integrity.

Online Communication Guidelines and Learning Resources:

Maintain Professional Conduct Both in the Classroom and Online: The classroom is a professional environment where academic debate and learning take place. I will make every effort to make this environment safe for you to share your opinions, ideas, and beliefs. In return, you are expected to respect the opinions, ideas, and beliefs of other students—both in the face-

to-face classroom and online communication. Students have the right and privilege to learn in the class, free from harassment and disruption. The course follows the standards set in the Student Code of Conduct, and students are subject to disciplinary action for violation of that code. If your behavior does not follow the course etiquette standards stated below, the grade you receive for a posting may suffer. I reserve the right to remove any discussion messages that display inappropriate language or content.

Online Post Etiquette:

- Offensive language or rudeness will not be tolerated. Discuss ideas, not the person.
- Avoid cluttering your messages with excessive emphasis (stars, arrows, exclamations).
- If you are responding to a message, include the relevant part of the original message in your reply, or make sure to refer to the original's contents so as to avoid confusion;
- Be specific and clear, especially when asking questions.
- Use standard punctuation and capitalization. Using all UPPERCASE characters gives the appearance of shouting and makes the message less legible;
- Remember that not all readers have English as their native language, so make allowances for possible misunderstandings and unintended discourtesies.

Online Classes Require Better Communication: It is important to remember that we will not have the non-verbal cues that occur in a face-to-face classroom. I cannot see the confused, frustrated, or unhappy expressions on your face if you encounter problems. **You MUST communicate with me so that I can help.** To make the experience go smoothly, remember that you're responsible for initiating more contact, and being direct, persistent, and vocal when you don't understand something.

My Role as the Instructor: As the instructor, I will serve as a "guide" in terms of the Discussion Board. While I will not respond to every post, I will read what is posted, and reply when necessary. Expect instructor posts in the following situations:

- To assist each of you when it comes to making connections between discussion, lectures, and textbook material.
- To fill in important things that may have been missed.
- To re-direct discussion when it gets "out of hand".
- To point out key points or to identify valuable posts.

Student Learning Resources:

- **Academic and Transfer Advising Services:** Have questions about choosing the right course? Contact an advisor today. Phone: (631) 632-7082 (option 2); email: advising@stonybrook.edu; website: <http://www.stonybrook.edu/commcms/advising/>
- **Amazon @ Stony Brook:** Order your books before classes begin. Phone: (631) 632-9828; email: [Bookstore Liaison@stonybrook.edu](mailto:Bookstore.Liaison@stonybrook.edu); website: <http://www.stonybrook.edu/commcms/bookstore/>
- **Bursar:** For help with billing and payment. Phone: (631) 632-9316; email: bursar@stonybrook.edu; website: <http://www.stonybrook.edu/bursar/>
- **Career Center** The Career Center's mission is to support the academic mission of Stony Brook University by educating students about the career decision-making process, helping them plan and attain their career goals, and assisting with their smooth transition to the workplace or further education. Phone: (631) 632-6810; email: sbucareercenter@stonybrook.edu; Website: <http://www.stonybrook.edu/career-center/>
- **Counseling and Psychological Services:** CAPS staff are available by phone, day or night. <http://studentaffairs.stonybrook.edu/caps/>
- **Disability Support Services:** Students in need of special accommodations should contact DSS. Phone: (631) 632-6748; email: dss@stonybrook.edu; <http://www.stonybrook.edu/commcms/studentaffairs/dss/>
- **Library:** Access to online databases, electronic journals, eBooks, and more!
 - **Library Instruction Website** - <http://library.stonybrook.edu/workshops-this-week-citation-skills-worldcat-and-endnote-the-hsc/>
 - **SBU Library Research Guides and Tutorials** <http://library.stonybrook.edu/research/research-basics/>

- **Registrar:** Having a registration issue? Let them know. Phone: (631) 632-6175; email: registrar_office@stonybrook.edu; <http://www.stonybrook.edu/commcms/registrar/>
- **Writing Center:** Students are able to schedule face-to-face and online appointments. <https://www.stonybrook.edu/writingcenter/>
- **Support for Online Learning**
<http://www.stonybrook.edu/commcms/onlineed/student.html>
- **Ombuds Office** The Stony Brook University Ombuds Office provides an alternative channel for confidential, impartial, independent and informal dispute resolution services for the entire University community. We provide a safe place to voice your concerns and explore options for productive conflict management and resolution. The Ombuds Office is a source of confidential advice and information about University policies and procedures and helps individuals and groups address university-related conflicts and concerns. <http://www.stonybrook.edu/ombuds/>

Critical Incident Management and COVID

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Student Conduct and Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Until/unless the latest COVID guidance is explicitly amended by SBU, during Spring 2022 "disruptive behavior" will include refusal to wear a mask during classes.

For the latest COVID guidance, please refer to:

<https://www.stonybrook.edu/commcms/strongertogether/latest.php>