

California State University, Chico  
**Department of Mechanical and Mechatronic Engineering and Sustainable  
Manufacturing**

MECH 208: Introduction to Technical Computing  
Instructor: Dr. Ramesh Varahamurti

**Catalog Course Description:**

A foundation course in technical computing for engineering. Introduces commercial software commonly used in the solution of engineering problems. Application areas include kinematics and kinetics, fluid flow, thermal systems, and machine design. 1 hour lecture, 3 hours laboratory.

**Office:** OCNL 229, 530-898-6353

**Office Hours:** Please check the office door for my office hours

**Prerequisite:** *MATH 121. Recommended: PHYS 204A*

**Textbook:** Amos Gilat, "MATLAB An Introduction with Applications", 6<sup>th</sup> edition, John Wiley & Sons. Inc. 2017 (ISBN 9781119256830)

**Other equipment requirements**

To ALL Sections: A laptop computer to run MATLAB for studying and homework. Only OCNL 438 is a MatLab equipped computer lab.

**Software**

MATLAB (bare system \$49, Student Suite \$99); visit [www.mathwork.com](http://www.mathwork.com)

**Course Objectives: To Learn to:**

1. Solve technical computing problems using MATLAB
2. Write MATLAB functions and scripts, using common mathematical operators and functions
3. Generate various types of plots to graphically represent numerical data
4. Understand and apply programming concepts, such as array, branching, and looping
5. Understand and apply basic concepts of numerical analysis, such as systems of linear equations and numerical integration and (differentiation if your software is able)

**Coverage** includes the following topics:

1. Course overview, Intro to Matlab Desktop, Help/Documentation, Variables, Basic arithmetic operators
2. Vectors, matrices, Indexing, Built-in functions, Matlab Editor, Publishing
3. Elementary math and logical operations, Basic linear algebra, Matrix operation, Element-wise operations, Basic plotting
4. Script and Function, Function handle, Recursion, more plotting

5. Branching, Looping
6. Program design, Pseudo code, Flow chart
7. Data import/export, Basic File I/O operations, Curve fitting, Exporting figures
8. Interpolation, Linear equations solving
9. Numerical Integration
10. (Numerical Differentiation)

**Excel (*time permitting*)**

1. Spreadsheet (Excel) basics
2. Array formula, Plots, Trend lines
3. Excel Goal seek, Solver, Table look-up(an exercise for you)

**Final exam**

**Grading Policy**

<b>Homework</b>	<b>10%</b>
<b>1 Exam</b>	<b>20%</b>
<b>2 Exam</b>	<b>30%</b>
<b>Final Exam</b>	<b>40%</b>

*(Note: Grading policy is subject to change with fair notice.)*

<b>Grading Ranges:</b>	
A- To A:	90 – 100%
B- To B+	75 – 89.99%
C- To C+	60 – 74.99%
D- To D+:	50 – 59.99%
F	Below 49.99%

**Expectations:**

1. *You are expected to learn code-writing by writing programs. Mistakes will be made during the process. And as in learning any language, do not be afraid to make mistakes and learn from fixing them. The key to code writing is prior planning via pseudo code, converting it to Matlab and testing it.*
2. *Practice helps improve the quality of your program. Quality is a function of a well thought out and logical flow of code. It is also a function of how easy it is to understand the code by anyone who understands code writing (including yourself after 5 years!)*
3. *Taking initiative in writing code for problems beyond what's expected in class will help you in the long run in other areas of your interest. Code writers are being sought after. (Disclaimer: Just learning to be a code-writer does not automatically guarantee a job! Besides, no university in the world guarantees you a job. YOU AND YOU ALONE HAVE TO LAND ONE)*
4. **Late work will not be accepted.**
5. **Home work will be graded and returned to you in time to study for the exams. However, students sometimes do not pick up their**

homework. That starts piling up in my office. The week prior to the finals week is the last week to pick up ALL your graded home work. Thereafter it will be shredded.

6. Once exams are graded and their solutions discussed in class, **they must be returned to the instructor.** You may bring any grading errors to the instructor and your grade will be rectified. No one will be allowed to keep their exams. Once the following academic semester (summer session is not an academic semester) has started, you have 31 days from the start of *that* semester to get questions about your overall grade as well as questions about the grade on the final exam clarified from the previous semester. **All exams will be shredded after that.**

**Homework:** Homework is due at the beginning of class

**Lab:** These are to learn to use Matlab.  
Some lab *assignments may be graded.*

**Exams:** Exam dates will be announced in class along with your responsibility.

**Dropping and Adding:** You are responsible for knowing the deadlines and penalties for adding and dropping classes.

### **Academic Integrity**

Students are expected to be familiar with the University's Academic Integrity Policy. Your own commitment to learning, as evidenced by your enrollment at California State University, Chico, and the University's Academic Integrity Policy requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the Office of Student Judicial Affairs. The policy on academic integrity and other resources related to student conduct can be found on the Student Judicial Affairs web site.

**Americans with Disabilities Act:** If you need course adaptations or accommodations because of a disability or chronic illness, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Please also contact Accessibility Resource Center (ARC) as they are the designated department responsible for approving and coordinating reasonable accommodations and services for students with disabilities. ARC will help you understand your rights and responsibilities under the Americans with Disabilities Act and provide you further assistance with requesting and arranging accommodations.

**Accessibility Resource Center** 530-898-5959 located in Student Services Center 170, [arcdept@csuchico.edu](mailto:arcdept@csuchico.edu).