

An introductory course in computer science and programming (using MATLAB) and its use in solving engineering and scientific problems. The emphasis is on the logical analysis of a problem and the formulation of a computer program leading to its solution. Topics include basic concepts of computer systems, algorithm design, programming languages and data abstraction. Designed for students not specializing in computer science.

## 1.1 Contact Information

INSTRUCTOR:	Alex Gerbessiotis	E-MAIL:	<a href="mailto:alexg+cs101@njit.edu">alexg+cs101@njit.edu</a>
OFFICE:	GITC 4213, 4th floor	TEL:	(973)-596-3244
OFFICE HOURS:	Tue 4:00-5:30pm and Thu 4:00-5:30pm.	Else, by	appointment Mon/Tue/Thu
ASSISTANT:	TBA on course web-page		
CLASS HOURS:	18:00-21:05 GITC 2400		
WEB PAGE:	<a href="http://www.cs.njit.edu/~alexg/courses/cs101/index.html">http://www.cs.njit.edu/~alexg/courses/cs101/index.html</a>		

If it breaks down, use alternatively one of the following,

WEB PAGE:	<a href="http://web.njit.edu/~alexg/courses/cs101/index.html">http://web.njit.edu/~alexg/courses/cs101/index.html</a>
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Print Handout 1 from Web-page and compare the printout to this document! They must be identical.

## 1.2 Course Administration

Prerequisites	No course required. Knowledge of last 4 digits of NJIT ID, and NJIT UCID and password.
Textbook	MATLAB Programming for Engineers by Stephen J. Chapman, 4th edition. ISBN-10: 049524449X , ISBN-13: 978-0495244493. <i>Note that a newer version might be out by the start of the semester.</i>
CourseWork:	<b>2 exams (including the final); 3 MiniProjects ; At most 4 unannounced Quizzes.</b>
Grading:	1000 points = Exam1(345) + Exam2(345) + QuizzesAndMP(310).
Exams/Quizzes	The two exams (Exam1,Exam2) are open-textbook; you may bring a HARD-copy of the textbook but you are not allowed to borrow one during the exam. 15-minute quizzes are closed everything and worth 50points. Exam1(midterm) is 90mins, 345 points and Exam2(final) is 120mins, 345 points.
MP1-3	Three MiniProjects; 70 points each. DUE before noon of a FRIDAY which is NOT a class day.
Note	At most 310 points of Quizzes and MPs account toward the total grade. There is room to miss one (or the other).
Due Dates	MiniProjects MUST BE RECEIVED BY EMAIL PER INSTRUCTIONS <b>before NOON</b> of the day they are due. For late submissions 30 pts deducted from grade at noon time that day, and noon the following day(s), if applicable.

### Tentative list of topics

Topics	T1 : High-level computer organization. Introduction to computing. Bits and Bytes.
	T2 : Data representation in memory. Integers and reals
	T3 : The abstract data type: Matrix and Vector. Implementations using an array.
	T4 : The fundamental concepts of MATLAB. MATLAB basics
	T5 : MATLAB vector/matrix functions and operations
	T6 : MATLAB misc plotting functions
	T7 : MATLAB Branching statements
	T8 : MATLAB loops (iterative) statements. MATLAB functions
	T9 : Program design. MATLAB profiling. Recursion.
	T10: Advanced MATLAB features. Sorting and Searching.

## 2.1 Course Objectives and Outcomes

- Objective 1** Learn the fundamentals of computers, computing and programming, MATLAB and its programming environment.
- Objective 2** Learn how to use and allocate MATLAB data-types, their operations, behavior and side-effects.
- Objective 3** Learn how to trace a MATLAB program and understand its interactions with MATLAB M-files and MATLAB functions of various types and how to modify it.
- Objective 4** Learn how to use MATLAB to solve (simple) computational problems.
- Objective 5** Learn how to use MATLAB to solve more elaborate computational problems.
- Outcome 1** Be able to explain fundamental computing concepts related to processing, memory and data organization as related to engineering.
- Outcome 2** Become familiar with the syntax, functionality and capabilities of MATLAB.
- Outcome 3** Be able to understand and use MATLAB primitive data types, and effectively use built-in MATLAB functions and trace MATLAB programs.
- Outcome 4** Become familiar with matrices and arrays in MATLAB and learn how to formulate and use array operations.
- Outcome 5** Be able to provide a computer-based programming solution for simple engineering problems using a high-level language such as MATLAB and how to modify one as needed.
- Outcome 6** Be able to effectively and efficiently use MATLAB for solving more involved computational problems.

## 2.2 Tentative Course Calendar

Fall 2015				
Week*	Tue to Mon	Exams	MP	Comments
W01	09/01-09/07			Week and Semester starts on Tue (Sep 1);
W02	09/08-09/14		MP1 out	Note that Tue Sep 8 is a "Monday"
W03	09/15-09/21			
W04	09/22-09/28		MP2 out	
W05	09/29-10/05		MP1 due by	Before noon FRI OCT 02
W06	10/06-10/12			
W07	10/13-10/19		MP2 due by	Before noon FRI OCT 16
W08	10/20-10/26	<b>EX1</b>		Midterm is Ex1
W09	10/27-11/02		MP3 out	Mon Nov 2 : Withdrawal deadline
W10	11/03-11/09			
W11	11/10-11/16			
W12	11/17-11/23			
W13	11/24-11/30		No classes Thursday:	Thanksgiving Day (11/26)
W14	12/01-12/07		MP3 due by	Before noon FRI DEC 4
W15	12/08-12/10**			Last day of classes is Thu Dec 10
FIN	12/15-12/21	<b>EX2***</b>	Tue Dec 15-Mon Dec 21	is Final Exam Week

\*The Week starts on Tuesday and ends on the following Monday. \*\* Leftovers from Thanksgiving Recess and Labor Day. \*\*\*The final exam is prescheduled: same place, day and time as the class during exam week.

**Any modifications or deviations from these dates, will be done in consultation with the attending students and will be posted on the course Web-page. It is imperative that students check the Course Web-page regularly and frequently.**

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Programs	Submitted code must conform to the requirements of Handout 2 and of the MiniProject(s).
Grading	<b>If you use a pencil in an exam or quiz do not complain about grading afterwards.</b>
Grades	Check the marks in a written work and report errors promptly. <b>MAKE SURE YOU REPORT SUCH PROBLEMS TO THE GRADER AND THE INSTRUCTOR WITHIN TWO WEEKS FROM RECEIPT, RETURN, LETTER-GRADE POSTING and no later than the (first) Reading Day; for the final exam, within one week (7 calendar days) from the exam date.</b> Talk to the grader first and then to the instructor (if different). <b>Letter grades</b> are decided based on a 0 to 1000 point performance. A 50% or more is <i>C</i> or better, 90% or more is <b>USUALLY</b> required for an <i>A</i> , but it may vary slightly depending on overall class performance.
Absenteeism	The instructor reserves the right to push a student's grade down one level if he notices a student being absent from <b>MORE than 2 classes</b> ; one way to note absenteeism is absence from a quiz or not picking a graded quiz, or by handing out a sign-up list.
Collaboration	COLLABORATION OF ANY KIND IS <b>NOT</b> ALLOWED IN EXAMS OR MINI-PROJECTS. A STUDENT MUST TURN IN CODE (MINI-PROJECT) THAT HAS BEEN FULLY WRITTEN BY HIM/HER. ANY SUBMITTED CODE (EVEN FEW LINES) OBTAINED THROUGH THE INTERNET OR OTHERWISE, OR IS PRODUCT OF ANOTHER PERSON'S/STUDENT'S WORK, OR IS COMMON WITH ANOTHER SUBMISSION IN THE SAME SECTION/COURSE OR OTHER, RISKS SEVERE PUNISHMENT, AS OUTLINED BY THE UNIVERSITY; ALL PARTIES OF SUCH WITTING OR UNWITTING INTERACTION RECEIVE AUTOMATICALLY 0 IN ALL MINIPROJECTS, NOT JUST THE MINIPROJECT IN QUESTION, AND ONE LOWER LETTER GRADE LEVEL. THE WORK YOU SUBMIT MUST BE THE RESULT OF YOUR OWN EFFORT AND YOU MUST SAFEGUARD IT.
Mobile Phones	Switch off (not just silence) mobile devices before class.
Email/SPAM	Always use an NJIT email address; NJIT spam filters might be unpredictable. Include <b>cs101</b> in the subject line. Do not complain otherwise.
Missing class	If you miss a class and there is no Exam/Quiz it's up to you to make up for absence.
MakeUp	There are three scheduled mini projects. Plan ahead of time and submit early; do not wait until the last day. <b>NO EXTENSIONS</b> are granted for any reason medical, judicial, or otherwise for the mini-projects. If you miss an exam and there is a valid documentation for your absence, such documentation must be presented to the Dean of Student Services (DOSS) within 3 working days from the day the reason for the absence is lifted and also inform us on this. The maximum accommodation will be the number of (justified) missing days to the exam date. For the quizzes no MakeUp will be given. A grade based on the Final will be extrapolated for approved cases (by the DOSS).
Final Exam	The final exam is scheduled by the Registrar; If you make travel arrangements, or make private arrangements with other instructors to have other exams rescheduled you will not be accommodated. ■

**The NJIT Honor Code will be upheld; any violations will be brought to the immediate attention of the Dean of Student Services. Read this handout carefully!**