Monroe Community College
Physics and Engineering Science Department
Course Information Spring 2020

Course Title: **ENR 161 Engineering Computing I**

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**Engineering
Learning Center:**   Room 7-111, Hours 6 a.m. till midnight, 7 days per week. If the room is locked go to the Public Safety Desk on the 2nd floor entrance of Building 1 with your MCC ID and an officer will unlock the door for you.

Required Texts: *Engineering with Excel 5th Edition*, Ronald W. Larsen, Prentice Hall,
ISBN 978-0134589664

Beginning Arduino Programming, Brian Evans, Technology in Action,
ISBN 978-1430237778.

Required Software: Microsoft Office 2016
You may be able to get this free**.** Google: **Student Offers - Microsoft Education**

Arduino IDE
Can be downloaded from www.Arduino.cc

Required Materials: A USB Stick storage media with a label **with your name and phone number on it**

Elegoo EL-KIT-004 which is ~$15 https://www.amazon.com/gp/product/B01DGD2GAO

You may alternatively pick up any starter kit you want however, it must have or you must acquire at least the following components:
- 1 Arduino board (Uno, Mega, etc)
- 1 Light Detecting Resistor
- 1 Solderless breadboard
- Jumper wires for the breadboard
- 3 Buttons
- 1 RGB LED
- 3 220 ohm resistors
- 3 10k ohm resistors

Headphones for Listening to ENR161 instructional videos.

Students should also back up their files on the MCC student storage (S:) drive. Students may not store files on the desktop or C drives of the classroom computers as they may be deleted daily.

Course Objectives:
- Demonstrate understanding of how to use Excel and Arduino.
- Analyze and solve engineering problems with Excel and Arduino.
- Create Excel spreadsheets and Arduino programs with efficient design that clearly communicates the methods utilized.

Topics Covered:
Engineering with Excel 5th Edition

Ch 01: Intro to Excel (Organizing, Printing, and Saving Worksheets)
Ch 02: Excel's Ribbon (Navigating the Ribbon, Ribbon Groups, Formatting)
Ch 03: Graphing (XY Scatter Graphs, Editing Graphs, Graph Types, Importing Text Files)
Ch 04: Excel Functions (Built-in Functions, Sums, Trig and Advanced Math Functions)
Ch 05: Matrix Operations (Matrix Math, Solving Systems of Linear Equations)
Ch 06: Linear Regression (Regression with Excel Functions and Trendlines, 2-Coefficient Models, Polynomial Regression, Excel's Regression Analysis Package)
Ch 07: Statistics (Populations and Samples, Standard Deviation, Distributions, Confidence Intervals)
Ch 09: Iterative Solutions (Graphical Root Finding, Guess and Check, Goal Seek, Solver, Non-Linear Regression, Linear Programming)

Beginning Arduino Programming

Ch 01: Getting Started (Creating, and Setting up)
Ch 02: Sketching in Code (Sketching, Arduino C Structure, Uploading)
Ch 03: Working with Variables (Variable names, Data Types, Scope, and Operators)
Ch 04: Making Decisions (Control Statements; If-Else, Loops)
Ch 05: Digital Ins and Outs (Digital Functions, State Changes)
Ch 06: Analog In, Analog Out (Analog Functions, Serial Monitor, Mapping Values)
Ch 07: Advanced Functions (Timing Functions, Custom Functions)
Ch 09: Hardware Libraries (Using Libraries)

Arduino Robotics Project

Students will work in teams to design and write code capable of completing the navigation portion of the 2020 ASEE Model Design Project. Visit http://faculty.tcc.edu/PGordy/ASEE/ for complete project details. Students will also create written and oral reports to document their work.

Note: The list of topics may be changed by the instructor to fit the available time.

Withdrawal Policy:

Regular class attendance is one of the most important contributing factors to your academic success. Missing classes may have an academic consequence as outlined in your course syllabus. In addition, failure to attend class may impact scholarships, grants, loans, veteran affairs status, satisfactory academic progress (SAP), participation on athletic teams, eligibility to live in campus housing, and, most significantly, financial aid assistance.

MCC is transitioning to a model where faculty members will be reporting student attendance through Starfish. For the spring 2020 semester, students who miss a number of classes may receive automated messages from the Starfish Early Alert system. These messages will alert students if they miss more than 10, 20, and then 30 percent of the class, and they will advise students about course withdrawal from a class if they miss 30 percent of the class. However, it might be important for you to consider withdrawing before this point. If you anticipate missing class, please keep in regular communication with your instructor as specified in your syllabus. Also, please regularly review the record of your attendance in Blackboard and contact your instructor promptly if you note any possible discrepancy.

If a student determines that they will be unable to complete courses in which they are currently enrolled, it is the students' responsibility to initiate procedures leading to a formal withdrawal ("W") in order to avoid a failing ("F") grade. Students who need assistance in completing this process should contact the Registration and Records Office.

Academic Honesty:

Students must abide by the regulations and policies outlined in the MCC Catalog/Student Handbook (go to **monroecc.edu**, **A-Z, C, Catalog, Student Handbook, Academic Honesty**.

Copying the work of another student, or allowing a student to copy your work is considered cheating. Copying another person's electronic file, or files found on the internet, is strictly forbidden.

Students must credit all sources that they received help from on homework assignments. Failure to credit your sources of assistance will be considered plagiarism. Students caught cheating or plagiarizing will be penalized and a letter outlining the incident will be sent to the Vice President of Student Services.

Classroom Policies:

While the instructor is lecturing, students may not use a laptop or classroom computer unless instructed to do so by the instructor. Students may only use computers for academic purposes. All recreational use of computers such as for playing games or surfing the internet is prohibited on all Engineering Science and Physics Department computers. Failure to abide by these rules may result in dismissal from the class and/or loss of the privilege of using the computers.

No open food or beverage containers are allowed near department computers. Students wishing to eat or drink should do so outside the classroom.

The use of cellular telephones, iPods and other electronic equipment is prohibited in the classroom. Pagers and cellular telephones should be turned off during class except in emergency situations when the instructor has given the student permission to keep the phone or pager on.

Learning Center Conduct:
Students must act in a professional manner and not engage in any actions that will cause distress or discomfort to others around them. Watching videos or playing games containing sexual, violent, or immoral content is prohibited. Engaging in so called "Locker Room" talk will not be tolerated. Behavior in learning centers should be no different from that in a classroom with a professor present. Students who do not follow these rules will be reported to the MCC Public Safety Department and the MCC Assistant to the President for Title IX & Inclusion.

Grade Distribution:

Homework*   70%
Final Design Project   30%

* The lowest homework grade will be replaced with the Final Project grade if this benefits the student.

Grade Scales:

A	>= 93%	Excellent	C	>= 70%	Average
A-	>= 90%		C-	>= 67%	
B+	>= 85%		D+	>= 64%	
B	>= 80%	Above Average	D	>= 60%	Below Average
B-	>= 77%		D-	>= 57%	Minimum Passing
C+	>= 74%		F	<= 57%	Failure

Attendance

1.   Students are responsible for all assignments and material covered in class even if they are absent.

2.   Students must contact the instructor prior to or during the day that they are absent to receive the assignment that will be due when they return to class.

3.   Absence from class is not a valid excuse for not handing in an assignment on time or taking a quiz.

Homework and Class Work

1.   Homework tutorials and problems will be graded on a 10 point scale.

No errors or omissions =	10 points (A)
Minor error or omission =	9 points (A-)
Major error(s) or omission(s) =	8 or 7 points (B or C)
Passing =	6 points (D)
Unsatisfactory =	0 to 5 points (F)

2.   If you fail to submit a homework assignment for grading, your Final Project grade will automatically replace the grade for that assignment. If you miss a second assignment you will receive a zero for it.

3.   Students may consult with other students in completing homework assignments as long as all students do their own work. Copying another student's file, or copying a file from the internet, will be considered plagiarism. **Students may not work together to submit a single homework assignment to count for both students.**

4.   **Students must list the names of everyone who helped them in completing an assignment.** Failure to do this will be considered plagiarism and will result in a penalty in your grade.

5.   Late homework will not be accepted for credit.

6.   The purpose of homework assignments is to gain technical expertise and to demonstrate the ability to meet strict deadlines. Be warned that computers can be unpredictable so you should never count on

everything working perfectly. Disks may become unreadable, computers may crash, printers may jam, or you may not have access to a computer when you need it.

Good excuses will earn you nothing, but good time management will pay big dividends. It is therefore essential for you to get started early on assignments so that **when (not if)** things go wrong**,** you will have time to compensate for them.

7. Students may not email homework assignments to the instructor. A student must submit their homework files to their GitHub repository prior to the due date.

8. **Students are required to create backup files for all their work.** Students are required to make one or more backup files for all work on a USB Stick Storage Media, the MCC student storage drive, or your own computer hard drive.

Final Project

1. Your Final Project grade will be based upon the performance of your robot and the quality of your written report and oral report.

2. A student's project grade may be raised or lowered based on the amount that a student has contributed to their team.

3. The Final Project grade will replace the lowest homework grade if this benefits the student.

4. Students who do not return their robot kits or return them in unsatisfactory condition will receive an incomplete grade for the course. The incomplete grade will not be changed to the letter grade until the kit is returned or missing parts are replaced. If you never return the missing kit or parts the incomplete grade may be replaced with a grade of F.

College Closing Policy

If the College is **closed** or classes are cancelled due to inclement weather or some other emergency, all Rochester area radio and television stations will be notified no later than 5:30 a.m. or in the case of a mid-day decision, no later than 3:00 p.m. In addition, the home page on the MCC website (www.monroecc.edu) will display a message indicating the College is closed or classes are cancelled. Please do not call the College to avoid overloading the telephone lines.

In the event of an **emergency**, such as a campus evacuation or closure, severe weather alert, fire in a building, hazardous material incident, etc., where time-sensitive, proactive actions need to be communicated, the **SUNY NY-Alert** system will be utilized to provide immediate notification to all MCC students and employees who have opted to receive such alerts. Those who sign up for SUNY NY-Alert can choose to receive emergency messages via a variety of communication technologies, such as e-mail (college and/or personal accounts), and audio and/or text message to a campus, home or cell phone, fax, etc. For more information on SUNY NY-Alert, including how to sign up, please visit http://www.monroecc.edu/depts/pstd/NYAlert.htm.

Information regarding **class cancellation** is available daily on the web or through the telephone. Simply go to the MCC website (www.monroecc.edu) and select the link in the second heading menu labeled "Current Students", and then select the "Class Cancellations" link along the left column under the "Academics at MCC "section. Additionally, class cancellation information is available by dialing 292-2066, press "1"

for the Brighton campus and "2" for the Damon City. **Class cancellation notices are also sent to student email accounts.**

College Learning Centers

Monroe Community College has a number of Learning Centers at Brighton (for example, Accounting, Math, Psychology, Writing, the Electronic Learning Center, etc.) and at Damon (for example, the Integrated Learning Center, Electronic Learning Center, etc.). Learning centers are staffed with instructional personnel and may be equipped with computers and software to assist students. It is recommended that students use the Learning Centers to get additional help with concepts learned in the classroom and with their homework. Please refer to your MCC student email to review your referral and objectives for your use of the Learning Center(s).

Brighton - the Brighton Learning Center, Bldg. 11, Room 106

Damon - the Damon Integrated Learning Center in 4-130 and the Student Services Office on the fifth floor

Week #	Week of	Monday Class	Wednesday Class
Tentative HW Due Dates* for ENR-161 Class Spring 2020
1	20-Jan	MLK Jr Day - Closed	Course Introduction
2	27-Jan	Course Info Sheet HW & Excel Ch. 1 HW Due	Excel Ch. 2 HW Due
3	3-Feb	Workday	Excel Ch. 3 HW Due
4	10-Feb	Excel Ch. 4 HW Due	Excel Ch. 5 HW Due
	17-Feb	Winter Recess	Winter Recess
5	24-Feb	Workday	Excel Ch. 6 HW Due
6	2-Mar	Excel Ch. 7 HW Due	Excel Ch. 9 HW Due
7	9-Mar	Workday	Workday
8	16-Mar	Arduino Ch. 1&2 HW & Ch. 3 HW Due	Workday
9	23-Mar	Arduino Ch. 4 HW Due	Workday
10	30-Mar	Arduino Ch. 5&6 HW Due	Workday
	6-Apr	Spring Recess	Spring Recess
11	13-Apr	Workday	Arduino Ch. 7 HW & Ch. 9 HW Due
12	20-Apr	Workday	Arduino Motors and PID HW Due
13	27-Apr	Arduino Project	Arduino Project
14	4-May	Arduino Project	Arduino Project
15	11-May	Arduino Project	Arduino Project
16	18-May	**Robot Trials (Competition Day)**	**Oral and Written Robot Project Reports Due**
	* Changes to this schedule will be announced in class

Course Information Sheet Homework Questions

Provide your answers to the following questions below each question and submit your answers to your GitHub repository.

1. Explain where and how you can obtain a free copy of Microsoft Office? Explain the different types of Arduino IDEs available.

2. Why should you get headphones for ENR161?

3. Give a brief description of the 2020 ASEE Model Design Project.

4. List the types of behavior listed in this course information sheet that are not allowed in Learning Centers. What will happen if you violate these rules.

5. Go to the MCC Student Handbook and write the first sentence for the definition of cheating listed there. Also write the first sentence in the definition of plagiarism definition.

6. What is the food and drink policy in class?

7. Can homework be handed in late?

8. What grade will you receive if you fail to hand in one homework assignment by the due date? What grade will you receive for failing to hand in a second homework assignment on-time?

9. State the policy for emailing homework to your instructor.

10. What grade will you receive if you don't return your robot kit, or return it in an unsatisfactory condition? What must you do to get this grade changed?