

**STATE UNIVERSITY OF NEW YORK !  
COLLEGE OF TECHNOLOGY !  
CANTON, NEW YORK !**



**MASTER SYLLABUS**

**COURSE NUMBER – COURSE NAME  
ENGS 102 – PROGRAMMING FOR ENGINEERS**

**Created by: Cullen Haskins**

**Updated by:**

**Canino School of Engineering Technology !**

**Department: ENGINEERING SCIENCE !**

**Semester/Year: FALL 2018 !**

A. **TITLE:** PROGRAMMING FOR ENGINEERS

B. **COURSE NUMBER:** ENGS 102

C. **CREDIT HOURS:** (Hours of Lecture, Laboratory, Recitation, Tutorial, Activity)

# Credit Hours: 2 !

# Lecture Hours: per week !

# Lab Hours: per week !

Other: (2) two-hour recitation per week per week

Course Length: 15 Weeks

D. **WRITING INTENSIVE COURSE:** Yes  No

E. **GER CATEGORY:** None:  Yes: GER !  
*If course satisfies more than one: GER !*

F. **SEMESTER(S) OFFERED:** Fall  Spring  Fall & Spring

G. **COURSE DESCRIPTION:**

This course provides the software skills necessary to create predictive models and solve basic engineering problems. Students will learn to make statistical inferences about the data while creating graphical presentation of the results using engineering related software. The skills taught in this course will assist in the analysis of engineering problems in more advanced course work.

H. **PRE-REQUISITES:** None  Yes  If yes, list below:

**CO-REQUISITES:** None  Yes  If yes, list below:

**I. STUDENT LEARNING OUTCOMES: (see key below)**

By the end of this course, the student will be able to:

<u>Course Student Learning Outcome</u> <i>[SLO]</i>	<u>Program Student Learning Outcome</u> <i>[PSLO]</i>	<u>GER</u> <i>[If Applicable]</i>	<u>ISLO &amp; SUBSETS</u>	
a. Develop simple predictive models using equation solving software	PENDING ABET OUTCOME UPDATE		2-Crit Think 5-Ind, Prof, Disc, Know Skills ISLO	PS None Subsets Subsets
b. Illustrate data through 2D and 3D plots			1-Comm Skills 5-Ind, Prof, Disc, Know Skills ISLO	W None Subsets Subsets
c. Demonstrate the use of control structures in programming			2-Crit Think 5-Ind, Prof, Disc, Know Skills ISLO	PS None Subsets Subsets
d. Recognize the correct use of string vs. numerical data			2-Crit Think ISLO ISLO	CA Subsets Subsets Subsets
e. Apply programming to engineering problems			2-Crit Think 5-Ind, Prof, Disc, Know Skills ISLO	PS None Subsets Subsets

<b>KEY</b>	<b><u>Institutional Student Learning Outcomes [ISLO 1 – 5]</u></b>
<b>ISLO #</b>	<b>ISLO &amp; Subsets</b>
<b>1</b>	<b>Communication Skills</b> Oral [O], Written [W]
<b>2</b>	<b>Critical Thinking</b> <i>Critical Analysis [CA], Inquiry &amp; Analysis [IA], Problem Solving [PS]</i>
<b>3</b>	<b>Foundational Skills</b> <i>Information Management [IM], Quantitative Lit./Reasoning [QTR]</i>
<b>4</b>	<b>Social Responsibility</b> <i>Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]</i>
<b>5</b>	<b>Industry, Professional, Discipline Specific Knowledge and Skills</b>

\*Include program objectives if applicable. Please consult with Program Coordinator !

J. **APPLIED LEARNING COMPONENT:** Yes  No

If YES, select one or more of the following categories:

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Classroom/Lab | <input type="checkbox"/> Civic Engagement              |
| <input type="checkbox"/> Internship               | <input type="checkbox"/> Creative Works/Senior Project |
| <input type="checkbox"/> Clinical Placement       | <input type="checkbox"/> Research                      |
| <input type="checkbox"/> Practicum                | <input type="checkbox"/> Entrepreneurship              |
| <input type="checkbox"/> Service Learning         | (program, class, project)                              |
| <input type="checkbox"/> Community Service        |  |

K. **TEXTS:**

Recommended: MATLAB for Engineers (5<sup>th</sup> Edition), Holly Moore, ISBN-13: 978-034589640

L. **REFERENCES:**

None

M. **EQUIPMENT:** None  Needed:

N. **GRADING METHOD:** A-F

O. **SUGGESTED MEASUREMENT CRITERIA/METHODS:**

Exams, Quizzes, and Homework

P. **DETAILED COURSE OUTLINE:**

**I. Introduction**

- a. Use of the Matlab command screen and mathematical operators
- b. Management of variables and syntax
- c. Annotation requirements for program code

**II. Plotting in Matlab**

- a. Generating plots and subplots of various engineering problems
- b. Generating three-dimensional plots

**III. Syntax commands in Matlab**

- a. While loops
- b. If / Elseif, and Else statements
- c. For loops

**IV. Data input/ output**

- a. Strings
- b. Scalar
- c. Vector
- d. Keyboard
- e. File reading and generation

**V. Numerical methods**

**VI. Advanced graphics**

Q. LABORATORY OUTLINE: None  Yes