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# ESC180F – INTRODUCTION TO COMPUTER PROGRAMMING

Fall 2019

## COURSE INSTRUCTORS



**Saima Ali | LEC0101**

M 11:00-12:00 MP103

TH 13:00-15:00 LM162

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## HEAD TEACHING ASSISTANTS

**Christopher Lucasius**

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Contact for: Lab remark requests

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Contact for: Midterm remark requests

## COURSE OVERVIEW

This course will serve as an introduction to computer programming in Python. It will cover the fundamentals of programming followed by an in-depth treatment of core programming topics. The goal of this course is to enable students to utilize principles guided by engineering to: decompose a computer programming problem into its functional parts, generate multiple feasible programming solutions to the problem, and comparatively evaluate these solutions with quantifiable metrics.

## TEXTBOOKS

- **Practical Programming**, 3rd Edition by Gries, Campbell, & Montojo
- **How to Think Like a Computer Scientist: Learning with Python**, 3rd edition, by Elkner, Downey, and Meyers

## RESOURCES

- **Discourse:** Online course discussion platform <http://discourse.engsci.utoronto.ca>
- **Software:** Python 3.7.4
  - 64-bit Windows: <https://www.python.org/ftp/python/3.7.4/python-3.7.4-amd64.exe>
  - 64-bit Mac OS X: <https://www.python.org/ftp/python/3.7.4/python-3.7.4-macosx10.9.pkg>
  - Wing 101 IDE (optional): <https://wingware.com/downloads/wing-101>
- **PyDocs:** Python 3.7.4 documentation <https://docs.python.org/3/>
- **Accessibility:** If you require accommodation due to a disability, please register with Accessibility Services by **October 11** <https://www.studentlife.utoronto.ca/as/new-registration>

## CLASSROOM ENVIRONMENT

Our aim is to facilitate an inclusive learning environment. This includes ensuring the classroom is scent-free. Please refrain from using scented personal hygiene products when attending class. You may read about the Faculty's values of diversity, equity, and inclusion at <https://www.engineering.utoronto.ca/about/equity-diversity-and-inclusion/>.

## LABS

Labs are not mandatory **except** for the week of Sept 9 (Lab 0). You may attend labs to work on your assignments and teaching assistants will be present to answer your questions. You may **only** attend your assigned lab session indicated on ACORN. The lab schedule can be found in the course outline section of this document. Submission instructions for the assignments will be covered in Lab 0 (week 1).

PRA0101	PRA0102	PRA0103
T 09:00-12:00 SF1012	T 15:00-18:00 SF1013	F 09:00-12:00 SF1012

## ASSESSMENTS

Assessment	Weight
Assignments	20%
Midterms (2, each 15%)	30%
Final Exam	50%

**Midterm 1:** October 3 09:00-10:00  
(Location: TBD)

**Midterm 2:** November 14th 09:00-10:00  
(Location: TBD)

**Final Exam:** Location and time TBD

## ACADEMIC INTEGRITY

Honesty and fairness are considered fundamental values shared by students, staff, and faculty at the University of Toronto. As an ESC180 student, you are responsible for ensuring the integrity of your work and for understanding what constitutes an academic offence. All submitted assessments must be your own work. If you are unsure whether what you are doing is considered an academic offence, ask an instructor or TA, or review the Code of Behaviour on Academic Matters ([www.governingcouncil.utoronto.ca/policies/behaveac.htm](http://www.governingcouncil.utoronto.ca/policies/behaveac.htm)).

To avoid any possibilities of academic infringement, do not reference code from your peers or online; and conversely, do not post your code on online forums or share your assignment solutions with your peers.

## REMARK POLICY

To request a remark for the midterm exam, send an email to the indicated teaching assistant with the subject heading "ESC180 Midterm Exam Remark Request". For all assignment remark requests, contact the indicated teaching assistant with the subject heading "ESC180 Assignment Remark Request". The remark request will only be considered if a full and specific explanation of the nature of the remark request is given in written in the email. Be aware that if an assessment is remarked, the final grade can increase, decrease, or experience no change.

## COURSE OUTLINE

Week	Lec #	Topic	Suggested reading	Lab
<b>1</b> 05/09/19- 06/09/19	1	Course introduction Values and expressions	Sections 2.2, 2.3, 2.4 2.6	
<b>2</b> 09/09/19 - 13/09/19	2	Variables and memory Types of errors	Sections 3.2, 4.1, 4.2; 2.5, 7.3	Lab 0 Introduction Due: End of lab <b>Mandatory lab attendance</b>
	3	Functions	Sections 3.1-3.10	
<b>3</b> 16/09/19 - 20/09/19	4	Conditionals and Booleans	Sections 5.1	
	5	If Statements	Sections 5.2, 3.8	
<b>4</b> 23/09/19 – 27/09/19	6	Lists	Sections 8.1-8.3	Lab 1 Logic Essentials Due: Sept 29 23:59
	7	Nested lists Strings	4.4,4.5	
<b>5</b> 30/09/19 – 04/10/19	8	Midterm Review		
	9	<b>Midterm 1 - No Lecture</b>		
<b>6</b> 07/10/19 – 11/10/19	10	List Methods String Methods	Sections 8.4, 8.5	Lab 2 Vector Operations Due: Oct 13 23:59
	11	Loops	Sections 9.3-9.7	
<b>7</b> 15/10/19 – 18/10/19		<b>Thanksgiving Holiday – No Lecture</b>	<i>How to Think like a Computer Scientist (Recursion)</i>	
	12	Recursion Introduction to Files	Sections 6.1, 10.1, 10.2	
<b>8</b> 21/10/19 – 25/10/19	13	Files (continued)	Sections 6.1, 10.1, 10.2	Lab 3 Computer Vision & Image Processing Due: Nov 3 23:59
	14	Advanced data types (containers)	Sections 11.1-11.5	
<b>9</b> 28/10/19 – 01/11/19	15	Dictionaries	Section 11.5	Lab 4 AI for Written Text Generation Due: Nov 10 23:59
	16	Introduction to Sorting	<i>How to Think like a Computer Scientist (Sorting)</i>	
<b>10</b> 04/11/19 – 08/11/19	-	Sorting (continued)		
	-	Engineering applications of programming	(Class notes)	
<b>11</b> 11/11/19 – 15/11/19	17	Midterm Review		
	18	<b>Midterm 2 - No Lecture</b>		
<b>12</b> 18/11/19 – 22/11/19	19	Object Oriented Programming (OOP)	<i>Sections 14.1, 14.2</i>	
	20	Classes	<i>Sections 14.3, 14.4</i>	
<b>13</b> 25/11/19 – 29/11/19	21	Introduction to Data Structures	<i>How to Think like a Computer Scientist (Trees)</i>	Lab 5 Battlebots and Data Structures Due: Dec 1 23:59
	22	Trees		
<b>14</b> 02/12/19 – 04/12/19	23	Introduction to Graphs	<i>How to Think like a Computer Scientist (Graphs)</i>	