

## Syllabus

Course Information	
<b>Course:</b>	CS100
<b>Format:</b>	Asynchronous Online-Only
<b>Section:</b>	B01-43072
<b>Semester:</b>	Summer 2021
<b>Date/Time:</b>	Asynchronous
<b>Location:</b>	Blackboard and Piazza

Instructor	
<b>Name:</b>	Shahnaz Kamberi
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<b>Phone:</b>	(703) 993 1530
<b>Office:</b>	ENGR 2706
<b>Office Hours:</b>	Tuesdays and Wednesdays 1:00 PM – 2:00 PM or by Appointment in <a href="#">Skype</a>

### Course Description

This course is intended to help students learn to think in the manner necessary to fully grasp the nature and power of the digital world around us. The early era of the Internet and the personal computer led to the need for "computer literacy." Now the changing nature of our global society requires that students learn new ways to think about problems and how to solve them, regardless of students' specific fields of endeavor. Through this course, students will explore major issues related to the "big ideas" of computational thinking (namely, Creativity, Abstraction, Data, Algorithms, Programming, Internet, and Societal Impact), as well as how these issues will impact their future lives. (3 credits).

### Student Learning Outcomes (LO)

Upon completing the course, the student will be able to:

1. Students will be able to use technology to locate, access, evaluate, and use information, and appropriately cite resources from digital/electronic media.
2. Students will understand the core IT concepts in a range of current and emerging technologies and learn to apply appropriate technologies to a range of tasks.
3. Students will understand many of the key ethical, legal, and social issues related to information technology and how to interpret and comply with ethical principles, laws, regulations, and institutional policies.
4. Students will understand the essential issues related to information security, how to take precautions and use techniques and tools to defend against computer crimes.
5. Students will recognize the significance of the "big ideas" of computational thinking.

### Topics

- Representation of ideas with bits
- Basic Boolean logic
- Devices to implement logic functions
- Programming languages for data and action
- Primitive operations and abstraction
- Algorithms for work and play
- Communication between machines
- Computing security concepts
- Basic data analysis
- Impact of automation and communication on human societies
- Human and machine intelligence

**Course Prerequisites/Co-requisites** None

**Technical Competencies**

Basic Blackboard knowledge is assumed.

**Textbooks for the class (Both Free)**

- **Required:** W. Daniel Hillis, *The Pattern on the Stone: The Simple Ideas that Make Computers Work*; (available free online from the GMU University Libraries [https://wrlc-gm.primo.exlibrisgroup.com/permalink/01WRLC\\_GML/refoc6/alma9946908707104105](https://wrlc-gm.primo.exlibrisgroup.com/permalink/01WRLC_GML/refoc6/alma9946908707104105))  
*Note:* You have to login to GMU CAS to access the book when you are off-campus.
- **Required:** Wentworth, Elkner, Allen, and Meyers, *How to Think Like a Computer Scientist: Learning with Python 3*; (available free online at <http://openbookproject.net/thinkcs/python/english3e/>)

**Required Materials/Software/Hardware**

Students will need access to:

**For Class --**

- Computer on which they can access Internet sites and install programs
- Internet Connection
- Skype
- Blackboard
- Piazza – for announcements, discussions, TA contact information

**For Assignments --**

- Microsoft Word
- Python <https://www.python.org/>
- Geany <https://www.geany.org/>
- For Hosting Website on mason.gmu.edu/~NetID  
<https://its.gmu.edu/knowledge-base/how-to-set-up-a-personal-site/>  
<https://its.gmu.edu/knowledge-base/how-to-upload-files-with-filezilla/>  
 VPN <https://its.gmu.edu/service/virtual-private-network-vpn/>

\*There are computer labs on campus which provide this capability (limited)

**Course Grading, Examinations, & Grades Composition**

Your final grade is based on the following scale:

A+	(>= 98.0%)	A	(>= 92.0%)	A-	(>= 90.0%)
B+	(>= 88.0%)	B	(>= 82.0%)	B-	(>= 80.0%)
C+	(>= 78.0%)	C	(>= 72.0%)	C-	(>= 70.0%)
D	(>= 60.0%)				
F	(< 60.0%)				

Grading Scheme		
Assignments	Points	Weight
Participation	Lessons Learned Journal Entries in Blackboard (7 total) 100 Points	10%
Homework	7 Homework Assignments Total 50 Points Each or 350 Points Total	35%
Mini exams	3 Mini-Exams Total 100 Points Each or 300 Points Total	30%
Final Exam	250 Points	25%
	<b>Total Points: 1000 Points</b>	<b>Total: 100%</b>

- Your Homework is due electronically (via Blackboard) on the date as assigned by your instructor. You may resubmit as many times as you like up until the deadline. But only the most recent upload is graded.
- For grade disputes please contact the grader (the TA in most cases) first. You must initiate a dispute within a week of receiving your grade for the dispute to be considered.
- Late work is penalized **-10% per day late, up to a maximum of 2 days**. Thus, an assignment submitted 1 day late which would have scored an 87% would instead receive a 78.3%. An assignment submitted 2 days late which would have scored an 87% would instead receive a 69.6%.
- An assignment which is more than 2 days late **will not** be accepted.
- A missed exam will result in a zero.
- Please contact the instructor as soon as possible (**prior** to deadline) if there are extenuating circumstances which affect your ability to complete an assignment or exam.

### **Email Communication/Zoom/Class Recordings/Class Materials Policies**

Students must use their MasonLive email account to receive important University information, including communications related to this class. I will not respond to messages sent from or send messages to a non-Mason email address. I expect all email to be written in a professional manner, please indicate your name and what course you are referring to in your email.

Please give 48 hours (usually 24 hours) for faculty to respond to email on weekdays. Emails sent on the weekend will be responded to on the following Monday.

The use of computers is required in this class.

Activities and assignments in this course will regularly use the Blackboard learning system, available at <https://mymason.gmu.edu>. Students are required to have regular, reliable access to a computer with an updated operating system (recommended: Windows 10 or Mac OSX 10.13 or higher) and a stable broadband Internet connection (cable modem, DSL, satellite broadband, etc., with a consistent 1.5 Mbps [megabits per second] download speed or higher).

In addition to the requirements above, students are required to have a device with a functional camera and microphone.

All course materials posted to Blackboard or other course sites are private to this class; by federal law, any materials that identify specific students (via their name, voice, or image) must not be shared with anyone not enrolled in this class.

- Video recordings — whether made by instructors or students — of class meetings that include audio, visual, or textual information from other students are private and must not be shared outside the class.
- Live video conference meetings (e.g. Collaborate or Zoom) that include audio, textual, or visual information from other students must be viewed privately and not shared with others in your household or recorded and shared outside the class.

Recordings will be stored on Blackboard and will only be accessible to students taking this course during this semester.

Sharing of instructor-created materials, particularly materials relevant to assignments or exams, to public online “study” sites is considered a violation of Mason’s Honor Code. For more information, see the Office of Academic Integrity’s [summary of information about online study sites](#).

## University Policies

Beginning Fall 2018, there is a limit of two graded attempts for this course. A W does not count as a graded attempt. Please see the University Catalog and consult with your academic advisor if you have any questions.

**Honor Code:** The [University Honor Code](#) is upheld and supported by the [Office for Academic Integrity](#). Mason is an Honor Code university; please see the Office for Academic Integrity for a full description of the code and the honor committee process. The principle of academic integrity is taken very seriously and violations are treated gravely. What does academic integrity mean in this course? Essentially this: when you are responsible for a task, you will perform that task. When you rely on someone else's work in an aspect of the performance of that task, you will give full credit in the proper, accepted form. Another aspect of academic integrity is the free play of ideas. Vigorous discussion and debate are encouraged in this course, with the firm expectation that all aspects of the class will be conducted with civility and respect for differing ideas, perspectives, and traditions. When in doubt (of any kind) please ask for guidance and clarification. Here is a training module on the Honor Code if you're interested: [student integrity training module](#).

**Gender Identity and Pronoun use:** If you wish, please share your name and gender pronouns with me and how best to address you in class and via email. I use she/her for myself and you may address me as Dr. Kamberi/Dr. K. or Professor Kamberi/Professor K. in email and verbally. You can update your chosen name and pronouns here: [change name and pronouns on Mason records](#).

**Disability Services at George Mason University** is committed to providing equitable access to learning opportunities for all students by upholding the laws that ensure equal treatment of people with disabilities. If you are seeking accommodations for this class, please first visit <http://ds.gmu.edu/> for detailed information about the Disability Services registration process. Then please discuss your approved accommodations with me. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email:ods@gmu.edu | Phone: (703) 993-2474.

**George Mason University**, an intentionally [inclusive community](#), promotes and maintains an equitable and just work and learning environment. We welcome and value individuals and their differences including race, economic status, gender expression and identity, sex, sexual orientation, ethnicity, national origin, first language, religion, age, and disability. As a member of the George Mason University community, the Computer Science department plays an integral role in building an educational environment that is committed to anti-racism and inclusive excellence. For more information on how to continuously cultivate the practice of anti-racism, see this guide from the National Museum of African American History and Culture on how to be anti-racist: <https://nmaahc.si.edu/learn/talking-about-race/topics/being-antiracist>.

**Title IX:** As a faculty member and designated "Responsible Employee," I am required to report all disclosures of sexual assault, interpersonal violence, and stalking to Mason's [Title IX Coordinator](#) per [university policy 1412](#). If you wish to speak with someone confidentially, please contact the [Student Support and Advocacy Center](#) (703-380-1434) or [Counseling and Psychological Services](#) (703-993-2380). You may also seek assistance from [Mason's Title IX Coordinator](#) (703-993-8730; [titleix@gmu.edu](mailto:titleix@gmu.edu)).

**Student Support Resources on Campus:** <https://stearnscenter.gmu.edu/knowledge-center/knowing-mason-students/student-support-resources-on-campus/>.

**Incomplete Grades:** <https://chssundergrad.gmu.edu/other-forms/incompletes>.

### Dr. Kamberi's Classroom Expectations

- The expectations of this course are for you to put in at least 5+ hours of work/week outside of class, to complete this course successfully.
- You are expected to treat the faculty and each other respectfully. I will treat you with respect and fairness.
- Due to this course being asynchronous, you are expected manage your time carefully to make sure you are up to date on materials that you must watch and review prior to an assignment or exam deadline.
- Submitting assignments on time is expected of all students.
- All assignments must be submitted using Blackboard. \*Emailed assignments will not be graded [\*unless Blackboard is down and is not working; and the assignment is due that day/time, in which case you must email the assignment to timestamp it as on time].
- Students must verify that the correct assignment has been submitted by the due date. Blank copies and incorrect file format assignments turned in will automatically receive a zero grade. Please double check your submission after submitting.
- No make-up for tests and/or late submission of assignments accepted (beyond the 2-day window with point deduction), except for documented mitigating circumstances. Example of a mitigating circumstance is death in immediate family, or student's illness as verified by a physician.
- I will let you know what my assignment expectations are prior to work being assigned, and you are expected to turn in assignments on the due date as specified by me.
- I, in turn, will make sure to grade your assignment and give you feedback within 7 days of the due date.
- Your grade is NOT based on how hard you work but based on how you have mastered the material.

### In addition, please remember these 7 principles:

"(1) Knowledge is a privilege that is earned through hard work, challenge, and discomfort. (2) Learning isn't about satisfying requirements; it's about living a satisfying life. (3) When you are struggling, it's your responsibility to ask for help. (4) Failure is the bedrock of learning, embrace your failures as opportunities. (5) No one has the same learning or test-taking style. Teachers develop policies that apply to everyone. (6) There are penalties for breaking the rules just as there are in the world outside of school. (7) Teachers can only facilitate learning; education is something we accomplish for ourselves throughout a lifetime."

- <http://www.rootsofaction.com/avoiding-academic-entitlement-helpingyouth-develop-realistic-expectations-for-college/>

**Schedule**

*Please note: The instructor reserves the right to adjust (change) the schedule at any time.*

Week	Class Meetings	Topics Covered	Reading	Assignments
1	June 1 - June 8	Brief History of Computers/Introduction Overview and Algorithms Computability Alan Turing Turing Machine (LO 1, LO 2, LO 5) Transistors Circuits Moore's Law Digital Information (Bits) Bit Encoding Boolean Logic/Circuits Clock Speeds (LO 2, LO 5)	Pattern Chap. 4 Pattern Chap. 1 Pattern Chap. 2	<b>HW 1</b> <b>Due by Tuesday 6/8</b>  <i>Lesson's Learned Journal Entry 1</i>
2	June 8 – June 15	Transistors Circuits Moore's Law Digital Information (Bits) Bit Encoding Boolean Logic/Circuits Clock Speeds (LO 2, LO 5) Modern Computers Memory, Disk, IO, CPU Multi-Tasking Parallel Programming (LO 2, LO 5)	Pattern Chap. 6 Pattern Chap. 7 Pattern Chap. 8	<b>HW 2</b> <b>Due by Tuesday 6/15</b>  <i>Lesson's Learned Journal Entry 2</i>
3	June 15 – June 22	Mini-Exam 1 Review  Programming with ENIAC Binary Codes Low Level Languages High Level Languages Python Drawing Drawing with Conditionals Iterations While Loop/Python Lists Functions Big O (LO 2, LO 5)	Pattern Chap. 3  Learning with Python Chap. 1-2  Learning with Python Chap. 3-4	<b>Mini-Exam 1</b> <b>Due by Tuesday 6/22</b>  <b>HW 3</b> <b>Due by Tuesday 6/22</b>  <i>Lesson's Learned Journal Entry 3</i>
4	June 22 – June 29	Programming with ENIAC Binary Codes Low Level Languages High Level Languages Python Drawing Drawing with Conditionals Iterations While Loop/Python Lists Functions Big O (LO 2, LO 5)	Learning with Python Chap. 5-6  Learning with Python Chap. 7, Chap. 11 and Chap. 20	<b>HW 4</b> <b>Due by Tuesday 6/29</b>  <i>Lesson's Learned Journal Entry 4</i>

5	June 29 – July 6	Computer/Intellectual Privacy Impact of Automation Computer Ethics (LO 2, LO 3, LO 5) Linear Search Index Search Algorithm Vs. Heuristics SEO Google Searches/Researching for technical writing/Data Analysis (LO 1, LO 2, LO 3, LO 5) Computer Networks Encryption Cyber Security (LO 4, LO 5)	Pattern Chap. 5	<b>HW 5 Due by Tuesday 7/6</b>  <i>Lesson's Learned Journal Entry 5</i>
6	July 6 – July 13	Mini-Exam 2 Review  Internet Routing Communication Layers SFTP Web Servers Introduction to HTML (LO 1, LO 2, LO 4, LO 5)		<b>Mini-Exam 2 Due by Tuesday 7/13</b>  <b>HW 6 Due by Tuesday 7/13</b>  <i>Lesson's Learned Journal Entry 6</i>
7	July 13 – July 20	Internet Routing Communication Layers SFTP Web Servers Introduction to HTML (LO 1, LO 2, LO 4, LO 5) AI Machine Learning Neural Networks (LO 2, LO 3, LO 5)  Mini-Exam 3 Review Final Exam Review	Pattern Chap. 9	<b>HW 7 Due by Tuesday 7/20</b>  <b>Mini-Exam 3 Due by Tuesday 7/20</b>  <i>Lesson's Learned Journal Entry 7</i>
8	Final Exams Week July 22 - July 24			<b>Final Exam Due by 7/24</b>

**Other Important Dates:**

Last Day to Drop with 100% Refund: Thursday 6/3  
 Last Day of Classes before Finals: Wednesday 7/21  
 Check [here](#) for more important dates.