University of Illinois at Chicago;
CS100 - Introduction to Computer Science and Programming; 3 Credit Hours
Spring Semester 2019

Note: This document has been developed by Mohammad Taha Khan and is derived from the contents of MIT OCW course 6.00 Introduction to Computer Science and Programming.

Instructor: Mohammad Taha Khan
Office Location: SEO 1300
Office phone: (631) 790-9553
E-mail address: taha@cs.uic.edu
Class Timings: Tuesday/Thursday 2 - 3:15 pm.
Recitation Timings: Friday 12 - 4 pm. (4 separate sections, 1 hour each)
Class Location: SES 250
Recitation Location: TBH 150
Office Hours: Wednesday 12 - 2pm, and by appointment

Teaching Assistants

<table>
<thead>
<tr>
<th></th>
<th>John Kristoff</th>
<th>Sara Amini</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email</td>
<td><a href="mailto:jkrist3@uic.edu">jkrist3@uic.edu</a></td>
<td><a href="mailto:samini2@uic.edu">samini2@uic.edu</a></td>
</tr>
<tr>
<td>Office Location</td>
<td>SEO 1232</td>
<td>SEO 118</td>
</tr>
<tr>
<td>Office Hours</td>
<td>Monday 9 -11am, Thursday 4 - 5pm</td>
<td>Tuesday 11am – 2pm</td>
</tr>
<tr>
<td>Recitation</td>
<td>Friday 12 -12:50pm &amp; 1 – 1:50pm</td>
<td>Friday 12 -12:50pm &amp; 1 – 1:50pm</td>
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</table>

Note: The teaching assistants are primarily a resource for guidance with the course content. The Instructor is responsible for any final judgements on grading for exams and assessments.

Course Description
This is an introductory course aimed at students with little or no prior programming background. The course aims to provide students with an understanding of how computers can be used to solve problems. In addition, students will also learn how to write small programs that allow them to accomplish specific goals. The language of instruction for this course is Python. The course is primarily targeted towards freshmen and sophomores, however non-CS majors are also welcome to enroll to strengthen their programming and computational skills.

Learning Objectives

- Gain the understanding to map computational problems into efficient computer programs.
- Learn the underlying fundamentals of program execution and concepts of program complexity
- Acquire the ability to write small programs in Python.
- Develop essential programming related skills such as debugging linting etc

Required Text
Course Websites
- cs100.cs.uic.edu (For class details, content and announcements)
- piazza.com/class/jpvnwrkg6o6i9 (Forum for class and assignment discussions)
- www.gradescope.com (For assignment submission and reviewing grades)

Note: To login to Piazza and Gradescope, use your regular UIC email address. If you do not see CS 100 under the enrolled courses, kindly email the instructor.

Course Websites

Attendance Policy
Class attendance is not mandatory. However, there will be graded activities in class, that will require students to be present in class to score points.

Policy for Missed or Late Work
Students may submit their homework with a 10% penalty for up to 24 hours after the deadline. No submissions will be accepted after 24 hours. In case of a medical emergency, students will be required to provide an official notice and the new due date will be decided by the instructor.

Electronic Communication
The best way to reach out for any logistical concerns is via e-mail and I will respond within 48 hours. For all course content related questions and discussions, please use Piazza. All questions will be responded within 24 hours but the instructor or the TAs.

Academic Integrity Policy
As an academic community, UIC is committed to providing an environment in which research, learning, and scholarship can flourish and in which all endeavors are guided by academic and professional integrity. All members of the campus community—students, staff, faculty, and administrators—share the responsibility of insuring that these standards are upheld so that such an environment exists. Instances of academic misconduct by students will be handled pursuant to the Student Disciplinary Policy: http://dos.uic.edu/docs/Student%20Disciplinary%20Policy.pdf

Religious Holidays
Students who wish to observe their religious holidays shall notify the faculty member by the tenth day of the semester of the date when they will be absent unless the religious holiday is observed on or before the tenth day of the semester. In such cases, the student shall notify the faculty member at least five days in advance of the date when he/she will be absent. The faculty member shall make every reasonable effort to honor the request, not penalize the student for missing the class, and if an examination or project is due during the absence, give the student an exam or assignment equivalent to the one completed by those students in attendance. If the student feels aggrieved, he/she may request remedy through the campus grievance procedure.
http://oae.uic.edu/docs/ReligiousHolidaysFY20152017.pdf

Academic Deadlines
All course related deadlines are mentioned in the course deadlines sections. For all university academic deadlines, please refer to the following link: http://grad.uic.edu/cms/?pid=1000222

Disability Accommodations
The University of Illinois at Chicago is committed to maintaining a barrier-free environment so that students with disabilities can fully access programs, courses, services, and activities at UIC. Students with disabilities who require accommodations for access to and/or participation in this course are welcome, but must be registered with the Disability Resource Center (DRC). You may contact DRC at 312-413-2183 (v) or 773-649-4535 (VP/Relay) and consult the following: http://drc.uic.edu/guide-to-accommodations.

The Use of Electronic Devices
The use of electronic devices for any social media and electronic communication is prohibited in class. If students need to communicate with anyone not in the class, they can briefly step outside.

Evaluation Criteria
Students will be evaluated on the following course components

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework assignments</td>
<td>40%</td>
</tr>
<tr>
<td>In class activities</td>
<td>10%</td>
</tr>
<tr>
<td>Exams 1 and 2</td>
<td>10% each</td>
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<tr>
<td>Final exam (cumulative)</td>
<td>30%</td>
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</table>

**Homework assignments:** Each week students will be given a programming homework assignment. The assignment will require 4-5 hours to complete. Students are encouraged to make use of office hours, Piazza, and recitations for questions related to the homework.

**In class activities:** To make the class a collaborative learning experience, there will be in class activities which include clicker quizzes and small group-based discussions.

**Exams 1 and 2:** The course is divided into 3 main components. Exam 1 and 2, will each focus on an individual component 1 and 2, respectively.

**Final Exam:** The final exam will be cumulative and will cover on the all 3 course components, with a approximately 50% focus on the third component. For a schedule of exams and exam policies see: http://www.uic.edu/depts/oar/current_students/calendars/final_exam_schedule.html

Grading Criteria
The course will be graded on a fixed graded scheme mentioned below.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>90 -100</td>
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<tr>
<td>B</td>
<td>78 – 90</td>
</tr>
<tr>
<td>C</td>
<td>65 - 78</td>
</tr>
<tr>
<td>D</td>
<td>50 – 65</td>
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<tr>
<td>F</td>
<td>&lt; 50</td>
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</table>

Grievance Procedures
UIC is committed to the most fundamental principles of academic freedom, equality of opportunity, and human dignity involving students and employees. Freedom from discrimination is a foundation for all decision making at UIC. Students are encouraged to study the University's “Nondiscrimination Statement”. Students are also urged to read the document “Public Formal Grievance Procedures”. Information on these policies and procedures is available on the University web pages of the Office of Access and Equity: http://oae.uic.edu/.

### Course Calendar Events and Deadlines

<table>
<thead>
<tr>
<th>Week #</th>
<th>Topics/Activity During Class</th>
<th>Deadlines</th>
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</table>
| Week 1 | **Tuesday (Lecture 1):**  
- Course introduction  
- Basic definitions and syntax  
*Activities: Drawing activity and a short quiz*  | N/A |
|       | **Thursday (Lecture 2):**  
- Introduction to expression opera  
- Fundamentals of branching  
*Activities: Programming activity and a short quiz*  | |
| Week 2 | **Tuesday (Lecture 3):**  
- Loops in Python  
- Code complexity and big O notations  
*Activities: Programming activity and a short quiz*  | Homework 1 due on Tuesday, before lecture 3 |
|       | **Thursday (Lecture 4):**  
- Machine Interpretation of a programs  
- Python functions  
*Activities: Programming activity and a short quiz*  | |
| Week 3 | **Tuesday (Lecture 5):**  
- Lists and comprehensions  
- Basic data structures, sets, tuples lists  
*Activities: Programming activity and a short quiz*  | Homework 2 due on Tuesday, before lecture 5 |
|       | **Thursday (Lecture 6):**  
- Introduction to recursion  
- Python functions  
*Activities: Programming activity*  | |
| Week 4 | **Tuesday (Lecture 7):**  
- Course introduction  
- Basic definitions and syntax  
*Activities: Drawing activity and a short quiz*  | Homework 3 due on Tuesday, before lecture 7 |
|       | **Thursday (Lecture 8):**  
- Revisiting algorithmic complexity  
- Code efficiency and order of growth  
*Activities: Programming activity*  | |
| Week 5 | **Tuesday (Lecture 9):**  
- Course introduction  
- Basic definitions and syntax  
*Activities: Drawing activity and a short quiz*  | Homework 4 due on Tuesday, before lecture 9 |
<table>
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<tr>
<th>Week 6</th>
<th>Thursday (Lecture 10):</th>
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<td>Exam 1, covering topics from week 1 through week 5.</td>
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</table>

**Tuesday (Lecture 11):**
- Introduction to hashing based concepts
- Basics of classes

*Activities: A short quiz*

**Thursday (Lecture 12):**
- Object oriented programming
- Inheritance

*Activities: Drawing activity and a short quiz*

<table>
<thead>
<tr>
<th>Week 7</th>
<th>Tuesday (Lecture 13):</th>
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</table>
|        | Running simulations
- Randomization methods in python |

*Activities: Programming activity and a short quiz*

**Thursday (Lecture 14):**
- Basic computational probability
- Plotting in Python

*Activities: A short quiz*

**Homework 5 due on Tuesday, before lecture 13**

<table>
<thead>
<tr>
<th>Week 8</th>
<th>Tuesday (Lecture 15):</th>
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</table>
|        | Sampling from data
- Running Monte Carlo simulations |

*Activities: A short quiz*

**Thursday (Lecture 16):**
- Sampling from data
- Running Monte Carlo simulations

*Activities: A short quiz*

**Homework 6 due on Tuesday, before lecture 15**

<table>
<thead>
<tr>
<th>Week 9</th>
<th>Tuesday (Lecture 17):</th>
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</table>
|        | Measures of statistics in Python
- Plotting histograms |

*Activities: Programming activity and a short quiz*

**Thursday (Lecture 18):**
- Probability distributions and growth functions
- Curve fitting in Python

*Activities: A short quiz*

**Homework 7 due on Tuesday, before lecture 17**

<table>
<thead>
<tr>
<th>Week 10</th>
<th>Tuesday (Lecture 19):</th>
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</table>
|         | Algorithmic optimization
- Discussion of knapsack problem |

*Activities: Programming activity and a short quiz*

**Thursday (Lecture 20):**
- Exam 2, covering topics from week 6 through week 10.

**Homework 8 due on Tuesday, before lecture 19**

<table>
<thead>
<tr>
<th>Week 11</th>
<th>Tuesday (Lecture 21):</th>
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</table>
|         | Clustering mechanisms in Python
- Scaling and k-means clustering |

*Activities: A short quiz*

**N/A**
| Week 12   | **Thursday (Lecture 22):**  |  |  |
|----------|-----------------------------|  |  |
|          | • Introduction to graphs    |  |  |
|          | • Modeling problems with nodes and edges |  |  |
|          | **Activities:** No activity on this day |  |  |
|          | **Tuesday (Lecture 23):**   |  |  |
|          | • Continued discussion of graphs |  | Homework 9 due on Tuesday, before lecture 23 |
|          | • Graph traversal algorithms |  |  |
|          | • Memoization               |  |  |
|          | **Activities:** Programming activity and a short quiz |  |  |
| Week 13  | **Thursday (Lecture 24):**  |  |  |
|          | • Dynamic programming       |  |  |
|          | • Solving overlapping subproblems |  |  |
|          | **Activities:** A short quiz |  |  |
|          | **Tuesday (Lecture 25):**   |  | Homework 10 due on Tuesday, before lecture 25 |
|          | • More discussion in statistics |  |  |
|          | • Statistical fallacies     |  |  |
|          | **Activities:** Group discussion with peers |  |  |
|          | **Thursday (Lecture 26):**  |  |  |
|          | • Modeling real world problems |  |  |
|          | • Examples of queuing network |  |  |
|          | **Activities:** Group discussion with peers |  |  |
| Week 14  | **Tuesday (Lecture 27):**   |  | N/A |
|          | • Guest Lecture: Future and Applications of Computer Science |  |  |
|          | **Thursday (Lecture 28):**  |  |  |
|          | • Exam review               |  |  |
| Week 15  | **Final Exam** on all topics covered throughout the semester |  |  |

**Note:** All homework assignments should be submitted on Gradescope before the class on each respective Tuesday

**Regarding Readings:** Students are expected to read content before class. The readings for each class will be periodically updated on the course website. cs100.cs.uic.edu

**Regarding Recitations:** Recitations are complementary sessions that will be conducted by the TAs. While TA’s will be go over in depth over some problems related to the topics covered in the lectures for that specific week. Students should attend their respective recitation sections.

**Course Evaluations**
Student evaluations of teaching play a fundamental role in improving course content, format, and delivery (teaching) at UIC. The Office for Faculty Affairs offers all Colleges and Departments the opportunity to participate in an online course evaluation system.

Students receive an email invitation in their ‘uic.edu’ inbox with the following title in the subject line: “UIC
Student Evaluation of Teaching CS 100 by Mohammad Taha Khan, Spring 2019.”  The body of the email will reiterate the course name, instructor name, and semester. It will contain a link and a unique student password for the online evaluation for that course. Students will need an electronic device with Internet access to complete the evaluation online. **Submitted course evaluations cannot be removed from the system** so it is vital that students pay attention to the **instructor name** and **course name** when completing their evaluations. **Students must complete the online evaluations before 12 am on the first day of finals.** No exceptions are made if the evaluation is not submitted before 12 am on the first day of finals.

For more information about the program and timelines for when the system is open to students to complete the evaluations, please visit: [https://faculty.uic.edu/course-evaluations/](https://faculty.uic.edu/course-evaluations/)

**UIC Resources**

If you find yourself having difficulty with the course material or any other difficulties in your student life, don’t hesitate to ask for help! Come to me, or if it is about an issue beyond this class, please contact your college advisors, or get help from any number of other support services on campus. You can get a referral to the right place, or help on the spot, from concerned advisor in the Undergraduate Success Center (USC) at usc@uic.edu.

See also:

**The Writing Center**

This is located in Grant Hall 105, offers one-on-one consultation with student writers who need help developing ideas, or need advice, guidance or additional instruction on any aspects of writing in any class. Tutors are prepared to spend fifty minutes per appointment, and there is no limit to the number of tutoring sessions you can have each semester. Make an appointment and be on time! Bring the paper on which you're working, as well as any related drafts or notes, and information about the assignment. For an appointment, call the Writing Center at (312) 413-2206, or stop by room 105 of Grant Hall. Visit the Writing Center website at [www.uic.edu/depts/engl/writing](http://www.uic.edu/depts/engl/writing) for more information.

**The Science and Learning Center**

This is located in the Science and Engineering South Building (SES) 201B, is a meeting place for students in Biological Sciences, Chemistry, Earth and Environmental Sciences, and Physics. At the SLC, students can meet with graduate teaching assistants for tutoring in 100-level courses, arrange informal group study sessions with other students, or meet up with friends to attend one of the workshops, seminars, or other activities sponsored by the SLC during the semester. Visit the website at [http://www.uic.edu/depts/bios/facilities/science_learning_center.shtml](http://www.uic.edu/depts/bios/facilities/science_learning_center.shtml)

**The UIC Library**

The library is located both on east and west campus, provides access to resources, study rooms, and research support both online via chat and in person. At Daley Library on the east side of campus, stop by the reference desk in the IDEA Commons, or make an appointment for research help on either side of campus. Learn more about library policies at [http://library.uic.edu/](http://library.uic.edu/). To find research materials in specific subject areas view the Research Guides at [http://researchguides.uic.edu/](http://researchguides.uic.edu/).

**Public Computer Labs**

These labs are available throughout campus where you may write and/or print out your work. For a list of labs and the hours they’re open, go to [www.accc.uic.edu/pclabs](http://www.accc.uic.edu/pclabs). **NOTE:** Do not wait until the last minute to print out papers. Sometimes labs have long lines of students waiting for access.
The Academic Center for Excellence can help if you feel you need more individualized instruction in reading and/or writing, study skills, time management, etc. Phone: (312) 413-0031.

Counseling Services are available for all UIC students. You may seek free and confidential services from the Counseling Center www.counseling.uic.edu. The Counseling Center is located in the Student Services Building; you may contact them at (312) 996-3490. In addition to offering counseling services, the Counseling Center also operates the InTouch Crisis Hotline from 6:00 p.m.-10:30 p.m. They offer support and referrals to callers, as well as telephone crisis interventions; please call (312) 996-5535.

Campus Advocacy Network
Under the Title IX law you have the right to an education that is free from any form of gender-based violence and discrimination. Crimes of sexual assault, domestic violence, sexual harassment, and stalking are against the law and can be prevented. For more information or for confidential victim-services and advocacy contact UIC’s Campus Advocacy Network at 312-413-1025 or visit http://can.uic.edu/. To make a report to UIC’s Title IX office, contact Rebecca Gordon, EdD at CTitleIX@uic.edu or (312) 996-5657.

Campus Security
As a UIC student, you've chosen to live in one of the nation's largest cities. But, as at any university, crime is a reality. At UIC, we are strongly committed to our public safety programs, and we encourage students to be proactive in learning what programs and services are available in case of an emergency. You are DISCOURAGED from staying in university buildings alone, including lab rooms, after hours and are ENCOURAGED to use the POLICE/STUDENT patrol escort if you are uncomfortable traveling anywhere on campus. You may request an escort to accompany you to your campus destination on foot by calling 312-996-2830, and between 11:00 pm and 7:00 am you can dial the Red Car service (312-996-6800) if you are alone and need to leave the building. Through Red Car, the university has established a safe evening transportation service for university employees, students, visitors, and other authorized individuals. The car travels between university facilities within the following general boundaries: Clinton Street on the east; Western Avenue on the west; Jackson Boulevard on the north; and, 16th on the south. This service is available only to individuals possessing a valid UIC i-card. The i-card is required to ensure the safety of the driver and other passengers. Consult the following for more information: http://www.uic.edu/uic/studentlife/campus/safety.shtml

Also you can subscribe your cell phone to receive text message alerts. An immediate SMS text alert will be sent in case of a serious crime in progress, a weather emergency, or other urgent situation. (http://sms.accc.uic.edu). Finally, by dialing 5-5555 from a campus phone, you can summon Police or Fire for any on-campus emergency. You may also set up the complete number, 1-312-355-5555, on speed-dial on your cell phone. For more information contact: http://www.uic.edu/uic/studentlife/campus/emergency-information.shtml