CS 1140, Fall 2019
Intro to Programming Environments
For Secondary Education

General Information

Time and Place: MWF 12:00-12:50, ITTC 328

Class Website: http://www.cs.uni.edu/~schafer/1140/

Credit Hours: Three (3). This course meets the Course Credit Hour Expectation outlined in the Course Catalog. Students should expect to work approximately 2 hours per week outside of class for every course credit hour.

Instructor: Ben Schafer
Email: schafer@cs.uni.edu [Note, please use this address instead of my @uni.edu address]
Office: 316 ITTC, phone 273-2187
Office Hours:
  • MWF, 9:00-9:50 AM, 11:00-11:50 AM, 1:00-1:50 PM
    o No reservation is necessary, but if you would like priority you can reserve a time using:
      ▪ http://bit.ly/2oUoNbr
  • If those times don't work for you, PLEASE, send me an email and propose a specific alternative.

Course Information:

Course Description
Introduction to computer programming through a survey of programming environments used by teachers. Topics include structure of programming, study of several programming environments used by students at a variety of age/ability levels, and end-user programming for teachers.

Course Learning Outcomes
By the end of this semester students taking this course should be able to meet the following objectives:

Programming Oriented Outcomes. Students should be able to:
• trace a segment of code to determine the result produced or state achieved by given code
• modify a provided piece of code to accomplish a given task
• choose and sequence action statements to accomplish a given task
• develop and use selection statements (if-then, if-then-else, etc.) to control selection between actions
• develop and use iteration statements (for, while) to control repetition of actions
• explain the concepts of sequence, loops, parallelism, events, conditionals, operators, variables, and lists within the context of computer science.

Teaching Oriented Outcomes. Students should be able to:
• explain the concepts of sequence, loops, parallelism, events, conditionals, operators, variables, and lists within the context of a K-12 classroom.

Required Materials
No single textbook fits our needs. Instead, all required readings and other materials will be selected from legally available resources on the internet or from instructor produced materials. Everything you will need to complete this course is either directly contained within the class website (see above) or is available on the internet from other sources.
Course Grading

You will earn six grades/scores in this course. Each of these is a 5-0 score based on the idea that an A is worth 5 points, a B is worth 4 points, a C is worth 3 points, a D is worth 2 points, and an F is worth 0. Think of this as the standard 4 point GPA system with one point added to everything to allow for there to be two levels of F at the end of the semester.

These six grades will consist of:
- 3 Unit Activity Grades
  - Each unit is graded independently based on activity specifications and a grade table published later in this syllabus.
- 2 Competency Demos
  - These are sort of like "mid-term" exams.
- 1 Final Exam
  - Given during the university scheduled exam period on Monday, December 16
  - Failure to take the final exam results in an F for the semester

At the end of the semester you will have had the opportunity to earn up to 30 points (six numerical scores from 5-0). Your overall grade will be based on the sum of these scores and the following hard cutoffs. [By that I mean that a score of 24.99 is not automatically rounded to a B+ but is considered a B]

<table>
<thead>
<tr>
<th>Score Cutoff</th>
<th>Grade</th>
<th>Score Cutoff</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>28.5</td>
<td>A</td>
<td>17</td>
<td>C</td>
</tr>
<tr>
<td>27</td>
<td>A-</td>
<td>15</td>
<td>C-</td>
</tr>
<tr>
<td>25</td>
<td>B+</td>
<td>13</td>
<td>D+</td>
</tr>
<tr>
<td>23</td>
<td>B</td>
<td>11</td>
<td>D</td>
</tr>
<tr>
<td>21</td>
<td>B-</td>
<td>9</td>
<td>D-</td>
</tr>
<tr>
<td>19</td>
<td>C+</td>
<td>8.99 or lower</td>
<td>F</td>
</tr>
</tbody>
</table>

Course Structure

There are two things that may make this course very different from other courses you have taken.

First, the whole class is "flipped" from the "traditional" course structure. In many classrooms you come to class for a lecture on new material and then you go home to practice that material. In this class we will do the opposite. You will prepare for class by watching a series of online lecture videos before you come to class. You will then spend almost every in-class session working on code with a small group, a partner, or by yourself. In most cases this is much more efficient because you will need the most help when you are actually doing the programming. In this structure you are in my classroom (and I am available) when you most need the help. To be honest, I expect that the pre-recorded lectures will give you a good foundation, but most of the learning will take place during the in-class activities. I point this out because your attendance will be essential to learning enough about the units to be comfortable using the environments in your own classroom.

Second, most activities in this course can be attempted multiple times.
- In the case of the in-unit activities [programming assignments, peer reviews, and code reports], you may resubmit multiple times up to the unit deadline.
- In the case of competency demos, you have the option to attempt a second version of the demo. If you do not like the grade you earned on the original CD you will be provided one opportunity to attempt a second CD to improve your grade. If you do better on the retake I will replace your original grade with that from the retake. If you do worse on the retake I will average the two grades.

The final exam is the only activity that may not be attempted more than once.
Technology Requirements
Students in this course will rely heavily on the use of the computer. Fortunately, all of the preparation materials and some of the programming environments for this course are available from any computer with a web browser and internet access. Furthermore, all of the required assignments can be completed using software available in most CHAS computer labs or available for free download to a personally owned machine. If you do not own a computer than you can find appropriate machines (with all the correct software) in several different labs on campus. While many will work, I suggest either Wright 339 or ITTC 335.

Scholastic Conduct
You are responsible for being familiar with the University’s Academic Ethics Policies:

https://www.uni.edu/policies/301

Copying from other students is expressly forbidden. Doing so on exams or assignments will be penalized every time it is discovered. The penalty can vary from zero credit for the copied items (first offense) up to a failing grade for the course. If an assignment makes you realize you don't understand the material, ask a fellow student a question designed to improve your understanding, not one designed to get the assignment done. Your final submission for assignments should be individual, original work unless otherwise specified. Any substantive contribution to your solution by another person or taken from a publication should be properly acknowledged in writing. Failure to do so is plagiarism and will necessitate disciplinary action. In addition to the activities we can all agree are cheating (plagiarism, bringing notes to a closed book exam, etc), assisting or collaborating on cheating is cheating. Cheating can result in failing the course and/or more severe disciplinary actions. Remember: Discussing assignments is good. Copying code or answers is not.

Class Distractions
While you are welcome to own and use electronics such as cell phones, tablets, and laptops, the use of these, and other, electronic devices for non-classroom purposes in the classroom is forbidden without my explicit permission (This is a University-wide policy). A few exceptions do exist, and I reserve the right to approve these situations on a case-by-case basis with prior notification. Unless we have discussed it in advance, all electronic devices should be left out of sight during class time.

Accessibility
The University of Northern Iowa (UNI) complies with the Americans with Disabilities Act Amendments Act of 2008 (ADAAA), Section 504 of the Rehabilitation Act of 1973, the Fair Housing Act, and other applicable federal and state laws and regulations that prohibit discrimination on the basis of disability. To request accommodations please contact Student Accessibility Services (SAS), located at ITTC 007, for more information either at (319) 273-2677 or Email accessibility services@uni.edu. Visit Student Accessibility Services (https://sas.uni.edu/) for additional information.

Finally, all students are encouraged to use The Learning Center @ Rod Library (formerly The Academic Learning Center) for assistance with writing, math, science, reading and learning strategies. Meet with trained and certified tutors during walk-in hours or by appointment. For more information, visit us in person on the main floor of Rod Library, on the web at TLC.uni.edu or by calling 319-273-6023.
Unit One – Fundamentals of Programming using Scratch
August 26 - September 30, 2019

During this unit you will participate in the following activities:

- Non-graded Programs
  - 3 or 4 non-graded, "practice" programs.
  - These will frequently be completed with a partner and may be shared with the rest of the class.
  - While the successful completion of these programs will not have an effect on your unit grade it is strongly suggested that you complete each one. These are designed to help you practice some skills that will be used in other activities that will count for credit.

- Graded Programs
  - 6 assignments worth 2, 1, or 0 points each.
  - These programs are typically assigned after the completion of a paired, non-graded, program so you have had a chance to practice with the new content for the week.
  - These programs are typically completed as an individual.
  - You can earn up to 2 points for each activity:
    - 2 points – Program meets all of the requirements of the published grading rubric
    - 1 point – Program runs but does not yet meet 1 or 2 of the rubric requirements
    - 0 points – Program fails to meet multiple rubric requirements or was not submitted at all.

- Peer-review activities
  - 6 activities worth 1 or 0 points each.
  - After the "deadline" for each graded program has passed you will be asked to complete four or more peer reviews of the deliverables from your classmates. [Further instructions will be provided].
  - These activities are always completed as an individual.
  - You can earn up to 1 point for each activity:
    - 1 point – You have completed 4 or more peer reviews that meet the expectations of an appropriate peer-review.
    - 0 points – You have completed 3 or fewer peer reviews that meet the expectations of an appropriate peer-review.

This unit is scheduled to officially end on Monday, September 30th. All programs must be attempted for the first time by that date. Final peer reviews and resubmissions to correct deficiencies will be accepted through Friday, October 4th. After that deadline your Unit 1 grade will be assigned as follows:

<table>
<thead>
<tr>
<th>Points Earned</th>
<th>Score Assigned</th>
<th>Approximate Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>5</td>
<td>A</td>
</tr>
<tr>
<td>17</td>
<td>4.5</td>
<td>A-/B+</td>
</tr>
<tr>
<td>16</td>
<td>4</td>
<td>B</td>
</tr>
<tr>
<td>15</td>
<td>3.5</td>
<td>B-/C+</td>
</tr>
<tr>
<td>14</td>
<td>3</td>
<td>C</td>
</tr>
<tr>
<td>13</td>
<td>2</td>
<td>D</td>
</tr>
<tr>
<td>12 or fewer</td>
<td>0</td>
<td>F</td>
</tr>
</tbody>
</table>

Note:
While rare, I reserve the right to adjust the letter grade assigned for ANY unit either up or down based on individual circumstances and my perception of your efforts to co-operate with vs. gaming the grading system. In other words, if you have earned a B for a unit based on the specification guide, but have done so by consistently doing the absolute minimum required to earn the points needed for that B, I reserve the right to assign a slightly lower grade. If it comes to this, I will discuss this situation with you so you are well aware that it is happening.
Unit Two – Introductory Python Programming
September 30 – November 6, 2019

During this unit you will participate in the following activities:

- **Non-graded Program Sets**
  - 5 non-graded, "practice" program sets.
    - A program set will consist of 4 "small" programs
  - These will be completed with a partner.
  - While the successful completion of these programs will not have an effect on your unit grade it is strongly suggested that you complete each one. These are designed to help you practice some skills that will be used in other activities that will count for credit.

- **Graded Program Sets**
  - 5 graded program sets.
    - A program set will consist of 4 "small" programs.
    - Each program set will be worth 2, 1, or 0 points each.
  - These programs are typically assigned after the completion of a paired, non-graded, program so you have had a chance to practice with the new content for the week.
  - These program sets are completed as an individual.
  - You can earn up to 2 points for each program set:
    - 2 points – All programs in the program set were submitted and passed the tester suite [Further instructions will be provided]
    - 1 point – All programs in the program set were submitted and no more than 2 of the programs do not pass the tester suite.
    - 0 points – Either more than 2 failed to pass the tester suite OR at least one program was never submitted.

- **Code Walkthrough Reflections**
  - 4 graded code walkthrough reflections
  - After the code walkthrough day for each program set you will be asked to complete a reflection paper.
  - These activities are always completed as an individual.
  - You can earn up to 1 point for each reflection:
    - 1 point – You submitted a reflection paper that convinces me you have thought about the code walkthrough and how it relates to the code you submitted from that program set.
    - 0 points – You either fail to submit the reflection or it does not show the level of thought I am expecting.

This unit is scheduled to officially end on Wednesday, November 6th. All program sets and code walkthrough reflections must be attempted for the first time by that date. Resubmissions to correct deficiencies will be accepted through Monday, November 11th. After that deadline your Unit 2 grade will be assigned as follows:

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<th>Points Earned</th>
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<tbody>
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<td>13</td>
<td>5</td>
<td>A</td>
</tr>
<tr>
<td>12</td>
<td>4.5</td>
<td>A-/B+</td>
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<tr>
<td>11</td>
<td>4</td>
<td>B</td>
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<td>10</td>
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<td>C</td>
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<tr>
<td>8</td>
<td>2</td>
<td>D</td>
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<tr>
<td>7 or fewer</td>
<td>0</td>
<td>F</td>
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Unit Three – Data Analysis in Python
October 30 – December 13, 2019

During this unit you will participate in the following activities:

- Non-graded Program Assignments
  - 5 non-graded, programming assignments.
    - Each will consist of a single, "larger" program, often consisting of several sub-parts
    - These will be completed with a partner.
  - While the successful completion of these programs will not have an effect on your unit grade it is strongly suggested that you complete each one. These are designed to help you practice some skills that will be used in other activities that will count for credit.

- Graded Program Sets
  - 4 graded programming assignments.
  - These programs are completed after the completion of a paired, non-graded, program set so you have had a chance to practice with the new content for the week.
  - These programs are completed as an individual.
  - You can earn up to 2 points for each program:
    - 2 points – The program passes all parts of the tester suite
    - 1 point – The program was submitted and passes most of the parts of the tester suite
    - 0 points – The program either was never submitted or it fails multiple parts of the tester suite.

- Code Walkthrough Reflections
  - 4 graded code walkthrough reflections.
  - After the code walkthrough day for each program you will be asked to complete a reflection paper.
  - These activities are always completed as an individual.
  - You can earn up to 1 point for each reflection:
    - 1 point – You submitted a reflection paper that convinces me you have thought about the code walkthrough and how it relates to the code you submitted from that program set
    - 0 points – You either fail to submit the reflection or it does not show the level of thought I am expecting.

This unit is scheduled to officially end on Friday, December 13. All programs and code walkthrough reflections must be attempted for the first time by that date. Resubmissions to correct deficiencies will be accepted through Monday, December 16th (the date of the final exam). After that deadline your Unit 3 grade will be assigned as follows:

<table>
<thead>
<tr>
<th>Points Earned</th>
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<th>Approximate Letter Grade</th>
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<tbody>
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<td>12</td>
<td>5</td>
<td>A</td>
</tr>
<tr>
<td>11</td>
<td>4.5</td>
<td>A-/B+</td>
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<tr>
<td>10</td>
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<td>B</td>
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<tr>
<td>9</td>
<td>3.5</td>
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<td>D</td>
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<td>6 or fewer</td>
<td>0</td>
<td>F</td>
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