CSCI 1101.01 Introduction to Computer Science

Instructor: Gustavo Dietrich
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Class Meeting Times: MW 1:40 pm-2:55 pm
Office Hours: MTWR 8:15 am-9:15 am and by appointment.

Catalog Description:
This course presents an introduction to the breadth of the field of computer science. Topics include an introduction to computer science as a career, overviews of various computer science areas and topics, and foundations of computational problem solving.

Prerequisite: None.
Warning: This course is required for Computer Science majors or minors. Computer Engineering majors must take CMPE 1101. Other Engineering majors must take the intro courses specific for their majors.

Course Structure:
CSCI 1101 consists of lectures and assignments. The goals for the lecture are to introduce history, terminology, concepts, applications, social and ethical aspects and technology of the computer. The goals of the assignments are to provide hands-on experience with problem solving and software supporting the concepts introduced in the course. Most assignments will be done individually but a few will be done in groups.

Course Grading:
1. Tests (3) 50%
2. Assignments 50%

I DO NOT do extra credit so make sure you get good grades in tests and assignments in order to get a good final grade.

Grading scale: A: 90-100 B: 80-89 C: 70-79 D: 60-69 F: 0-59

Course Policies:
• Attendance. I assume that you will attend class, be punctual, remain on task, and stay through the entire class meeting.
• If you miss more than 10% of the classes without a valid excuse you will be reported to the Early Warning System program. UTRGV’s attendance policy excuses students from attending class if they are participating in officially sponsored university activities, such as athletics; for observance of religious holy days; or for military service. Other acceptable excuses include (but are not limited to) the death of an immediate family member, or an illness requiring a physician's attention.
• Completion of exams and assignments. You must take all exams and turn in all assignments on time. If you miss any of the work for the course, you must speak to me as soon as possible so that I can determine if I will allow you to make up the missed work. Depending on the excuse provided, make-up exams may result in automatic loss of points. All exams must be taken to be able to pass the course, missing anyone will result in an F as a final grade.
• Assignment Policies. Even if you work in teams, all assignments are assessed individually. Labs will be graded on correctness, quality, and style.
• Scholastic integrity. As members of a community dedicated to Honesty, Integrity and Respect, students are reminded that those who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and expulsion from the University. Scholastic dishonesty includes but is not limited to: cheating, plagiarism, and collusion; submission for credit of any work or materials that are attributable in whole or in part to another person; taking an examination for another person; any act designed to give unfair advantage to a student; or the attempt to commit such acts. Since scholastic dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced (Board of Regents Rules and Regulations and UTRGV Academic Integrity Guidelines). All scholastic dishonesty incidents will be reported to the Dean of Students.
• Course drops. According to UTRGV policy, students may drop any class without penalty earning a grade of DR until the official drop date (see Important dates below please). Following that date, students must be assigned a letter grade and can no longer drop the class. Students considering dropping the class should be aware of the “3-peat rule” and the “6-drop” rule so they can recognize how dropped classes may affect their academic success. The 6-drop rule refers to Texas law that dictates that undergraduate students may not drop more than six courses during their undergraduate
career. Courses dropped at other Texas public higher education institutions will count toward the six-course drop limit. The 3-peat rule refers to additional fees charged to students who take the same class for the third time.

- You are responsible for saving and backing up your own assignment files. If you lose a file, you must start the assignment over again. I will give NO special consideration or extensions for lost files.

**Expectations:**

I am committed to quality teaching and to providing you a meaningful experience in this course but learning is your responsibility so please do your part in order to receive the maximum benefit from the course.

**For this class, I expect you to:**

- **Have your electronic devices (cell phones, notebooks, music players, etc.) OFF at times (tests, lectures and labs).**
- Attend each class, arriving on time and remaining throughout the entire class meeting. If you have a legitimate and important reason for needing to leave early, please let me know before class starts.
- Complete all assignments and submit them on time (this is very important for you!).
- Interact respectfully with me, the course assistants, and your other classmates.
- Participate in class discussions and activities.
- **Remain on task and focused during class (i.e., no doing homework, engaging in side conversations, web-surfing, reading e-mail, Facebooking, chatting, IMing, etc. during class).**
- Access your Blackboard account frequently to get information on course policies, assignments, tests, grades, etc. **All information posted on it will be assumed to be known by the student 24 hours later.**
- **Do Not bring food or drinks into the lab please.** This is a real issue around computers and robots.
- Come speak to me IN PERSON and IMMEDIATELY at the first sign that you are having trouble with the course or if you miss assignments so I can try to help you.

**Communication – IMPORTANT NOTICE:**

It is UTRGV policy that all electronic communication related to university activity/business must use university systems. Thus, you MUST communicate with me through Blackboard Messages or (if Blackboard is not available) through your UTRGV e-mail account.

Whether you send a message in Blackboard or an e-mail through your UTRGV account, please ensure that all your messages have the following:

- Descriptive subject line.
- Your name, course number and section (if e-mailing from your UTRGV account), and a clear statement of your question or problem. If you send an attachment, please explain it.
- An e-mail is a relatively formal communication, so please ensure your language reflects that fact (be polite, avoid acronyms, use punctuation marks, capitalize, etc.). For example, fyi tina (For your information, this is not acceptable).

**Special Problems/Note to students with disabilities:**

If you have a documented disability (physical, psychological, learning, or other disability which affects your academic performance) and would like to receive academic accommodations, please inform your instructor and contact Student Accessibility Services to schedule an appointment to initiate services. It is recommended that you schedule an appointment with Student Accessibility Services before classes start. However, accommodations can be provided at any time. **Brownsville Campus:** Student Accessibility Services is located in Cortez Hall Room 129 and can be contacted by phone at (956) 882-7374 (Voice) or via email at ability@utrgv.edu. **Edinburg Campus:** Student Accessibility Services is located in 108 University Center and can be contacted by phone at (956) 665-7005 (Voice), (956) 665-3840 (Fax), or via email at ability@utrgv.edu.

**SEXUAL HARASSMENT, DISCRIMINATION, and VIOLENCE:**

In accordance with UT System regulations, your instructor is a “responsible employee” for reporting purposes under Title IX regulations and so must report any instance, occurring during a student’s time in college, of sexual assault, stalking, dating violence, domestic violence, or sexual harassment about which she/he becomes aware during this course through writing, discussion, or personal disclosure. More information can be found at [www.utrgv.edu/equity](http://www.utrgv.edu/equity), including confidential resources available on campus. The faculty and staff of UTRGV actively strive to provide a learning, working, and living environment that promotes personal integrity, civility, and mutual respect in an environment free from sexual misconduct and discrimination.
Course Learning Outcomes:

ABET Learning Outcomes:
(a) An ability to apply knowledge of computing and mathematics appropriate to the discipline.
(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
(g) An ability to communicate effectively.

Detailed learning outcomes:

Machine level representation of data
1. Explain the reasons for using different formats to represent numerical data.
2. Explain how negative integers are stored in twos-complement representation.
4. Describe numeric data representation and number bases, and convert numbers between bases. Convert numerical data from one format to another.
5. Understand binary logic circuits and Boolean algebra. Prove properties using truth tables.
6. Discuss how fixed-length number representations affect accuracy and precision.
7. Describe the internal representation of nonnumeric data.

Fundamental programming constructs
1. Design, implement, test, and debug simple programs for Lego Mindstorms robots.
2. Use of control structures for programs (selection, repetition).

Algorithms and problem-solving, fundamental data structures
1. Discuss the importance of algorithms in the problem-solving process.
2. Understand the difference between an algorithm and a computer program.
3. Identify the necessary properties of good algorithms.
4. Understand algorithms for repetition, selection, input/output, assignment, and modules.

Assembly level machine organization, Memory system organization and architecture
1. Explain the organization of the classical von Neumann machine and its major functional units.
2. Explain how an instruction is executed in a classical von Neumann machine.

Database systems
1. Explain the characteristics that distinguish the database approach from programming with data files.
2. Cite the basic goals, functions, and social impact of database systems.

History of Computing
1. List the contributions of several pioneers in the computing field.
2. Identify significant continuing trends in the history of the computing field.

Computer devices and sustainability
1. Define sustainability and describe its three pillars.
2. Understand how computer devices can affect sustainability.

Mandatory Course Evaluation Period (April 12 – May 3):
Students are required to complete an ONLINE evaluation of this course, accessed through your UTRGV account (http://my.utrgv.edu); you will be contacted through email with further instructions. Online evaluations will be available April 12 – May 3, 2017. Students who complete their evaluations will have priority access to their grades.
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Tentative Schedule:

The specific topics covered in this course are those listed in the detailed class schedule shown below

<table>
<thead>
<tr>
<th>Week</th>
<th>Monday</th>
<th>Wednesday</th>
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<tbody>
<tr>
<td>16-Jan</td>
<td>Martin Luther King holiday</td>
<td>Course Introduction;</td>
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<tr>
<td></td>
<td></td>
<td>What is Computer Engineering</td>
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<tr>
<td>23-Jan</td>
<td>[Brief] History of Computing</td>
<td>Binary values and Number systems</td>
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<tr>
<td>30-Jan</td>
<td>Other Representations</td>
<td>Binary Arithmetic</td>
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<tr>
<td>6-Feb</td>
<td>Representing Non-numeric Data</td>
<td>Boolean Algebra</td>
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<tr>
<td>13-Feb</td>
<td>Boolean Algebra</td>
<td>Gates and Circuits</td>
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<tr>
<td>20-Feb</td>
<td>Gates and Circuits</td>
<td>Computing Components</td>
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<tr>
<td>27-Feb</td>
<td>CPU and the Instruction Cycle</td>
<td>Test 1</td>
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<tr>
<td>6-Mar</td>
<td>Machine Language ; Assembly Language;</td>
<td>Algorithms</td>
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<td>13-Mar</td>
<td>Spring Break</td>
<td>Spring Break</td>
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<tr>
<td>3-Apr</td>
<td>Algorithms: Decisions and Repetition</td>
<td>Test 2</td>
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<tr>
<td>10-Apr</td>
<td>Algorithms: Searching and Sorting</td>
<td>Algorithms: Searching and Sorting</td>
</tr>
<tr>
<td>17-Apr</td>
<td>Algorithms: Searching and Sorting</td>
<td>Database Systems</td>
</tr>
<tr>
<td>24-Apr</td>
<td>Database Systems</td>
<td>Computer devices and sustainability</td>
</tr>
<tr>
<td>1-May</td>
<td>Computer devices and sustainability</td>
<td>Test 3</td>
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Important dates:

- **Monday 1/17/17**: Martin Luther King Day Holiday; university closed
- **Wednesday 2/1/17**: Last day to drop a class before it appears on the transcript and counts toward the "6-drop" limit. Last day to receive a 100% refund for dropped classes (other policies apply when a student is withdrawing from all classes).
- **Monday 3/13/17-Saturday 3/18/17**: Spring Break; university closed
- **Thursday 4/13/17**: Drop/Withdrawal Deadline; last day for students to drop the course and receive a DR grade. After this date, students will be assigned a letter grade for the course that will count on the GPA.