COSC 5356 Theory of Computation
School of Engineering and Computing Sciences
Spring 2015

A. COURSE INFORMATION
Course number/section: COSC 5356 – Section 001
Class meeting time: MWF 11:00 – 11:50 AM
Class location: OCNR 258
Course Website: https://bb9.tamucc.edu/

B. INSTRUCTOR INFORMATION
Instructor: Dr. Ping Guo
Office location: EN 314G
Office hours: MW 3:30-5:00 PM, T 02:00-4:00 PM or by appointment
Telephone: (361)825-3831
e-mail: Ping.Guo@tamucc.edu
Appointments: By email

C. COURSE DESCRIPTION
An introduction to theoretical foundations of modern computing. Topics include finite state machine concepts, formal grammars, and basic computability concepts.

D. PREREQUISITES AND COREQUISITES
Prerequisites
COSC 5321 (Data Structures) and MATH 2305 (Discrete Mathematics)

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES
Required Textbook(s)

Optional Textbook(s) or Other References
F. STUDENT LEARNING OUTCOMES AND ASSESSMENT

Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By the end of this course, students should be able to:
1. Understand basic models of computation, their properties, and relationships.
2. Understand relationships between machine models and languages.
3. Be able to apply these topics to program design and analysis.

G. INSTRUCTIONAL METHODS AND ACTIVITIES

This is a graduate-level core course. Students are expected to attend all classes. Regular completion of all homework assignments on time are essential for success in this course.

H. MAJOR COURSE REQUIREMENTS AND GRADING

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Attendance and Quizzes</td>
<td>10</td>
</tr>
<tr>
<td>Homework Assignments</td>
<td>55</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>15</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20</td>
</tr>
</tbody>
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Grade Scale: A: 85-100, B: 75-84, C: 65-74, D: 60-64, and F: 0-59

Class Attendance: Students are expected to attend all classes. Attendance will count towards part of students’ final grades.

Quizzes: There will be announced and unannounced quizzes during the semester. No make-up quizzes will be given.

Homework Assignments: There will be 6-8 homework assignments.

Exams: One in-class midterm exam and one comprehensive final exam will be given. Please note the dates of the exams on the course schedule below and plan accordingly.
## I. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>DATE (BY DAY OR WEEK)</th>
<th>TOPIC</th>
<th>CHAPTER(S)</th>
<th>ASSIGNMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Course Overview Introduction</td>
<td>Chapter 0</td>
<td>TBA</td>
</tr>
<tr>
<td>Week 2</td>
<td>Program Correctness</td>
<td>Chapter 0</td>
<td>TBA</td>
</tr>
<tr>
<td>Week 3</td>
<td>Regular Languages</td>
<td>Chapter 1</td>
<td>TBA</td>
</tr>
<tr>
<td>Week 4</td>
<td>Regular Languages</td>
<td>Chapter 1</td>
<td>TBA</td>
</tr>
<tr>
<td>Week 5</td>
<td>Context-Free Languages</td>
<td>Chapter 2</td>
<td>TBA</td>
</tr>
<tr>
<td>Week 6</td>
<td>Context-Free Languages</td>
<td>Chapter 2</td>
<td>TBA</td>
</tr>
<tr>
<td>Week 7</td>
<td>Church-Turing Thesis</td>
<td>Chapter 3</td>
<td>TBA</td>
</tr>
<tr>
<td>Week 8</td>
<td>Church-Turing Thesis</td>
<td>Chapter 3</td>
<td>TBA</td>
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<tr>
<td>Week 9</td>
<td>Spring Break</td>
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<tr>
<td>Week 10</td>
<td>Midterm Review</td>
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<td></td>
<td><strong>Midterm Exam</strong></td>
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<tr>
<td>Week 11</td>
<td>Decidability</td>
<td>Chapter 4</td>
<td>TBA</td>
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<tr>
<td>Week 12</td>
<td>Decidability Reducibility</td>
<td>Chapter 4 Chapter 5</td>
<td>TBA</td>
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<tr>
<td>Week 13</td>
<td>Reducibility Computability</td>
<td>Chapter 5 Chapter 6</td>
<td>TBA</td>
</tr>
<tr>
<td>Week 14</td>
<td>Computability</td>
<td>Chapter 6</td>
<td>TBA</td>
</tr>
<tr>
<td>Week 15</td>
<td>Time Complexity</td>
<td>Chapter 7</td>
<td>TBA</td>
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<tr>
<td>Week 16</td>
<td>Final Review Final Exam</td>
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Note: The class schedule is tentative. Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

J. **COURSE POLICIES**

- **Attendance/Tardiness**
  Students are expected to attend all classes. Attendance will count towards part of students’ final grades. Students are responsible for any materials covered and announcements made in their absence.

- **Late Work and Make-up Exams**
  There is a penalty for late homework/projects submissions. No Make-up Exams will be arranged after each exam without a University Excused Absence.

- **Academic Honesty Policy**
  All work submitted for grading must be the student's own work. Plagiarism will result in a score of 0 (zero) for the work or dismissal from the course and the Dean of Students office will be notified. No copying from another student's work of any type is allowed. It is the student's duty to allow no one to copy his or her work. Anyone found cheating and/or copying, in the exams or assignments, in the instructor's opinion, may receive an automatic F for the course.
Cell Phone/Laptop Use
Please refrain from the use of electronic devices during class, as it is distracting to not only you, but also to your instructor and peers. Please silence your phones during class. Laptops will be permitted for particular activities as deemed appropriate.

K. COLLEGE AND UNIVERSITY POLICIES

Academic Integrity (University)
It is expected that university students will demonstrate a high level of maturity, self-direction, and ability to manage their own affairs. Students are viewed as individuals who possess the qualities of worth, dignity, and the capacity for self-direction in personal behavior. See Full University Policy at http://catalog.tamucc.edu/content.php?catoid=10&navoid=313#Academic_Integrity

Classroom/Professional Behavior
Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

Deadline for Dropping a Course with a Grade of W (University)
The grade of W will be assigned to any student officially dropping a course by Friday, April 10, 2015. No student is eligible to receive a W without completing the official drop process by this deadline. Visit the Office of the University Registrar for the Course Drop Form that must submitted. After April 10, 2015 a student will not be allowed to drop a course.

Grade Appeals (College of Science and Engineering)
As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://www.tamucc.edu/provost/university_rules/index.html, and the College of Science and Engineering Grade Appeals webpage at...
http://sci.tamucc.edu/students/GradeAppeal.html. For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- **Disability Services**
  Disability Services (DS) is the hub for coordinating services and accommodations to ensure accessibility and utilization of all programs for all Texas A&M University-Corpus Christi students with disabilities. Our services are designed to meet the unique educational needs of enrolled students with documented permanent or temporary disabilities. DS provides intake and consultation services to students seeking to register with our office. DS reviews an individual’s documentation of disability and assesses eligibility for services and the determination of reasonable accommodations. For more information visit the Disability Services Office at 116 Corpus Christi Hall or go to http://disabilityservices.tamucc.edu/

**GENERAL DISCLAIMER**

I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.