CSC 303 Theory of Computation
Fall 2010 Syllabus

Instructor: Dr. Jan Pearce
C.P.O.: 1815
Office: 304-B Draper Hall
(859) 985-3569
Office Hours: MTWR 2:00-2:50 pm
or by appointment
E-mail: pearcej@berea.edu
Feel free to send e-mail for appointments at other times.

The CSC 303 Course Description

An introduction to the fundamental ideas and the basic paradigms of computer science, the very foundation on which to base one's thinking about computers now and in the future. This course will address some of the following topics in the theory of computation--the theory of automata and formal languages, computability by a Turing machine, and computational complexity. Computational tasks that cannot be solved on any computer or tasks where there is no practical, reasonably fast algorithm to solve them will be considered. The perspective here is from that of computing, but the treatment is mathematical in nature.

The Course Goals

- The primary learning goal is to come to understand the fundamental limits on what can be efficiently computed (in our universe and in other possible universes)
- To learn to approach two fundamental questions about a computational problem:
    - Can it be solved using a given "abstract" computing machine? (computability)
    - How much time and space will be required to solve it? (complexity)
- To learn to more effectively communicate computational ideas to others through both group work and oral presentations.
- To become a more independent learner and logical thinker.

The Resources:

Our Text: Automata, Computability and Complexity: Theory and Applications (Edition 1) by Elaine A. Rich, ISBN-13: 9780132288064 and ISBN: 0132288060, Prentice Hall (2007)
Our Homepage: Our course home page is located at http://faculty.berea.edu/pearcej/CSC303/.
Use this page as a resource to find this syllabus and other course-related information.

Plagiarism and Academic Honesty

Plagiarism is the use of anyone else's work or ideas without adequate citation. It is a sin which is both easy to commit and easy to avoid. Ideas taken from other people include those from published or unpublished books, articles, websites, TAs, or friends' homework. **The best way to avoid plagiarism is to cite ALL your sources, including those from which you paraphrase or borrow ideas, and to use quotation marks when quoting verbatim.** If you are not sure whether or not to cite a source, you should cite it! Simply put, plagiarism is not only cheating, it is stealing because it constitutes theft of someone else's ideas. It is a serious offense, and Berea College takes it very seriously. ***Plagiarism will not be tolerated!*** At the first offense, the student will receive an F for that assignment. At the second offense, the student will fail the course. In addition, ALL offenses of plagiarism will be reported to the Associate Provost for Academic Services as detailed in the Berea College *Student Handbook*.

The System of Evaluation

Maximum Final	Scale
Grade ≥ 93 %	A
90% ≤ Grade < 93 %	A-
87% ≤ Grade < 90 %	B+
83% ≤ Grade < 87 %	B
80% ≤ Grade < 83 %	B-
77% ≤ Grade < 80 %	C+
73% ≤ Grade < 77 %	C
70% ≤ Grade < 73 %	C-
67% ≤ Grade < 70 %	D+
63% ≤ Grade < 67 %	D
60% ≤ Grade < 63 %	D-
Grade < 60 %	F

Evaluated Items	Grading Percentages
Test 1	15.0 %
Test 2	15.0 %
Quiz Total	10.0 %
Homework	15.0 %
Oral Presentations	15.0 %
Class Participation	5.0 %
Final Exam	25.0 %

Please refer to the GRADING section of the current Berea College Catalog for the College-wide interpretations of these letter grades.

The Grading Policies

For the benefit of the students in the class, all course grade computations are continually updated by the instructor in Moodle, so students may check on their in-progress course grade during the term.

For each student, the lowest quiz score will be dropped before computing the final grade.

Class participation will be 5% of the grade. It is expected that students who pay attention to the other presentations and try to add to the class in general will earn an A for this 5%.

A student's final grade may be raised above her or his earned percentage grade if in the instructor's opinion the student shows significantly improved work in the course or on the comprehensive final exam.

The Assignment Bonus

Assignments will be assigned on a near-daily basis, since doing assignments thoughtfully and conscientiously is one of the keys to success in this course. Through assignments students get the needed practice of application of the concepts. Because the instructor desires to strongly encourage a diligent effort on assignments, students who turn in each of their assignments with no more than two assignments submitted late, will be awarded an additional 5% on the assignment grade!

The Tests and Quizzes

Tests and frequent short quizzes will be given in this course. Approximately one announced quiz will be given each week in which there is no test. In general, the announced quizzes will consist of questions on the assigned text readings or assignment-like problems.

The most likely time of the two tests will be:

- Test 1: Second Week of October
- Test 2: Third Week of November

Problems that appear on the tests will be more varied in nature, ranging from assignment-like problems to problems that require a deeper synthesis of ideas and from true or false questions to short-answer questions.

The Final Exam

The comprehensive final exam will be during the regularly scheduled final exam period. By Berea College policy, no instructor can reschedule a final exam on his or her own, so please plan now to take it then.

The Attendance Policy

Class lectures, discussions, and student presentation are considered to be a vital key to success in this course. It is the hope of the instructor that class sessions are both informative and useful, therefore attendance is expected at each class session unless a specific exception is made. This policy will be enforced in several ways. Quizzes may be announced or occasionally "popped," and because the lowest quiz grade will be dropped, under nearly all circumstances, make-up quizzes will not be given. Likewise, make-up exams will under almost no circumstances be given, so students should be careful not to miss exams.. Absences from class are noted, and repeated absences will adversely affect the student's participation grade. In addition, the final grade may be lowered by one third of a letter grade for each absence after the fourth. Thus, it is the responsibility of the student to speak to the instructor about each absence from class. This should be done as soon as possible, and if at all possible before the absence occurs. Students who miss class are held responsible for all of the material covered, assigned, and collected during their absence.

The Class Atmosphere

The members of this class constitute a learning community. Learning in such a community best takes place in an atmosphere in which instructor and the students treat everyone with mutual respect. Students need not always raise their hands in order to ask questions or to make comments, but they should not interrupt the instructor or fellow students in doing so. Students typically find the atmosphere set by the instructor to be a sometimes playful and nearly always relaxed one, but students will still need to work hard and consistently both in and out of class in order to do well. If at anytime you have thoughts, comments, or suggestions about how the class atmosphere could be improved or made into one which is more supportive of your learning, please come by or drop me a note about it. I welcome such suggestions.

On Homework Collection

All written work should be neat, organized, and should show sufficiently many steps to demonstrate a clear understanding of the techniques used. Homework is due at the beginning of class on the announced date due. If a student must miss class due to either a sickness or a planned absence, homework assignments are still expected to be submitted on time. Homework assignments are all posted on the web and may be requested in advance.

Late homework assignments will be accepted for reduced credit up only until the assignment is returned, and late work must be labeled as late. Written or printed assignments may be turned in before class or at the instructor's office, but should NOT be sent through the CPO, attached in e-mail, or given to a student assistant. A selection of the assignment problems will be graded for credit, and assignments not meeting the above standards may receive reduced credit.

On Teamwork

Learning to work in teams effectively is strongly encouraged. Some assignments may be specifically designed for teamwork, others for individual work, but on most assignments you can choose to work alone or in a team. All assignments must clearly include all of the authors' names at the top of each page. On any assignment in which half or more of the work was completed in a team, a single copy of the assignment should be handed in with all of the team's participants listed as authors. Teams can generally consist of one, two, or three members due to the nature of the work in this course. Unless otherwise stated, teams shall not consist of more than three members for most work. On any assignment where less than half of the work was completed in a team, individual assignments should be handed in with the author acknowledging all of the help received for each problem. This includes significant help received from the instructor or in the Math/CS Lab Consultants. Note that the instructor or a Math/CS Lab Consultant may help with assignments or labs, and while this help should not be acknowledged as co-authorship, it should still be mentioned. This is meant to be a sharing process; do not "give credit" to other students who have not attempted to contribute to the work or to the team's work, because it is ultimately not a help for the student who did not contribute to the work. Thoughtful practice, not (even mindful) copying, is ultimately the best way to learn. Note that on all team-completed assignments, students must describe the roles played by each author on the assignment. *Warning:* Please be careful to conform to these standards for teamwork, since they are designed to encourage good learning practices. (Furthermore, copying another's work or otherwise failing to adhere to these standards may even result in a charge of academic dishonesty.)

For Additional Help

The teaching assistant for this course will be Minh Duong. will be able to answer questions about the course during consultations in the Math/CS Lab. Located in Hutchins 230, the Math/CS Lab is open each Sunday through Thursday 7:00 to 9:15 PM (except on evenings of convocations when it closes early). Students are strongly encouraged to make use of the help available in the Math/CS Lab, as well as in the instructor's office hours. Best results are obtained trying to solve problems alone or in a group before asking for help, so in either place, students should be prepared to show what they have already tried. Topics in this course build throughout the course, so students should be sure to do their best to keep up with the class, so as to not get behind and possibly forever lost. No question to which one does not know the answer is "dumb" unless it goes unanswered because it remained unasked.