CSCI 4/5160: Compiler Design and Software Development
Spring 2020

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Office Hours:
Monday & Wednesday: 9:30 – 11:30 & 12:30 – 14:00
Other times by appointment

Course Information:

Requirement textbook:
Compiler Construction: Principles and Practice by Kenneth Louden.

Reference book:
- Compilers: Principles, Techniques, & Tools (2nd edition) by Alfred Aho etc.
- Modern Compiler Implementation in Java by Andrew Appel
- A Practical Approach to Compiler Construction by Des Watson

Course webpage: http://www.cs.mtsu.edu/~zdong/4160

Covered concepts: The various phases of a compiler along with grammars, finite automata, regular expressions, LR parsing, error recovery, and other related materials. A term project consisting of the design and construction of a functional complier required.

Learning outcomes: Upon successful completion of this course, a student will be able to
- develop an understanding of how to work in teams,
- develop an understanding how one can work on a project so large and complicated that one can't possibly fully understand the complete project (at the beginning) and in return how important design, debugging, and proper documentation are to a project,
- develop an understanding of how to analyse and design large projects,
- develop an understanding of compiler techniques (the theory),
- develop an understanding of how valuable software tools and libraries are to a project.

Course Assignments

<table>
<thead>
<tr>
<th>Assignments</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projects (6-7)</td>
<td>50%</td>
</tr>
<tr>
<td>Midterm Exams (3)</td>
<td>36% (12% each)</td>
</tr>
<tr>
<td>Final Exam</td>
<td>14%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>
**Project**

The term-long project will be a mixture of individual assignments and team projects where each team consists of three persons. For each project assignment, only one copy per team will be turned in to be graded. Based upon this one copy and the audit trail found in the time log and the information found in the assignment hardcopy, grades will then be assigned to each of the individual team members. Efforts will be made to validate and verify any problems before assigning assignment grades. You must be aware at the beginning of the semester before forming teams that your course grade may be affected by others in your team since part of the learning environment is working in teams. Working in teams on the compiler project assignments is a course requirement. Each assignment will be graded based upon the following criteria: correctness of output and algorithm, efficiency of code, readability, documentation, and audit trail. This criteria is applied to the coded assignment as well as the time log for each compiler project assignment.

In addition to the team assignments, there will be individual assignments. These individual assignments are meant to be warm up exercises for the team assignment (to force each team member to learn the material regardless of their involvement in the project assignment). Each individual assignment is to be completed individually without collaboration from others.

**Grading scale**

Letter grades will be determined using a standard percentage point evaluation as outlined below.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90% - 100%</td>
</tr>
<tr>
<td>B+</td>
<td>85% - 89%</td>
</tr>
<tr>
<td>B</td>
<td>80% - 84%</td>
</tr>
<tr>
<td>C+</td>
<td>75% - 79%</td>
</tr>
<tr>
<td>C</td>
<td>70% - 74%</td>
</tr>
<tr>
<td>D+</td>
<td>65% - 69%</td>
</tr>
<tr>
<td>D</td>
<td>60% - 64%</td>
</tr>
<tr>
<td>F</td>
<td>0% - 59%</td>
</tr>
</tbody>
</table>

Your final grades will be calculated based on the above tables with the following exceptions:

- The project grade cannot raise the test grade more than two levels. For example, if your test grade is C, then the highest final letter grade you can get is B (i.e. C --> C+ --> B).
- If the exam average (including final exam) is a F, then the course grade is a F.
- If the project average is a F, then the course grade is a F.
- A grade of zero on two or more assignments automatically results in a course of F.

**Class Policies**

**ACCREDITATION ACTIVITIES:** Samples of graded work will be collected this semester for our accreditation team. Identifying information will be removed from any such work collected.

**Cell Phone:** Please silence all cell phones and beepers. If the lecture is interrupted by a cell phone or beeper, the student will answer a question later in the class.

**Attendance:** Attendance is expected and absences do not excuse one from class responsibilities. If for some unavoidable reason you must miss class, obtain class notes, handouts, and assignments from another class member or course webpage. Students can earn up to 2 bonus points if they are "active" enough, i.e. asking and answering questions in the class.
**Exams:** Examinations must be taken at the published times. No make-up exams will be offered unless there is an unavoidable extenuating circumstance (at the discretion of the instructor).

**Grade:** It is guaranteed that you will get at least 20% points for any homework or project you submit. Each homework/project has ONE deadline only. No submission will be accepted after the deadline.

**Final Exam:** Students can opt out the final exam if he or she get 80% or above on EVERY homework, project, and exam. His or her final grades will be the letter grade provided by instructor based on the past performance.

**Zero Tolerance of Academic Misconduct:** The class has a zero tolerance policy of academic misconduct. Academic misconduct includes cheating, plagiarizing, research misconduct, misrepresenting one’s work, and inappropriately collaborating. This applies to any work students turn in for evaluation or course credit. Definitions can be found at: [http://www.mtsu.edu/~csdept/Academics/academicIntegrity.htm](http://www.mtsu.edu/~csdept/Academics/academicIntegrity.htm). If a student is found responsible for committing an act of academic misconduct, he/she will get F on this course and will be reported to the university. If you are working on a lab machine, make sure your work is stored under your personal account so that other students cannot access it.

**University Policies**

**Lottery Scholarship:** Do you have a lottery scholarship? To retain the Tennessee Education Lottery Scholarship eligibility, you must earn a cumulative TELS GPA of 2.75 after 24 and 48 attempted hours and a cumulative TELS GPA of 3.0 thereafter. A grade of C, D, F, FA, or I in this class may negatively impact TELS eligibility.

If you drop this class, withdraw, or if you stop attending this class you may lose eligibility for your lottery scholarship, and you will not be able to regain eligibility at a later time.

For additional Lottery rules, please refer to your Lottery Statement of Understanding form ([http://www.mtsu.edu/financial-aid/forms/LOTFEV.pdf](http://www.mtsu.edu/financial-aid/forms/LOTFEV.pdf)) or contact your MT One Stop Enrollment Coordinator ([http://www.mtsu.edu/one-stop/counselor.php](http://www.mtsu.edu/one-stop/counselor.php)).

**Academic Misconduct:** It is expected that all work for this class (including exams, homework and open labs) is your own. The university policy for academic misconduct will be followed. Academic misconduct includes the following behaviors:

- Plagiarism. The adoption or reproduction of ideas, words, statements, images, or works of another person as one's own without proper acknowledgement.
- Cheating. Using or attempting to use unauthorized materials, information, or study aids in any academic exercise. The term academic exercise includes all forms of work submitted for credit or hours.
- Fabrication. Unauthorized falsification or invention of any information or citation in an academic exercise.
- Facilitation. Helping or attempting to help another to violate a provision of the institution code of academic misconduct.

For more information, please refer to the following links: [http://www.mtsu.edu/~csdept/Academics/academicIntegrity.htm](http://www.mtsu.edu/~csdept/Academics/academicIntegrity.htm)
Unofficial Withdrawals: Federal regulations require that students who cease class attendance but do not officially withdraw from the University must be reported so that future financial aid will cease and/or the student will be required to return funds. Therefore, during the term I will be required to complete a roster indicating those students who have stopped attending class without officially withdrawing. Faculty members are not required to check attendance each day; however, you may use project submission deadlines, exams, quizzes, advising appointments, or other methods I choose may be used to determine unofficial withdraws.

Student with Disabilities: Students with documented disabilities are entitled to reasonable accommodations if needed. If you believe you need accommodations, please see me and the Office of Disabled Student Services (898-2783). No accommodations will be made unless verified by the Office of Disabled Student Services. For more information about the office, please check their website: [http://www.mtsu.edu/dssemail/](http://www.mtsu.edu/dssemail/).

Title IX Statements: MTSU faculty are concerned about the well-being and development of our students and are legally obligated to share reports of sexual assault, dating violence, domestic violence and stalking with the University’s Title IX coordinator to help ensure student’s safety and welfare. Please refer to MTSU’s Title IX site for contact information and details. [http://www.mtsu.edu/titleix/](http://www.mtsu.edu/titleix/).

This syllabus represents a general plan for the course and deviations from this plan may be necessary during the duration of the course. I reserve the right to modify course policies, the course calendar, assignment point values, and due dates.