Course Syllabus

EC602 Design By Software

Fall 2021

Contents

1 Course Description and Goals 1

2 Course Structure 2
  2.1 What to bring to class 2

3 Online Resources 2
  3.1 Piazza: discussion and communication 2
  3.2 Course website 2

4 Instructional Staff 2

5 Assignments 2
  5.1 Weekly assignments 2
  5.2 Participation/Extra Credit Assignment 3
  5.3 Collaboration Policy 3
  5.4 Submission 3

6 Tests and Exams 3

7 Course grading 3

8 Course Dates 3

9 Student Goals 4
  9.1 Beginners 4
  9.2 Intermediate 4
  9.3 Advanced 4

1 Course Description and Goals

This course is about learning to apply software to solving problems in electrical and computer engineering. The word design is interpreted broadly to mean “the
process of doing Electrical and Computer engineering”, including activities such as analysis, research, modeling, visualization, simulation, and prototyping.

2 Course Structure

The course is designed to provide you the maximum opportunity to master software skills within the context of Electrical and Computer Engineering. Therefore, all of our time will be focused on mastering skills in a real-world setting.

2.1 What to bring to class

Please bring a laptop and charger to each and every class, including your first one.

This laptop should have the VM installed (see below) and it should be configured with English as the system language if you want help getting it working.

3 Online Resources

3.1 Piazza: discussion and communication

All questions about the course should be asked at the piazza discussion forum: EC602 Piazza

This is also where announcements will be made. You can choose to be notified by piazza via email if anything changes on the site. Click on the gear symbol and go to “Account/Email” settings.

3.2 Course website

The course materials and submission system are available here: EC602 Course Website

4 Instructional Staff

Professors Carruthers will be leading the course.

Contact information is available on EC602 Piazza.

5 Assignments

5.1 Weekly assignments

A large portion of your grade will be determined by your work on approximately 11 weekly assignments and an assignment Participation/Extra Credit
5.2 Participation/Extra Credit Assignment

One assignment will be based on your semester-long participation in class, on piazza, and on extra credit assignments (to be defined later).

The [EC602 Course Website][EC602 Course Website] will have a Grading area where you can check your grades, once this feature is complete.

5.3 Collaboration Policy

It is expected that if your name is on a submitted work, that you have contributed in some fashion to the creation of that work.

5.4 Submission

Assignments will be submitted on the [EC602 Course Website][EC602 Course Website].

When you complete an assignment as part of a team, only one team member should submit, with all authors listed. The details will be available on the course website soon.

6 Tests and Exams

There will be two midterm examinations.

The format will be individual software challenges, in which you must use the VM.

Midterm 1 will require the use of Python.

Midterm 2 will require the use of C++.

7 Course grading

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments</td>
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<tr>
<td>Midterm One</td>
<td>15%</td>
</tr>
<tr>
<td>Midterm Two</td>
<td>15%</td>
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8 Course Dates

Available soon.
9 Student Goals

There are a wide range of backgrounds for students in EC602. We strive to make the course a worthwhile experience for beginning, intermediate, and advanced students.

9.1 Beginners

If you have little or no experience with software development, then here are your goals:

- learn about how to develop software
- learn two great new languages, python and C++
- improve your problem solving skills with computers and software
- learn from the staff and your fellow students

9.2 Intermediate

Most students in the class fall into this category. They have maybe learned Java or Matlab, or may have some limited experience with python or C. Perhaps this was several years ago and you are looking for a refresher.

Your goals are:

- prepare for future software courses and future research/development situations involving software
- strengthen your abilities in two great languages, python and C++
- learn from the staff and your fellow students
- share some of your knowledge with beginners

9.3 Advanced

Perhaps you are a former professional software engineer, but you only used COBOL or FORTRAN. Perhaps you should have taken the EC602 placement exam but forgot or bombed it. At any rate, you think you know a lot about software development.

Here are our goals for you:

- challenge yourself to write better code and hone your development process
- learn new and powerful features of python and C++ you may not have already mastered
- try to write code that is more beautiful and elegant than Prof Carruthers’ own code or anything else he has ever seen before
- share your knowledge and experience with the beginning and intermediate students. Teaching is a great way to really master something.
- make productive suggestions to the staff about the instructions or software provided (checkers, etc)
- engage with Prof Carruthers: lets learn from each other.