

THE GEORGE WASHINGTON UNIVERSITY  
School of Engineering and Applied Science  
Department of Computer Science

CSci 196 SENIOR COMPUTER SCIENCE DESIGN PROJECT II

## 1. Purpose

This is the second semester of a two-semester course in which each of you will research, design, implement, complete, document and compare a project in hardware and/or software. In the second semester you will:

1. Continue to construct the project that was started in the first semester.
1. Present four progress reviews of the state of the project. One review will be held approximately every three weeks.
1. At each review you will make a slide presentation, demonstrate part of the project, submit your laboratory workbook for review and submit a written report.
1. At the Final Project Review you will submit a complete report, demonstrate a working project, submit your laboratory workbook, deliver your prototype on a CD and present your completed project in a slide presentation.

A significant part of this course deals with learning to make effective written and oral presentations of technical material. Students must attend all of the class sessions in order to learn from each other, by example, the correct and incorrect methods for presenting material. In addition to learning by example, the student will gain knowledge from the instructor about techniques for making good presentations. The grade you achieve in this course will depend not only on producing a working product, but also on the manner in which you present your work.

## 1. Prerequisites

To take this course, you must have senior status and have satisfactorily completed CSci-195.

## 1. Attendance

Attendance is required at every session of the course. There will be lectures and material presented even if no work product is due from the student. Absence from class will reduce your grade. Three unexcused absences during the semester will result in an automatic failure. Missing a significant part of a class is not permitted. A significant part of a class is more than 15 minutes. Any combination of four unexcused absences and missing significant parts of classes is an automatic failure.

## 1. Timely Presentations

Each work product is due on the date shown on the schedule. Work products must be presented on time showing the status of the project as of the time of presentation. Late presentation of a

work product will reduce the grade for the product. Each week, or part of a week, that a work product is late will reduce the grade by 10%. No work product will be accepted after students in the class have started to present its successor product.

## 1. Attention in Class

Every student is to give full time and attention to a student making an oral presentation. No one is to be using the computers in the room for any purpose during that time. No printing of any material may be done once the class has begun. You wish to have your fellow students listen to your presentation and you should do the same for them.

## 1. Notebook

All the work you do and all the information you collect will be kept in a formal bound laboratory notebook. All entries must be in ink and every page must be dated and initialed. Since an economic analysis of your project must be performed, you must keep a record of the amount of time you spend in each phase of the project and the classes of work you are doing. This information will be kept on each page of the notebook. The notebook will be inspected and graded periodically. Do not work on scratch paper. Do all of your work in the notebook. You may cross out work that is incorrect. The notebook will not be graded on beauty, only on completeness.

## 1. Grading

Grading for the second semester of the course will be:

	<u>Presentation</u>	<u>Demonstration</u>	<u>Report</u>	<u>Notebook</u>	<u>Total</u>
PR #2	3	2	5	2	12
PR #3	3	2	5	2	12
PR #4	3	2	5	2	12
PR #5	6	4	7	2	19
<u>Final Pres.</u>	12	9	20	4	45
TOTALS	27	19	42	12	100

Not submitting a work product on the date it is due will reduce the grade for that product by 10% (one full point) from its graded value for each week or part thereof, the product is late.

## 2. Deliverables

During the second semester of the course, you will make five presentations of the progress you are making on your project. These presentations will consist of:

1. An oral report using slides showing the status of your work,
2. A formal written report of the status,
3. A demonstration of the completed work on the project, and
4. A review of your notebook that shows the details of your work.

A paper copy of your slides must be given to the professor at the time of the oral presentation. It will be retained to show the accreditation team.

## 3. Progress Report

The Progress report is a rather short report that documents the progress you have made toward the satisfactory completion of your project. It is written in a top-down manner showing each of the software modules and hardware subsystems that comprise your product.

The Progress report should contain the following:

1. Title Sheet
2. Abstract
3. Table of Contents
4. List of Figures
5. List of Tables
6. Introduction - A top-down description of the project
7. Block Diagram - A high-level diagram showing the relationships of the modules of the software and/or the blocks of hardware.
8. Module List/Description - A top-down listing of each module and submodule to the lowest level. For each component, it gives:
  - a) A description of the module,
  - b) Modules that it calls,
  - c) Modules that call it,
  - d) Total estimated number of lines of code in the module,
  - e) Number of lines written for the module,
  - f) Percent of the module completed,
  - g) Estimated number of lines of code to complete the module,
  - h) The number of hours spent coding the module,
  - i) The estimated number of hours needed to complete the module.
9. Gantt Chart of the project with supporting data
10. Graph of the Labor Costs - three curves that show: a) the originally estimated cost for the project, b) actual costs spent on the project to date, and c) the projected dollars needed to complete the project.

11. An Economic Analysis of the project with the original estimated costs in one column and the current estimated costs in a second column.
12. Status Matrices - One matrix for each of the phases of the project (Outlined, Designed, Constructed, Integrated, Tested, Documented, and Totals). Each matrix should show the initial estimated hours, current estimated hours, hours spent to date, percent of the module completed, and the estimated time needed to complete that module or submodule. Time spent in class is listed as a separate line in the Totals matrix. Documentation of the reports is to be allocated by module and included in the documented matrix. There are seven matrices:
  - a) Outlined - The amount of time used to divide the project into modules and submodules and determining the function in each module. What does this module do?
  - b) Designed - The amount of time used to determine the exact code to be performed in each module. The code is described with detailed flowcharts and Program Design Language (PDL).
  - c) Constructed - The amount of time used to write code for the module.
  - d) Tested - The amount of time used to test the module to ensure that it meets specifications.
  - e) Integrated - The amount of time used to integrate the modules together and ensure that the combination executes properly.
  - f) Documented - The amount of time used to document the entire project including all of the reports.
  - g) Total - The total of the previous six matrices and the time spent in class.
13. Conclusions - A statement about the status of the project and your ability to complete it on time.

#### 4. Demonstration

At each of the presentations of the progress review, you must demonstrate the status of the project. You should build and test your modules in a modular fashion and be able to demonstrate these modules at each of the progress reports. Plan your work so that you have demonstrable progress to show. As the project continues, you will show more of the total project as you integrate more of the modules together.

#### 5. Final Project Report

At the end of the spring semester, the student presents the completed and working project in the Final Project Review and as part of that review submits a Final Project Report. The Final Project Report contains the following:

1. Title Sheet - As per the example
2. Abstract - One page
3. Dedication (optional)
4. Acknowledgements (optional)
5. Table of Contents

6. List of Figures
7. List of Tables
8. Introduction - A top-down description of the project
9. Detailed specification of the project.
10. Theory that is pertinent to the project
11. A detailed top-down description of the project including block diagrams of the relationship of modules and the PDL to describe each module.
12. Module List/Description
13. A history of the significant changes in the project from its original proposal.
14. Detailed description of the tests that were run to verify the specifications of the project and the results of the tests.
15. Graph of the Cumulative Labor Costs estimated for the project, and the actual costs spent on the project.
16. An Economic Analysis of the project with the original estimated costs in one column and the actual costs in a second column.
17. Conclusions about the success and costs of the project
18. Bibliography
19. Appendices
  - a) A Users Manual including a complete description of the product and troubleshooting procedures.
  - b) A listing of computer code with complete external and internal documentation. This should include documentation produced by JavaDoc, Doxygen, or similar tools.

## 6. CD of the Prototype

Each student must turn in a CD containing:

1. A directory named "install" containing all the files necessary to install your product. Subdirectories should have meaningful names, such as "client," "server," etc.
2. A directory named "source" containing all the source code for the project. This includes all code for every part of the project, whether HTML, Java, etc. Subdirectories should have meaningful names, such as "client," "server," etc.

Your user manual should walk the user through the install process using this CD. The source code will be used to assist in grading your project.