

## CSA-115: Introduction to Computer Science

### Contents

<b>1 Overview</b>	<b>1</b>
1.1 Catalog Description . . . . .	1
1.2 Prerequisites . . . . .	2
1.3 Detailed Description . . . . .	2
<b>2 Course Administration</b>	<b>3</b>
2.1 The Staff . . . . .	3
2.2 Class Meetings . . . . .	3
2.3 Textbooks . . . . .	3
<b>3 Online Resources</b>	<b>4</b>
3.1 CSA-115 Web Page: <a href="http://euler.slu.edu/~goldwasser/csa115">euler.slu.edu/~goldwasser/csa115</a> . .	4
3.2 Electronic Assignment Submission . . . . .	4
3.3 Email with Instructor . . . . .	4
<b>4 Graded Work</b>	<b>5</b>
4.1 Assignments (45%) . . . . .	5
4.2 Exams (55%) . . . . .	5
4.3 Extra Credit . . . . .	5
4.4 Course Grades . . . . .	5
4.5 Academic Integrity . . . . .	6
4.6 Late Policies . . . . .	7
<b>5 Additional Information</b>	<b>7</b>
5.1 Students with Disabilities or Special Needs . . . . .	7
5.2 Related Books . . . . .	7

## 1 Overview

### 1.1 Catalog Description

”A broad survey of the computer science discipline, focusing on the computer’s role in representing, storing, manipulating, organizing and communicating information. Topics to include hardware, software, algorithms, operating systems, networks.”

## 1.2 Prerequisites

There are both official and unofficial prerequisites for this course. The official prerequisite is four years of high school mathematics or equivalent. The reason for this prerequisite is that our study of computer science will inherently involve a level of analytical and mathematical sophistication. This will arise in understanding how information is represented digitally and how computations proceed on such data.

The unofficial prerequisite is that, although we do not expect students to have any formal training in computing, we will expect that the great majority of students enter the class with at least some experience as a `user` of computers. Specifically, we will assume that students are comfortable with creating text files, sending and reading email, and using a web browser to explore content on the Internet. Students who do not have this experience are certainly welcome in the class however they should be aware that these skills are not taught in the class. The instructor can provide advice for gaining such experience.

## 1.3 Detailed Description

Our goal for the course is to explore a broad view of the computer science discipline, emphasizing the connections between individual aspects. To truly understand the capabilities of computing systems, we must recognize how various forms of data are represented digitally, how the major hardware components store and operate on such data and how software is developed to control the systems. We will examine the role of operating systems and networks in coordinating the usage of shared resources and in communicating information. We will also consider the use of computers in the larger society, the ethical implications of these uses, and whether there are inherent limitations to the power of computers.

Cognizant of the great number of topics which are included in the course, our aim is not to offer complete coverage for every topic. Instead, we will choose one or two representative areas of exploration in each sub-discipline, demonstrating the issues and challenges at hand.

For students considering further computer science offerings, this course provides an accurate picture of what lies ahead, hopefully increasing interest in the discipline. The course is also valuable for students who wish to take a single computer science course providing a coherent vision of the entire field.

We should note that computer programming is not a primary focus of this course. The university offers several introductory computer programming courses (e.g., CSA-120, CSP-125), which are specifically designed to maximize the depth of experience in designing and writing computer programs. If desired, this course can be taken independently of, or concurrently with, such courses.

## 2 Course Administration

### 2.1 The Staff

Instructor: Dr. Michael Goldwasser  
Email: goldwamh@slu.edu  
Web: <http://euler.slu.edu/~goldwasser/>  
Office: Ritter Hall 006  
Telephone: (314) 977-7039  
Office hours: Mondays 9:15–10:15am  
                  Tuesdays 2–3pm  
                  Thursdays 11:45am–12:45pm  
                  or by appointment

Please make sure to take advantage of office hours, as they offer a wonderful opportunity for individual attention.

### 2.2 Class Meetings

#### The Lectures

The material will be presented in two weekly lectures. Though attendance in class is not explicitly required, it is certainly expected. Lectures are designed to be interactive and class participation is most welcome. These meetings will offer learning opportunities that cannot be recreated purely from readings. That said, for those who miss a lecture, copies of lecture notes can be found on the course schedule web page.

Time: Tuesday/Thursday, 12:45–2:00pm  
Place: Shannon Hall 118

### 2.3 Textbooks

The required textbooks for this course are:

Title: *Computer Science Illuminated, Second Edition*  
Authors: Nell Dale and John Lewis  
Publisher: Jones and Bartlett, 2004  
ISBN: 0-7637-0799-6  
Website: [csilluminated.jbpub.com](http://csilluminated.jbpub.com)

Title: *Explorations in Computer Science: A Guide to Discovery*  
Authors: R. Mark Meyer  
Publisher: Jones and Bartlett, 2003  
ISBN: 0-7637-2265-0  
Website: [computerscience.jbpub.com/catalog/0763722650](http://computerscience.jbpub.com/catalog/0763722650)

The first of these titles will be our primary text, and the second will serve as a "lab manual" in class and for assignments. They can be bought individually or as a package, and should be available through the campus bookstore as well as various online book vendors. For those interested, a list of related books is included in a later section.

### 3 Online Resources

This course will take advantage of the Internet and the departmental network in many ways.

#### 3.1 CSA-115 Web Page: [euler.slu.edu/~goldwasser/csa115](http://euler.slu.edu/~goldwasser/csa115)

With the exception of the first day's printed handouts, most of the information for this course will be distributed only by means of the course web page. This web site will contain all assignments, a schedule of lectures, detailed lecture notes and links to many other sources of information.

The web page contains some information (e.g. solutions, submitted assignments, individual grades) which is more sensitive and therefore which will be available to students in the class only after they have identified themselves properly. To gain access to these parts of the web page, a student must first complete an online questionnaire, creating a unique identity and password.

#### 3.2 Electronic Assignment Submission

All assignments for this course must be submitted electronically! The submission procedure will be done through the course web page, and allows students to submit from any computer connected to the Internet. Each student in this class will be selecting a unique username/password combination solely for use in identifying the student when using the course web page. Details of the procedure are discussed at: [euler.slu.edu/~goldwasser/csa115/submit/](http://euler.slu.edu/~goldwasser/csa115/submit/)

#### 3.3 Email with Instructor

Face-to-face contact in class and in office hours is most desirable. Yet email is a convenient form of communication as well. I try to respond to email promptly, including at least once each evening when possible.

## 4 Graded Work

### 4.1 Assignments (45%)

We expect there to be a total of 12 weekly assignments during the course, each of which involves some amount of work on a computer. At the end of the semester, **we will throw away your lowest two of the twelve grades**, with the remaining ten assignments contributing to this portion of the grade. The late policy is discussed below.

Each assignment will contain one or more practice problems which are not to be turned in and which can be discussed freely between classmates. The problems which are to be submitted for a grade, however, must be done entirely individually. A more complete explanation of our policy towards Academic Integrity is given in Section 4.5. Most assignments will also offer a small extra credit challenge to those interested.

### 4.2 Exams (55%)

- **First Exam (15%)**, Thursday, 30 Sep 2004, 12:45–2:00 p.m
- **Second Exam (15%)**, Thursday, 4 Nov 2004, 12:45–2:00 p.m
- **Final Exam (25%)**, Tuesday, 14 Dec 2004, 12:00–1:50pm

### 4.3 Extra Credit

Most assignments will include a small extra credit challenge. Please notice, however, that the actual extra credit given for these challenges is relatively insignificant. Students who are seriously concerned about improving their overall grade would be best advised to focus all efforts on doing as well as possible on the required work and in preparing for exams.

Our true reason for including these opportunities is to provide some fun and encouragement for students who wish to dig a bit deeper than was required in an assignment. For those students, the chosen extra credit challenges provide a good next step.

### 4.4 Course Grades

Letter grades will be based on each student's overall percentage of awarded points according to the following formula.

- Student percentage above 90% will result in a grade of A or better.
- Student percentage above 86% will result in a grade of B+ or better.
- Student percentage above 80% will result in a grade of B or better.

Student percentage above 76% will result in a grade of C+ or better.  
Student percentage above 70% will result in a grade of C or better.  
Student percentage above 60% will result in a grade of D or better.  
Student percentage below 60% will result in a grade of F.

Any modification to this scale at the end of the year will be *in favor of the students*. That is we may later decide to award an A to a student who is slightly below the above cutoff, but we certainly will not deny an A from someone who is above the cutoff.

#### 4.5 Academic Integrity

Students are expected to have read and abide by the University statement on Academic Integrity available on page 56 of the Saint Louis University's Undergraduate Catalog. The College of Arts & Science provides a more detailed policy statement, at <http://www.slu.edu/colleges/AS/academichonesty.html>, which applies within the College and thus to this course.

In addition to those general statements, we wish to discuss our policy in the context of this course. When it comes to learning and understanding the **general course material** or the **practice problems**, you may certainly use other reference materials and you may have discussions with other students in this class or other people from outside of this class.

However, when it comes to **work which is submitted for this course**, you are not to use or to search for any direct or indirect assistance from unauthorized sources, including but not limited to:

- other students in this class
- past students, whether from this school or other schools
- other acquaintances
- other texts or books
- online information other than that referenced by course materials

Acceptable sources of information include consultations with the instructor, teaching assistants, or members of organized tutoring centers on campus, as well as any materials explicitly authorized in an assignment. Even in these cases, if you receive significant help you should make sure to document both the source of the help as well as the extent.

Any violations of these policies will be dealt with seriously. Penalties will apply as well to a student who is aiding another student. Any such violations will result in a minimum penalty of a zero on the given assignment which cannot be dropped, and severe or repeated violations will result in an immediate failing grade in the course. Furthermore all incidents will be reported in writing to the Department and/or the Dean, as per the College procedure.

## 4.6 Late Policies

All exams must be taken promptly at the required time. Requests for rescheduling an exam will only be considered if the request is made prior to the start of the exam, or else in an “emergency” situation with appropriate documentation.

For assignments, we wish to allow students to continue to work comfortably beyond the official deadline when a little more time will result in more progress, while at the same time discourage students from falling significantly behind pace and jeopardizing their success on future assignments. Our solution is the following exponentially decaying late formula (some have suggested that we should offer extra credit to anyone who fully understands this formula).

We will consider an assignment submission “complete” when any part of the assignment is last submitted or modified. Any assignment which is not complete promptly by its due date and time will be assessed a penalty based on the formula  $S = R \cdot e^{-h/173}$ , where  $S$  is the grade given,  $R$  is the grade the work would have received had it been turned in on time, and  $h$  is the amount of time (in hours or fractions thereof) that the work was late. Examples:

- work turned in 1 hour late receives over 99.6% of its original credit
- work turned in 5 hours late receives over 97% credit
- work turned in one full day late receives less than 88%
- work turned in two full days late receives less than 76%
- work turned in five days late receives less than 50%

The above policies will be waived only in an “emergency” situation with appropriate documentation.

## 5 Additional Information

### 5.1 Students with Disabilities or Special Needs

In accordance with the Americans with Disabilities Act, reasonable accommodations may be made to assist a student with a documented disability.

Any student who feels that he/she may need academic accommodations in order to meet the requirements of this course, as outlined in the syllabus, due to presence of a disability, should contact the Office of Diversity and Affirmative Action. Please telephone the office at 314-977-8885, or visit DuBourg Hall Room 36. Confidentiality will be observed in all inquiries.

### 5.2 Related Books

There are many other books which try to an overview of computer science in the same spirit as the book we have chosen. We list a selection of such books for those interested.

- *Computer Science, An Overview*, 8<sup>th</sup> edition  
Author: J. Glenn Brookshear  
Publisher: Addison Wesley, 2005  
ISBN: 0-321-24726-4  
Website: [www.aw-bc.com/catalog/academic/product/0,1144,0321247264,00.html](http://www.aw-bc.com/catalog/academic/product/0,1144,0321247264,00.html)
- *The Analytical Engine: An Introduction to Computer Science Using the Internet*, Second Edition  
Authors: Rick Decker and Stuart Hirschfield  
Publisher: Brooks/Cole Pub, 2004  
ISBN: 0-534-39159-1  
Website: [www.course.com/catalog/product.cfm?isbn=0-534-39159-1](http://www.course.com/catalog/product.cfm?isbn=0-534-39159-1)
- *Foundations of Computer Science – From Data Manipulation to Theory of Computation*  
Author: Behrouz A. Forouzan  
Publisher: Brooks Cole, 2003  
ISBN: 0-534-39143-5  
Website: [www.course.com/catalog/product.cfm?isbn=0-534-39143-5](http://www.course.com/catalog/product.cfm?isbn=0-534-39143-5)
- *An Invitation to Computer Science, Java Version*, Second Edition  
Authors: G. Michael Schneider and Judith L. Gersting  
Publisher: Brooks/Cole Pub, 2005  
ISBN: 0-534-41994-1  
Website: [www.course.com/catalog/product.cfm?isbn=0-534-41994-1](http://www.course.com/catalog/product.cfm?isbn=0-534-41994-1)
- *Introduction to Computing and Algorithms*  
Author: Russel L. Shackelford  
Publisher: Addison Wesley, 1998  
ISBN: 0-201-31451-7  
Website: [www.aw-bc.com/catalog/academic/product/0,1144,0201314517,00.html](http://www.aw-bc.com/catalog/academic/product/0,1144,0201314517,00.html)
- *Fluency with Information Technology: Skills, Concepts & Capabilities*  
Author: Lawrence Snyder  
Publisher: Addison Wesley, 2004  
ISBN: 0-201-75491-6  
Website: [www.aw-bc.com/catalog/academic/product/0,1144,0201754916,00.html](http://www.aw-bc.com/catalog/academic/product/0,1144,0201754916,00.html)
- *The Essential Guide to Computing: The Story of Information Technology*  
Author: E. Garrison Walters  
Publisher: Prentice Hall PTR, 2001  
ISBN: 0-130-19469-7  
Website: see [www.phptr.com](http://www.phptr.com)