# CPE 101: Fundamentals of Computer Science I
# Fall 2009
# Course Syllabus

September 20, 2009

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**office:** 14-215

| Section | Days | Lecture | | Lab | |
|---|---|---|---|---|---|
| | | When | Where | When | Where |
| CPE 101 08 | MVF | 9:10 – 11:00am | 192-331 *(Eng. IV)* | 9:40-11:00am | 14-301 *(F. Pilling)* |

**Office Hours**

| | When | Where |
|---|---|---|
| Monday | 8:30am - 9:30am | 14-215 |
| Wednesday | 8:30am - 9:30am | 14-215 |
| Thursday | 9:00am - 12:00pm | 14-215 |

Additional appointments can be scheduled by emailing the instructor at *dekhtyar@calpoly.edu*.

## Overview

Congratulations! This your first Computer Science course. Informally, the course has two goals: (i) to explain to you what Computer Science is as a discipline and a profession and (ii) to give you basic knowledge of a modern programming language (C).

Somewhat more formally, **the course objectives are**:

- Learn the basic principles of problem solving in Computer Science.
- Learn the basic principles of software development process.

- Learn one modern procedural programming language (C).
- Prepare for CPE 102.

## Textbook

**Required:** *Problem Solving and Program Design in C*, Hanly and Koffman, Addison Wesley, 4th Edition (ISBN: 0-321-19803-4) or 5th Edition (ISBN: 0-321-40991-4), Addison Wesley.

**Note:** This book is **required**. In addition to reading, homework assignments will be given out of the book.

**Recommended:**

- *The C Programming Language*, Kernigan, Ritchie, 2nd Ed, Prentice Hall.

**Note:** There are many different books on C, and you may already have some. Please consult me, if you want to you such a book throughout the course.

## Topics

The following will be covered in the course.

| No. | Topic | Duration (weeks) |
|---|---|---|
| 1. | Introduction: What is Computer Science | 1 |
| 2. | Introduction to C/Arithmetics | 1 |
| 3. | Input/Output (I/O) | 1 |
| 4. | Conditional Statements | 1 |
| 5. | Loops | 1 |
| 6. | Functions | 1 |
| 7. | Arrays | 1 |
| 8. | Strings | 1 |
| 9. | Structs | 1 |
| 10. | Pointers | 1 |

The topics may be covered in a different order.

## Grading

| | |
|---|---|
| **Homeworks** | 5% |
| **Labs** | 10-15% |
| **Automated Lab Tests** | *** |
| **Programming Assignments** | 20-25% |
| **Midterm Quizzes** | 30% |
| **Final Exam** | 30-35% |

| Score | Guaranteed Grade |
|---|---|
| 90 – 100 | **A** |
| 80 – 89 | **B** |
| 67 – 79 | **C-** |
| 57 – 67 | **D-** |
| below 67% | **F** |

**Note:** These are **guaranteed** grades. The final letter grade may be higher depending on the overall performance of everyone in the course and on the difficulty of exams and assignments.

**Note:** In order to be allowed to register for CPE 102 you **must pass CPE 101 with a grade of C- or higher!** A grade of **D+**, **D** or **D-** means that you have to retake CPE 101 before proceeding with the program.

**Note:** Please note that College of Engineering has instituted strict requirements concerning course repetitions and being in good standing, starting this academic year. Please see a separate handout for the outline of these policies.

**Note***:** A non-failing grade in the course will be assigned to a student ONLY if the student passed at the **lab quizzes**. See below for the exact policies.

### Furloughs

During this academic year all Cal Poly faculty is observing a furlough.

Each full-time faculty member is required to observe **six days of furlough** during the Fall quarter.

I will be observing the following days:

| No. | Date | Day of Week | Effect |
|---|---|---|---|
| 1. | September 29 | Tuesday | *no effect* |
| 2. | **October 14** | Wednsday | no class, no office hours |
| 3. | **October 23** | Friday | no class |
| 4. | **November 16** | Monday | no class, no office hours |
| 5. | November 27 | Friday | *no effect* (Friday after Thanksgiving) |
| 6. | December 3 | Thursday | *no office hours* |

I will be off-campus and unavailable for emails on furlough days.

**Note.** Please be aware that while the faculty are furloughed, the students are not. Unless otherwise announced in advance, the lectures are cancelled on furlough days, however, we keep the lab available to you for the lab session. You are expected to attend the lab session and use it to work on you pending lab assignment. *Assignments may be due for submission on faculty furlough days.*

## Course Policies

### Overall

Welcome to the Computer Science (Computer Engineering, Software Engineering) program! Some of the policies in this section may seem intuitive, but since this may be your first college course in your desired major, we outline and stress them here.

**Withdrawal.** You are free to drop this course during the first **eight days** of the quarter. Beyond day 8, *proof of unusual circumstances* is **required** if you want to withdraw. The instructor has no influence on the withdrawal process.

**Line Dropping.** You should be aware that the instructor is given the power to drop from the course roster any student who is deemed either (a) a no-show or (b) to not satisfy course prerequisites. While prerequisite satisfaction will become more important in later classes, please note, that lack of attendance in the fist two weeks of classes may lead to you being dropped from the roster as a no-show. **If you anticipate not being able to make one or more classes at the beginning of the quarter, please notify the instructor in advance!**

**Waiting Lists.** The department tries to accommodate every incoming freshman and make sure that there are enough sections for everyone to enroll. Occasionally, this does not work out and students wind up on waiting lists. In CPE 101 the size of each section is limited by the number of workstations in the lab. **This is a hard bound.** I will allow students from the wait list (if such exist) register for the course *until* we reach that limit. (I believe, last quarter it was 35 or 36, we will make that determination during the first lab). Students will be moved off of waiting list and into the class roster **strictly in the order in which they appear on the waiting list**.

**Incompletes.** A grade of **I** (***Incomplete***) will be given strictly in the cases stipulated by the university policies. Documentary evidence of the unusual circumstances leading to the assignment of this grade will be required in all cases **without exception**.

**Collaboration.** Both University and course policies regarding academic integrity are outlined at the end of the syllabus. These policies will be strictly enforced throughout the course. All students are required to sign a non-collaboration agreement.

**Programming Style.** When you submit programs for grading, they will be required to comply with a programming style sheet, which specifies layout of the code, use of indentation, variable naming, etc. Your instructor will go over this style sheet with you in class. See

http://users.csc.calpoly.edu/~cstaley/General/CStyle.htm

A uniform programming style makes it easier for programmers to work together on projects, and we will require the same style for all 101 students this fall in order to promote uniform style within the major. Any code that varies significantly from the required style will be handed back to you to redo, possibly with penalties, until it complies with the style sheet.

## Exams

You will have three midterm quizzes and one final exam.

The midterm quizzes will last for 20-30 mins, and will be offered on Mondays of Weeks 3, 5 and 7:

| | | |
|---|---|---|
| Midterm quiz 1 | October 5 | Basics of C |
| Midterm quiz 2 | October 19 | Conditions, Loops |
| Midterm quiz 3 | November 2 | Functions |

To **pass** an individual quiz you must score 70% or better on it.

We will have a **common final exam** for all students in all sections of CPE 101. The exact day and time of the exam will be announced in advance. Some students may have conflicts with other common finals (e.g., Calc I). We need to be notified of these conflicts as soon as possible.

**Make-up exams** for missing quizes will not be given, *unless there are extraordinary circumstances present and I am notified in advance.* By default, the exams will be **closed book, closed notes**. Any exceptions from this rule will be conveyed to you ahead of the exam.

## Homeworks

Each new topic in the course comes with **assigned reading**. The reading schedule is posted on the course web page. You are responsible for having read the textbook material assigned, even if portions of it are not covered in class, or are not covered in enough detail. Exams may have questions, and lab assignments may rely on knowledge contained in the books, but not discussed in class (on occasion, this may be done **on purpose**!).

Additionally, paper-and-pencil homework will be assigned on occasion. This will mostly involve problem analysis and problem-solving, preparation for in-class lab assignments, and solving problems from the textbook.

## Labs, Automated Lab Tests

Lab sessions start 10 minutes after the lecture period ends. Except for the first week, I expect everyone to be logged on and ready to work on the assignments at the beginning of each lab period.

Each week you will be given a lab assignment, which will advance your practical skills with C programming and (hopefully) – with problem solving. The lab assignment will typically be given out on a Monday of the week, and will be due the end of the lab period on Friday. On weeks with furlough days, automated lab tests and holidays, lab schedule can be altered, and some labs may become longer than 1 week in duration.

You are welcome to work on the lab assignments outside the lab hours, however, lab period attendance is mandatory. *You may only leave the lab period (a) with the express permission of the instructor if (b) the current assignment is complete and the next assignment has not been made available yet.* Some lab assignments can be done in pairs or small groups, while others will be individual. Each lab assignment will state it explicitly. All members of the group receive the same grade for all group/pair assignments.

**Automated Lab Tests. This is IMPORTANT!** Three times during the quarter you will have a **automated lab test.** The automated lab tests will be administered in Weeks 4, 6 and 8 or 9. Tentatively, the days are:

| | | |
|---|---|---|
| Automated Test 1 | October 12 | Conditions |
| Automated Test 2 | October 26 | Loops |
| Automated Test 3 | November 13 | Functions |

An **automated lab test** is a short programming assignment which you must complete within the allotted time. The allotted time is typically 50 minutes. The assignment must be completed by each student **individually** and any collaborative attempts will be immediately regarded as *academic cheating* and dealt with according to the university policies (see below). We expect that all or most lab tests will be conducted using a special on-line software system. You will receive some basic training with the tool prior to the first automated test.

Lab tests have two key properties: (a) they are graded as *pass/fail* and do not directly contribute towards your final grade, and (b) without passing all three of them, you will not receive a passing grade in the course. More specifically:

- **Grading**. The programs assigned to you will contain very specific instructions/requirements. As such your program will be expected to pass 100% of the instructor's tests. Failure to produce correct/defined behavior in any of the tests will result in you **failing** the lab test.
- **Passing Course.** You will receive a **passing grade** in the course ONLY if you successfully pass all three lab tests. Failure to do so will result in an automatic assignment of the grade of **D** or **F** (as the rest of your performance warrants) to you in this course.
- **Retaking Lab tests.** Lab tests are to be done in a special environment and grading them is automated. Each student will receive a personal assignment during the lab test. If the assignment is not completed, you can attempt multiple (until you succeed) retakes of the test. The retakes will be administered by the **tutoring center** at the CS department (see below). Each retake must be timed and proctored. Tutoring center staff will provide further retake instructions for you as needed.

## Programs

In addition to lab assignments, you will also be given three programming assignments during the quarter. In each assignment, I will provide program requirements. You will need to do problem analysis, design, implementation, testing and documentation. Each assignment will be two-to-three weeks long. These assignments are supposed to be completed by you individually (unless stated otherwise in the specific assignment) outside of the lab sessions.

### Assignment Due Times and Late Submissions

Each assignment (homework, lab, program) will be distributed to you in hardcopy as well as made available electronically through the course web page (see below). Each assignment will specify due date and time as well as give submission instructions.

Paper-and-pencil **homework assignments** are due at the beginning of the class on the due date. Submit them as you walk into the classroom.

**Lab assignments** are due at the end of the lab period, typically, on Friday of each week. On occasion, the due time may be extended to midnight. Each assignment will specify the due date/time.

**Programs** are due at the date and time specified in the assignment. The due time will typically be midnight of the due date.

**Late submissions.** There is a 24-hour late submission window for programming assignments. This includes programs and most of the lab assignments. A 10-30% (depending on the time of submission and the type of the assignment) penalty will be assessed on any late submission. No late submissions will be accepted for credit **after** the 24-hour period. No late submissions will be accepted for credit for paper-and-pencil homeworks.

The exceptions to late submission policies are ***documented unusual circumstances***. If such circumstances are foreseen, I require prior notice of them. In case of unforeseen circumstances, please make every effort to inform me about your situation as soon as you can. Please note, that almost under no circumstances will any dispensations be given *postfactum*.

## Communication

The course has an official mailing list. The email address for the mailing list is

*cpe-101-08-2098@calpoly.edu*.

All students enrolled in the class are automatically subscribed to the mailing list corresponding to their section.

I encourage questions during class time and questions via email. My answers to email questions may be broadcast to the entire class via the mailing list, if the answer may be relevant to everyone (e.g. a correction in a text of a handout, or a clarification of a homework problem), and may also appear on the web page. The questions can also be posted to the mailing list directly. The mailing list will also be used for all announcements related to the course. It is your responsibility to read y our class-related email. Failure to read email posted to the mailing list cannot be used as an excuse in the class.

## Web Page

Class web page can be found at

http://www.csc.calpoly.edu/∼dekhtyar/101-Fall2009

Through this page you will be able to access all class handouts including homeworks, lab and program assignments, test data, sample programs and lecture notes (should the latter be written).

## Academic Integrity

Please read these carefully.

### University Policies

Cal Poly's Academic Integrity policies are found at

http://www.academicprograms.calpoly.edu/academicpolicies/Cheating.htm

In particular, these policies define *cheating* as (684.1)

> "*... obtaining or attempting to obtain, or aiding another to obtain credit for work, or any improvement in evaluation of performance, by*

*any dishonest or deceptive means. Cheating includes, but is not limited to: lying; copying from another's test or examination; discussion of answers or questions on an examination or test, unless such discussion is specifically authorized by the instructor; taking or receiving copies of an exam without the permission of the instructor; using or displaying notes, "cheat sheets," or other information devices inappropriate to the prescribed test conditions; allowing someone other than the officially enrolled student to represent same.*"

Plagiarism, per University policies is defined as (684.3)

> "... the act of using the ideas or work of another person or persons as if they were one's own without giving proper credit to the source. Such an act is not plagiarism if it is ascertained that the ideas were arrived through independent reasoning or logic or where the thought or idea is common knowledge. Acknowledgment of an original author or source must be made through appropriate references; i.e., quotation marks, footnotes, or commentary."

University policies state (684.2): **"Cheating requires an "F" course grade and further attendance in the course is prohibited."** (appeal process is also outlined, see the web site above for details.). Plagiarism, per university policies (684.4) can be treated as a form of cheating, although a level of discretion is given to the instructor, allowing the instructor to determine the causes of plagiarism and effect other means of remedy. It is the obligation of the instructor to inform the student that a penalty is being assessed in such cases.

### Course Policies

Many of your lab assignments, and possibly some of the projects, will allow work in pairs or teams. Its easier for many people to explore difficult new material with a partner to work with. However, you will be required in your professional work to be able to write programs on your own as well. For this reason several of the class programming projects will be designated as individual work only. *You are required to do your own work on these assignments.Collaboration on such projects is strictly forbidden, and you must sign a contract agreeing to this standard* .

If you're accustomed to a high-school environment where cheating is discouraged but not really punished, please become unaccustomed to it immediately. We're very serious about this rule, because we know that individual work is an essential part of what you need to be successful professionals. Cheating will not only be punished with an F for the course; it will also result in you being reported to the University authorities.

If you feel you cannot complete the work on your own, the right solution is to come to your instructor and ask for help or to use the resources described below. We will give you individual attention, and a student tutor to assist you as well, but well make sure you ultimately are able to program on your own.

The penalties for cheating on individual assignments *apply not only to the receiver of help, but also to the giver.* Even well-intentioned help can seriously degrade a fellow students education if it is done incorrectly. Do not offer assistance to fellow students on individual assignments, and keep your own work secure.

If you are actively interested in learning how to tutor fellow students, please Email Dr Staley at cstaley@calpoly.edu. He runs our tutoring center, and teaches a course for students interested in tutoring (CSC 303). Once you learn how to help fellow students in a way that enhances their education, wed value your assistance in the tutoring center. (And well pay you for it, too.) If you have any question regarding the cheating standards, please feel free to ask us. We don't mind such questions; in fact we appreciate them because they show that you're taking the standards seriously.

## Support and Advancement

### CPE 105 and CSC Tutoring Center

There are two resources you may find especially helpful if you would like tutorial assistance with this course. Both of these are allowed sources of help under the noncollaboration agreement, even for individual projects:

CPE 105X is a support course for 101 students, which meets twice weekly, and is conducted by a carefully chosen and trained teaching assistant. Enrollment for this course is available throughout the add period, and we encourage you to sign up. In some cases, if we feel it is important to your success (e.g. if you are failing the lab programming tests), we may require you to attend a CPE 105 section even if you are not registered for it.

The CPE 105X web page is

http://wiki.csc.calpoly.edu/cpe105

The CSC department also runs a tutoring center. See

http://www.csc.calpoly.edu/resources/tutoring/.

We recommend this center if you are having difficulty in the course.

### CPE 108

Some of you may already have prior programming experience. If you do, and you think that you will be bored in 101, but can handle a course with a faster pace, please contact the course instructor, Professor Clint Staley at cstaley@calpoly.edu within the first week of classes to see if you can be placed in CPE 108.