CIS 101 – Beginning Programming
Course Syllabus and Calendar – Fall 2008

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Brigham Young University—Hawaii Campus

1 Overview

In this course you learn to write programs in Perl.

Prerequisites: We do not expect any prior experience in programming. We do expect you can send and receive email, and you can do word processing like Microsoft Word. Mathematically, you should be reasonably good at simple algebra, things like x+y=7, y=3, solve for x. If math like that frightens you, you are in the wrong class.

Topics: We cover variables, printing, precedence, if/else, loops, subroutines, arrays, and a number of related minor topics.

Grading is based on 1000 points, with 500 for labs, 200 for in-class activities, and 300 for tests. 930 for A, 900 for A-, ..., 600 for D-.

Group Work: Students can work alone but are encouraged to work together on labs. Most students have been on group projects where some people did more work than others. Those that do all the work get all the learning. Those that freeload learn less.

Tests are designed to see how much you learned while doing the labs. Some students get maximum points on all the labs and fail all the tests. Such students will usually earn a D in the class.

2 Introduction

Computer programming is one of those exciting, high-tech jobs that can make you a ton of money. It also puts you in control of the destinies of thousands. (When was the last time you were affected by a computer somewhere?). It leverages your own abilities by cloning a part of you to run on possibly many computers all hours of the day and night. While you sleep or play with your kids.

This course and its successor (CIS 201) teach you to program well enough that you can easily learn any language employers want, now or in the future. And, if you like doing programming, that means a well-paying job.

2.1 The Course

- **Course Number:** CIS 101
- **Title:** Beginning Programming
- **Course Description:** Structured programming fundamentals: control (sequence, selection, iteration and subroutine), data type (int, float, array), and output formatting. Extensive program development and testing.
- **Textbook:** (recommended) any book on Perl.
- **Class Time:** MWF 11:00 AM – 11:50 AM
- **Final Exam:** Fri Dec 12, 11-2.
- **Class Time:** MWF 1:00 PM – 1:50 PM
- **Final Exam:** Wed Dec 10, 3-6.
- **Classroom:** GCB 111

2.2 The Instructor

- **Instructor (me):** Don Colton
- **My email:** don@colton.byuh.edu
- **My Office:** GCB 128

2.3 Grading

Your grade is based on points. 1000 points are assigned. Some extra credit points are available. The grading is as follows:

930+	A	900–929	A-	870–899	B+
830–869	B	800–829	B-	770–799	C+
730–769	C	700–729	C-	670–699	D+
630–669	D	600–629	D-	0–599	F

It has been a while since I taught this class. Lately I have been teaching the CIS 201 class instead. But here is some historical information on grading:

In Fall 2000, the 74 grades were: `A` 48 (65%), `A-` 5, `B+` 4, `B` 2, `B-` 2, `C+` 2, `C-` 1, `F` 1, `UW` 9 (12%). My

goal is that you will master the course material. If you do, you will probably earn an "A." Grading is discussed further below.

2.4 Office Hours

Office hours are daily 9:00 to 9:50 AM. They are posted on my office door. Students for whom the posted hours are not convenient can contact me by email to make an appointment.

Even if it's not my office hour, if my door is open (even just a bit) feel free to knock and come in.

2.5 Students with Special Needs

If you require accommodation for special learning needs or physical impairments, please see me as soon as possible.

3 Why Take This Course?

In the old days (when I was young) CIS professionals wrote programs. Today many CIS professionals still write programs, while many others do not but still must understand programming. For many, the focus of a CIS professional's life has shifted from COBOL and RPG to the Internet. Often programs are bought off-the-shelf and customized rather than being built from scratch.

This however does not remove the need for an understanding of what goes on in a computer, or what goes into a program. I believe there will always be many CIS jobs that require programming as a routine part of their workday, and people who can program will be sought-after and respected (and employed). (CGI scripting and automation of web pages come to mind.)

This course and its successor (CIS 201) will teach you to program well enough that you can easily learn any language employers want, now or in the future. The foundation of most modern languages is ALGOL. Perl is based on that foundation. With the skill at Perl learned in this course, you will be able to continue learning Perl or any of the other languages (including 4GLs) that are likely to be encountered in CIS settings. You will know the fundamentals of computer programming. After these two classes, I believe those of you that get "A"s will be good enough to get entry-level programming jobs (even before graduating).

4 Prerequisites

There are no formal prerequisites for this class. To be successful you will need to use a computer, type, read, and recognize patterns in the things you see. I expect that you can manage your time well enough to get the work done, and not wait until the last week or two.

I assume you have **no experience** writing programs. This seems to be true for about 80% of my students. We start from the very beginning in that regard. You must, however, be willing to work hard, two to three hours per class session.

5 Grading

Your grade is earned by getting points for completing labs and tests. When you have earned enough points, see me and I will certify your final grade. Once your cis101 computer account is set up, progress reports are available to you by computer at any time.

in-class activities	200 pts
programming labs	500 pts
quizzes and exams	300 pts
total points possible	1000 pts

Deadlines: Each assignment has a deadline. You can see these deadlines by asking GradeBot (see below) for a **status** report. Most deadlines are "soft." Before the deadline an item is worth a certain number of points (100%). After the deadline, it is worth somewhat less each day until it reaches 60% of its original value. It then remains at the 60% level until the last day of class. All work must be completed by the end of the last day of class. Remember also that computer labs and testing centers sometimes shut down early on the last day. The final exam has a separate deadline.

Incomplete and UW: If you quit working in the class and do not get at least 600 points (a passing grade), generally I will give you a "UW" grade. In addition to saying that you failed the class, a UW also tells people that you didn't seriously attempt the class; you just gave up.

I rarely give "I" grades (incompletes) and only in unusual circumstances. In my experience only a vanishingly small fraction of incompletes are ever completed. I will consider giving you an incomplete if you request it, seem to have a good reason, have a

pretty solid timeline for completion, and you get the necessary paperwork filled out. I will not babysit you through the completion of an Incomplete, but I will assist you when you ask for help.

6 Work (No Pain, No Gain)

Most of your time will be spent writing programs. I estimate that a good student programmer could complete all of these assignments in about a month, working quarter time (as you should be). A professional could probably do most of them in one or two nights.

Since I do not assume you are a good programmer when you start, or even when you finish, I allow 14 weeks. Be aware that the work is only difficult because it is unfamiliar. Our task is to make it familiar, and therefore easy. You will find that assignments you did in three or four hours early in the semester can be done in just a few minutes late in the semester. You should feel a great sense of achievement.

If it takes you longer than others, remember that we do not all start with the same skills. About 10% of the students fail the class and take it again. This is not shameful, although it is tedious if you are one of those students.

Attendance: Each day of class I take roll. This serves several purposes, including helping me to learn your names. Arriving on time counts toward your in-class activity points for the day. If you come in late and want credit for attending, you are responsible for making sure I notice you.

Programming Labs: The key to this course is programming. That is the purpose of the class. That is your reason for being here. It is a vital skill for CIS professionals. That is why you signed up (or were forced to sign up). You want to learn to program. You will program. You may even like it.

You will write a lot of fairly simple programs, and test and submit them for grading. Each program must run perfectly (more on that below) before it will be accepted. Most students will submit a program five or more times before it is accepted. The overall average time spent fixing and resubmitting programs apprears to be about 30 minutes per program.

Bubble Tests: There are several quizzes given at the testing center using bubble sheets. You can complete the quizzes as soon as you want. I allow unlimited time and scratch paper, but no books, no notes, and no calculators. For each test, I will make available sample tests (with answers) that you can use as a study guide. You only get one chance to take each test. (If you feel there is some special reason you should get another chance, such as sudden illness, discuss it with me.)

Programing Tests: A few tests will be given in class. These will mostly require you to write by hand one or more programs.

7 GradeBot (Yes Drill Sergeant Sir!)

GradeBot is my robotic program grader. It (he?) is available 24 hours a day, seven days a week, to grade and return your lab assignments. This is done via the web (or possibly email).

I provide you with a computer account on the is2.byuh.edu UNIX host. This account gives you access to a UNIX system, software (including compilers and assemblers), email, and some storage. You can use this account to do all the lab work in this class. See me if you need any help getting set up.

GradeBot is correct and authoritative. It is your boss. It is your client. It is your Drill Sergeant. There is always a particular correct behavior that it wants. You must make your program behave in exactly the way that GradeBot is requiring. This may involve changing the wording of your prompts and/or the spacing and wording of your output. It will not significantly alter the difficulty of the problem.

To submit a program to GradeBot, log into the GradeBot web interface and write or paste your program into the space provided. Then press the SUBMIT button.

If you discover a case where you believe that GradeBot is wrong, tell me about it. If you found an error in GradeBot, I generally reward you with some extra credit. Otherwise, you must assume GradeBot is right.

8 CIS 101 Course Calendar

The first day of class is an orientation to the class. During the next few class periods I demonstrate (using an overhead projector) how to do the lab work. This continues until most or all students have completed the first two labs.

date	num	topics, activities
04/25	1	Orientation, dem1-1, tc1

You will encounter problems that would be difficult to solve by yourself, so I am available (especially in class) to help you. But to get that help you must ask a question or state a request. For example, "Brother Colton, how do you do problem 17-2?" Each class period I will come to the class room and respond to these questions and requests. In that way, you the students will determine the topics to be discussed each day, in response to the deadlines provided in your GradeBot status reports.

9 Assignment Calendar

The dates on this list are not guaranteed. They are approximately correct. You should run a GradeBot status report to find the authoritative, correct due dates for you.

```
(to be added)
 3: dem1-1    thru Apr 30 (Mon)  10 pts
96: final-ic  thru Jun 15 (Fri)  50 pts
97: final-tc  thru Jun 15 (Fri) 100 pts
```

10 Outcomes

An important way of looking at a course is to ask what outcomes it should create. Students completing this course will be able to do the following things:
• use control structures (if, while, sub).
• apply precedence to resolve complex math expressions.

The CIS 101 course addresses the following CC2001 Knowledge Units. These are defined in Computing Curricula 2001, a joint project of IEEE-CS and ACM. The IEEE Computer Society and the Association for Computing Machinery are the two major professional societies in computer science.

Much of this material is covered in more than one course.

PF1. Fundamental programming constructs

We review material that was introduced in CIS 101.
• Basic syntax, semantics of a higher-level language
• Variables, types, expressions, and assignment
• Simple I/O
• Conditional and iterative control structures
• Functions and parameter passing
• Structured decomposition

PF2. Algorithms and problem-solving

• Problem-solving strategies
• The role of algorithms in problem-solving process
• Implementation strategies for algorithms
• Debugging strategies
• The concept and properties of algorithms

11 Additional Statements

All syllabi are encouraged or required to address certain topics. These are generally considered to be

common sense, but we find that it is useful to mention them explicitly anyway.

11.1 Accommodating Special Needs

I am personally committed to making this course as easy as possible (but no easier). To this end, I give many quizzes in the testing center without time limits. To fully teach important concepts, I give lab work, but it is not constrained by the amount of time available in class. I publish important assignments on my web site so you do not have to rely on note taking or memory to know what you need to do. I allow an unlimited number of attempts on labs that are graded by GradeBot, and make it available 24 hours a day throughout the semester. I believe that many cases of special needs are already accommodated by these practices.

For in-class examinations (midterms and final exam) I apply a strict time limit and do not allow outside resources. To avoid giving an unfair advantage, I require those who need a special accommodation to establish their rights by working through the BYUH Special Needs Coordinator.

Brigham Young University Hawaii is committed to providing a working and learning atmosphere which reasonably accommodates qualified persons with disabilities. If you have any disability that may impair your ability to complete this course successfully, you are invited to contact the Students With Special Needs Coordinator, Leilani A'una or her successor at 675-3518. Reasonable academic accommodations are made for all students who have qualified documented disabilities.

11.2 Plagiarism

`http://en.wikipedia.org/wiki/Plagiarism` has a wonderful article on plagiarism. Read it if you are not familiar with the term. Essentially, plagiarism is when you present the intellectual work of other people as though it were your own. This may happen by cut-and-paste from a website, or by group work on homework. In some cases, plagiarism may also create a violation of copyright law. If you borrow wording from someone else, identify the source.

Intentional plagiarism is a form of intellectual theft that violates widely recognized principles of academic integrity as well as the Honor Code. Such plagiarism may subject the student to appropriate disciplinary action administered through the university Honor Code Office, in addition to academic sanctions that may be applied by an instructor.

Inadvertent plagiarism, whereas not in violation of the Honor Code, is nevertheless a form of intellectual carelessness that is unacceptable in the academic community. Plagiarism of any kind is completely contrary to the established practices of higher education, where all members of the university are expected to acknowledge the original intellectual work of others that is included in one's own work.

In this course group work is permitted and encouraged but you are not allowed to turn in work that is beyond your understanding, whether you give proper attribution or not. Make sure you understand what you are submitting and why each line is there.

Faculty are responsible to establish and communicate to students their expectations of behavior with respect to academic honesty and student conduct in the course. Observations and reports of academic dishonesty shall be investigated by the instructor, who will determine and take appropriate action, and report to the Honor Code Office the final disposition of any incident of academic dishonesty by completing an Academic Dishonesty Student Violation Report. If the incident of academic dishonesty involves the violation of a public law, e.g., breaking and entering into an office or stealing an examination, the act should also be reported to University Police. If an affected student disagrees with the determination or action and is unable to resolve the matter to the mutual satisfaction of the student and the instructor, the student may have the matter reviewed through the university's grievance process.

11.3 Sexual Harassment

BYUH's policy against sexual harassment complies with federal Title IX of the Education Amendments of 1972 to protect university students from student-to-student sexual harassment both in and out of the classroom setting. Any incidents of such student-to-student harassment should be reported to either the Director of Human Resources (293-3713) or the Honor Code Office (293-3531). Allegations of sexual harassment are taken seriously. Upon receiving a report of sexual harassment, the Director of Human Resources will take appropriate action to resolve and correct conditions resulting from individual perceptions or from inappropriate behavior.

11.4 Syllabus is Subject to Change

It is possible that I will revise aspects of the course as we go along. Any changes I make are likely to be to your advantage. If any of my changes seems unfair to you, let me know. I will try to correct it.