

CIS 101 – Beginning Programming

Course Syllabus and Calendar – Spring 2011

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Brigham Young University Hawaii

1 Overview

This is a fun class. Some say it is the best class they ever had. (No kidding. Maybe they should get out more.) It is hard work. It is powerful knowledge. It is skills you can “take to the bank.”

It is a foundational step in developing your ability to serve those around you by giving them better ways to use their computers.

We build web-based programs that you can share through the Internet with anyone in the world: friends, family, anybody. And we develop skills you can use later in classes and the work place.

The textbook is online free. You can download the PDF from <http://ipup.doncolton.com/>

Most time in class is spent actually making things. I go over parts of the textbook to introduce activities, but there is lots more in the book that we will expect you to read on your own.

Your grade is based on points for demonstrating specific skills listed below. You get one point for each skill. Every three points or so, you level up.

Based on past experience, almost everyone will pass the class. To get an A you must do a project of your own design.

1.1 Preparation

We assume you have no programming experience whatever. We expect you can type, send and receive email, and visit web sites.

1.2 So, What is Programming?

Computers are pretty stupid. But they are fast, reliable, and cheap. They don’t call in sick or take vacation. Many interesting tasks can be broken down into the simple steps that computers can perform. For these reasons, even though they are pretty stupid computers are very popular.

The art of programming is to convert useful activities into simple steps that a computer can perform.

Our programming language will be Perl.

2 Course Details

- **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:** Introduction to Programming Using Perl and CGI, by Don Colton.
- **Classroom:** GCB 111
- **Start/End:** Apr 18 to Jun 1, 2011
- **Class Time:** MWF 9:50 AM to noon
- **Final Exam:** Wed, Jun 1, 9:50 AM to noon

2.1 The Instructor

- **Instructor (me):** Don Colton
- **My email:** doncolton2@gmail.com
- **Home Page:** <http://byuh.doncolton.com/>
- **My Office:** GCB 128
- **Office Hour:** MWF 12:10 – 1:10 PM

3 Learning Objectives

The following is a statement of the high-level learning objectives for this course. Each objective can be further divided into many smaller objectives.

By the conclusion of this course, students will demonstrate the ability to write correct programs that utilize the following techniques.

- * sequences of simple steps
- * simple variables
- * decisions (if, else, elsif)
- * looping (while, for, foreach)
- * array and list variables
- * simple regular expressions
- * subroutines
- * dynamic web page creation
- * dynamic response to web page inputs

Students will demonstrate most of these skills by creating short programs that perform specific tasks in timed and supervised testing situations.

Students will demonstrate the other skills by creating working server-side web programs that create web pages and process input from web pages. Initially these will be done in class. These culminate in an individual Final Project done outside of class.

Students that meet all of these objectives can expect an A grade for the class. Students that meet half of these objectives might expect a C grade.

4 Grading

Grading is based on learning objectives and learning activities. Each is worth one point. The points are listed below.

As you demonstrate adequate skill with each objective, a point is awarded toward your semester grade. I track your progress online so you can always tell which points you have received.

You need this many of the 40 points for each grade:

10 D-; 12 D; 14 D+; 16 C-; 18 C; 21 C+;
25 B-; 28 B; 31 B+; 34 A-; 36 A

I sometimes give extra credit assignments good for

a point or two.

(4) Reading Points

- r1 : Read 1-7, 9-14, and 64 (69p) by Fri Apr 22.
- r2 : Read 17-24 and 27 (36p) by Mon May 2.
- r3 : Read 29-32 and 35-39 (35p) by Wed May 11.
- r4 : Read 41-45 and 48-50 (56p) by Wed May 25.

(3) Online Points - Basics

- oS : Online Static: create an html web page
- oP : Online Pictures: use img tags
- oC : Online CGI: write a dynamic web page

(1) Exam Section 1: String Handling (Basic)

- 1B : String Basic

(2) Exam Section 2: Number Handling (Basic)

- 2B : Number Basic
- 2S : Number Story

(3) Exam Section 3: Programming Style

- 3S : Style Spacing
- 3B : Style Block
- 3N : Style Block Nested

(2) Exam Section 4: Numeric Decision

- 4D : Number Decision
- 4S : Number Decision Story

(2) Exam Section 5: String Decision

- 5D : String Decision
- 5B : String Decision Bracket

(1) Online Points - Intermediate

- oI : Online Input: process closed-set input

(4) Exam Section 6: Loops Decision

- 6W : Repeat While
- 6F : Repeat For
- 6L : Repeat Last
- 6N : Repeat Nested Loops

(2) Exam Section 7: Lists (non-indexed)

- 7B : Lists Basic
- 7L : Lists Loop

(4) Exam Section 8: Arrays (indexed)

- 8B : Arrays Basic
- 8L : Arrays Loop
- 8S : Split
- 8J : Join

(2) Online Points - Advanced

- oM : Online Multi Input: process multiple inputs
- oH : Online Hidden Fields: pass state

(6) Exam Section 9: Subroutines

- 9B : Subroutine Basic Construction
- 9R : Subroutine Returns

- 9P : Subroutine Positional Parameters
- 9V : Subroutine Variable Parameters
- 9G : Subroutine Globals
- 9T : Subroutine Testing

(4) Project Points

- pC : Project CGI: write a dynamic web page
- pP : Project Pictures: use img tags
- pM: Project Multi Input: process multiple inputs
- pH : Project Hidden Fields: pass state

(?) Extra Credit

- eE : Find an Error in the Textbook

You must have 25 points (B-) before I will accept a project. The project must be your own work. It should be fun. A game would be ideal. You are allowed to consult with others including websites but you are not allowed to cut and paste code written by others. Each online screen must clearly identify you as the author. It must accept user input. It should utilize hidden fields (state) that are needed for its operation.

5 General Calender

- Mon Apr 18 Syllabus, Textbook, Online Basics
- Wed Apr 20 **Sample Final**, discussion, Strings, Numbers, Desktop Testing
- Fri Apr 22 **Early Final** (30m), grading (30m), 3 Style: Spacing, Clarity (1h), r1 due
- Mon Apr 25 4 Numeric Decisions (1h), oC: Online CGI, Dice Roller
- Wed Apr 27 5 String Decisions
- Fri Apr 29 **Early Final** (40m), grading (80m),
- Mon May 2 oI: Rock, Paper, Scissors, r2 due
- Wed May 4 6 Loops (2h)
- Fri May 6 Q/A, **Early Final**
- Mon May 9 7 Lists (2h)
- Wed May 11 8 Arrays (1h), r3 due
- Fri May 13 8 Split, Join, Regular Expressions
- Mon May 16 oM: Multi Inputs, Hidden Fields
- Wed May 18 Q/A, **Early Final**
- Fri May 20 9 Subroutines
- Mon May 23 9 Subroutines
- Wed May 25 **Early Final** (2h), r4 due
- Fri May 27 oH: activity
- Mon May 30 Memorial Day Holiday
- Wed Jun 1 **Final Exam** (2h), Projects Due by Midnight

Programming skills build one upon another. The early skills will take time to master but will then be

used constantly as more advanced skills are added.

Quizzes: <http://quiz.colton.byuh.edu/> is my quiz website.

Often I will begin with a brief quiz focused on knowledge and skills recently covered in class or assigned reading. The quiz will generally start before I walk into the room and end five minutes after official class starting time. Sometimes we will do a question from the final exam.

Immediately after the quiz we will have opening prayer and start the lecture portion of the class. Often it begins with a review of the quiz, with me telling how each answer would be graded so you will know what it takes to get the checkmark.

Most days we will use the last part of class to do an in-class activity.

Exams: Some days are designated for (Early) Final Exams. These normally last up to 60 minutes. On Final Exam day it will be for roughly two hours. The final is worth about 26 points. There are about 40 points possible in the class. As you pass each part of the final, you lock in your score on that point and never have to take that part of the test again. Until you pass, you can retake each part over and over right up to the end of the semester.

Exams are closed-book, closed-notes, closed-Google, closed-neighbor. Some memorization is definitely required.

6 Standard 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.

6.1 Dress and Grooming Standards

The dress and grooming of both men and women should always be modest, neat and clean, consistent with the dignity adherent to representing The Church of Jesus Christ of Latter-day Saints and any of its institutions of higher learning. Modesty and cleanliness are important values that reflect personal dignity and integrity, through which students, staff, and faculty represent the principles and standards of the Church. Members of the BYUH com-

munity commit themselves to observe these standards, which reflect the direction given by the Board of Trustees and the Church publication, "For the Strength of Youth." The Dress and Grooming Standards are as follows:

Men. A clean and neat appearance should be maintained. Shorts must cover the knee. Hair should be clean and neat, avoiding extreme styles or colors, and trimmed above the collar leaving the ear uncovered. Sideburns should not extend below the earlobe. If worn, moustaches should be neatly trimmed and may not extend beyond or below the corners of mouth. Men are expected to be clean shaven and beards are not acceptable. (If you have an exception, notify the instructor.) Earrings and other body piercing are not acceptable. For safety, footwear must be worn in all public places.

Women. A modest, clean and neat appearance should be maintained. Clothing is inappropriate when it is sleeveless, strapless, backless, or revealing, has slits above the knee, or is form fitting. Dresses, skirts, and shorts must cover the knee. Hairstyles should be clean and neat, avoiding extremes in styles and color. Excessive ear piercing and all other body piercing are not appropriate. For safety, footwear must be worn in all public places.

6.2 Accommodating Special Needs

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 at 808-675-3518. Reasonable academic accommodations are made for all students who have qualified documented disabilities.

6.3 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.

On exams you are required to work from personal memory, using only the resources that are normally present on your computer. This means the exams are closed book and closed notes. However, you are nearly always allowed (and encouraged!) to test your program by actually running it on the computer where you are sitting. Students caught cheating on the final exam may receive a grade of F for the semester, no matter how many points they may have earned, and they will be reported to the Honor Code office.

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 mu-

tual satisfaction of the student and the instructor, the student may have the matter reviewed through the university's grievance process.

6.4 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 (675-3713) or the Honor Code Office (675-3531). 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.

6.5 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.