CIS 101 – Beginning Programming
Course Syllabus and Calendar – Winter 2012

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Brigham Young University–Hawaii

1   Overview

This class can be hard work. It is powerful knowledge. It is skills you can "take to the bank."

It can also be a really fun class. Some (but not everybody) say it is the best class they ever had.

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 in later classes and the work place.

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

I will not lecture much in class. The book contains my lectures. You read them before class. In class we may review parts of the reading and I always give you the chance to ask questions. If you don't read you will probably fail.

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 you are expected to read on your own.

Your grade is based on points earned by demonstrating specific skills (listed in the section on grading). You get one point for each skill. Every two to four points you level up.

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

Here are the actual grades from Fall 2011: (35) A A A A- A- A- B+ B+ B+ B B B B B- B- B- B- B- B- B- C+ C+ C+ C C C- D+ D+ D- F F F F F F I

1.1   There May Be Changes

Like all courses I teach, I will be keeping an eye out for ways this one could be improved. Changes generally take the form of opportunities for extra credit, so nobody gets hurt and some people may be helped. If I make a change to the course and it seems unfair to you, let me know and I will try to correct it. If you are brave enough, you are welcome to suggest ways the class could be improved.

1.2   Preparation

We assume you have no programming experience whatever. We expect you can read, type, send and receive email, and visit web sites. We will teach you everything else you need to know.

1.3   So, What is Programming?

Computers are pretty stupid. But they are fast, reliable, and cheap. They don't get offended, 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 the art of converting 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:** Extensive hands-on software develoment and testing using variables, arrays, instruction sequences, decisions, loops, and subroutines. May also include dynamic web pages (CGI) and regular expressions.
- **Textbook:** Introduction to Programming Using Perl and CGI, by Don Colton.
- **Classroom:** GCB 111
- **Start/End:** Jan 9 to Apr 9, 2012
- **Class Time:** MWF 9:50 AM to 10:50 AM
- **Final Exam:** Fri, Apr 13, 10:00 AM to 12:50 PM

2.1 Important Website Links

- **Don Colton Home Page (General):**
  http://doncolton.com/
- **Prof Colton Home Page (BYUH):**
  http://byuh.doncolton.com/
- **CIS 101 Course Home Page:**
  http://byuh.doncolton.com/cis101/
- **CIS 101 Textbook:** PDF
  http://ipup.doncolton.com/
- **My Learning Management System: (Grade Book, Exams, etc.)**
  https://dcquiz.byuh.edu/

2.2 The Instructor

- **Instructor (me):** Don Colton
- **My email:** doncolton2@gmail.com
- **My Office:** GCB 128
- **Office Hour:** MWF 11:00 – noon

I may digitally record the audio of my lectures some days.

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 45 points for each grade:

14 D-; 16 D; 18 D+; 20 C-; 22 C; 24 C+;
28 B-; 32 B; 36 B+; 39 A-; 42 A

I sometimes give extra credit assignments good for a point or two.

(9) Reading Points
☐ r1 : Read 1-6 (30pg) by Jan 13 at 9:50 AM.
☐ r2 : Read 7-10 (25pg) by Jan 23 at 9:50 AM.
☐ r3 : Read 12-17 (25pg) by Jan 30 at 9:50 AM.
☐ r4 : Read 20-25 (25pg) by Feb 6 at 9:50 AM.
☐ r5 : Read 26-28 (20pg) by Feb 13 at 9:50 AM.
☐ r6 : Read 32-35 (20pg) by Feb 27 at 9:50 AM.
☐ r7 : Read 38-42 (15pg) by Mar 5 at 9:50 AM.
☐ r8 : Read 44-48 (35pg) by Mar 19 at 9:50 AM.
☐ r9 : Read 51-53 (20pg) by Apr 2 at 9:50 AM.

(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 (6N)

(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 28 points (B-) before I will accept a project. The project must be your own work. It should be fun. A simple 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 Jan   9   Read ch 1-2 (7p) before class.
                        Make a Web Page.
Wed Jan 11   Desktop Testing
  Fri Jan 13   r1: ch 1-6 (30p). ch5 Hippo Online
Mon Jan 16   Holiday: M L King
Wed Jan 18   ch6 oC: Online CGI, Dice Roller
  Fri Jan 20   **Early Final** (30m), grading (30m)
Mon Jan 23   r2: ch 7-10 (25p). ch7 Mad Lib
Wed Jan 25   Gimp: resize, alpha channel
  Fri Jan 27   **Early Final** (30m), grading (30m)
Mon Jan 30   r3: ch 12-17 (25p). Formulas
Wed Feb   1   Style: Spacing, Clarity
  Fri Feb   3   **Early Final** (30m), grading (30m)
Mon Feb   6   r4: ch 20-25 (25p). Decision Numeric
Wed Feb   8   if / elsif / elsif / else
  Fri Feb 10   **Early Final** (30m), grading (30m)
Mon Feb 13   r5: ch 26-28 (20p). Strings
Wed Feb 15   Booleans: and, or
  Fri Feb 17   **Early Final** (60m)
Mon Feb 20   Holiday: Presidents
Wed Feb 22   oI: Coin Toss, RPS
  Fri Feb 24   **Early Final** (60m)
Mon Feb 27   r6: ch 32-35 (20p). While
Wed Feb 29   For, Self-Modification
  Fri Mar   2   **Early Final** (60m)
Mon Mar   5   r7: ch 38-42 (15p). Lists, push, pop
Wed Mar   7   Arrays, indexing, localtime
  Fri Mar   9   **Early Final** (60m)
Mon Mar 12   Foreach
Wed Mar 14   Split / Join
  Fri Mar 16   **Early Final** (60m)
Mon Mar 19   r8: ch 44-48 (35p). Web input, regex
Wed Mar 21   oI: Calculator
  Fri Mar 23   **Early Final** (60m)
Mon Mar 26   Holiday: Kuhio Day

Wed Mar 28 oH: Tally
  Fri Mar 30 **Early Final** (60m)
Mon Apr   2 r9: ch 51-53 (20p). Subroutines
Wed Apr   4 Subroutines
  Fri Apr   6 **Early Final** (60m)
Mon Apr   9 JavaScript Calculator
  Tue Apr 10 Projects Due by Midnight
  Fri Apr 13 **Final Exam** 10:00-12:50 PM (3h)

Readings: Readings are due most Mondays. Readings are worth 9 out of the 45 total points. In class I will summarize the key points and try to answer questions. Then we will do an activity.

Lectures: The book contains my lectures. The in-class versions of the lectures are usually much shorter and just review what you already read and provide an opportunity to ask questions.

Activities: Wednesdays we generally do an activity. Labs are worth about 10 out of the 45 total points. Activities are usually open-book, open-notes, open-Google, open-neighbor. Memorization is useful but not required.

Exams: Fridays we generally have an Early Final Exam. Exams are worth about 25 out of the 45 total points. These normally last the whole class. On the last Final Exam day it will be for roughly three hours. 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. You can bring blank paper. **Some memorization is definitely required.** Practice helps.

6   Tutoring and Study Groups

6.1   Study Groups

You are encouraged to form a study group. If you are smart, being in a study group will give you the opportunity to assist others. By assisting others you will be exposed to ideas and approaches that you might never have considered on your own. (Some will be flat out lame. Others will be insightful and challenging.) You will benefit.

If you are less smart, being in a study group will give

you the opportunity to ask questions from someone that remembers what it is like to be totally new at this subject. They are more likely to understand your questions because they sat through the same classes you did, took the same tests as you did, and probably thought about the same questions that you did.

6.2   Tutoring

The CIS department provides tutoring in GCB 111, Monday through Friday, typically starting around 4 PM and ending around 11 PM (but earlier on Fridays). Normally a schedule is posted on one of the doors of GCB 111.

Tutors can be identified by the red vests they wear when they are on duty.

The best way to use a tutor is to show them something that you have written and ask them why it does not work the way you want. This can open the door to a helpful conversation.

Another good way to use a tutor is to show them something in the textbook and ask a question about it.

The worst way to use a tutor is to plunk down next to them and say, "I don't understand. Can you teach me?" If you did not try hard to read carefully, you are wasting everybody's time.

If you still need help, please come and see me, even outside my posted office hours. My door is always open.

7   BYUH Learning Framework

I believe in the BYUH Framework for Learning. If we follow it, class will be better for everyone.

Prepare: Before class, study the course material and develop a solid understanding of it. Try to construct an understanding of the big picture and how each of the ideas and concepts relate to each other. Where appropriate use study groups to improve yours and others understanding of the material.

In CIS 101: Do the readings on time. There is more than we could cover in class because we all learn at different rates. Our in-class time is better

spent doing activities and answering your questions than listening to my lectures.

Engage: When attending class actively participate in discussions and ask questions. Test your ideas out with others and be open to their ideas and insights as well. As you leave class ask yourself, "Was class better because I was there today?"

In CIS 101: Participate in the in-class activities. Those that finish first are often requested to help those that want assistance. It is amazing what you can learn by trying to help someone else.

Improve: Reflect on learning experiences and allow them to shape you into a more complete person: be willing to change your position or perspective on a certain subject. Take new risks and seek further opportunities to learn.

In CIS 101: After each exam, with possible rare exceptions, I allow you to see every score and every comment and every answer submitted for every question. Review your answers and those of other students. See how your answers could be improved. If you feel lost, study the assigned readings again.

8   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.

8.1   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 community 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.

8.2   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.

8.3   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 dis-

ciplinary 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.

CIS 101: 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.

CIS 101: 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 mutual satisfaction of the student and the instructor, the student may have the matter reviewed through the university's grievance process.

8.4   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 (808-675-3713) or the Honor Code Office (808-675-3531). 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.