

# CIS 101 – Beginning Programming

## Course Syllabus and Calendar – Winter 2014

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Brigham Young University–Hawai‘i

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## 1 Overview

Computers are great. But they are also really stupid. By stupid, I mean computers only understand really simple commands. Anything complex must be built up out of these simple commands.

Programming is the art of building up the fun and interesting things that you want to be done, starting from just the really simple commands that the computer can understand.

Sometimes it is frustrating. Sometimes it is very satisfying.

This class teaches powerful knowledge. It teaches skills by which you can better serve those around you. It teaches skills you can “take to the bank.”

There are many fine programming languages. Our programming language will be Perl.

### 1.1 Preparation

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

### 1.2 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.

I may digitally record the audio of my lectures some days. This is to help me improve my teaching materials.

## 2 Course Details

### 2.1 About the Course

- **Course Number:** CIS 101
- **Title:** Beginning Programming
- **Course Description:** Extensive hands-on software development and testing using vari-

ables, 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:** Mon, Jan 6 to Mon, Apr 7
- **Class Time:** MWF 11:00 to 12:00
- **Final Exam:** Wed, Apr 9, 10:00–12:50

## 2.2 About the Instructor

- **Instructor (me):** Don Colton
- **My email:** doncolton2@gmail.com
- **My Office:** GCB 128
- **Office Hour:** MWF 12:10 to 13:10.

I have reserved GCB 111 on MWF 12:10 to 13:10 so my CIS 101 students (and others) can study in a lab setting and meet with me and each other. I allow the room as an Open Lab for your use either individually or in groups, for my class or for other classes. MWF 12:10 to 13:10 I will be present in GCB 111 or in my office to assist students that come.

## 2.3 My Websites

Here is a list of my other websites that you may encounter this semester.

- <http://byuh.doncolton.com/cis101/> is my course homepage. It has links to everything else, including the study guide and the textbook.
- <http://ipup.doncolton.com/> has the textbook I wrote for this class.
- <https://dcquiz.byuh.edu/> is the learning management system for my courses.
- <http://byuh.doncolton.com/> is my campus homepage. It has my calendar and links to the homepages for each of my classes.
- <http://doncolton.com/> is my off-campus homepage.

## 3 Learning Objectives

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

- sequences of simple steps
- simple variables (scalars)
- decisions (if, else, elsif)
- looping (while, for, foreach)
- array and list variables
- subroutines

Students will demonstrate these major skills by creating, in timed and supervised situations, short programs that perform specific tasks.

In teaching the major skills, I also teach the following:

- dynamic web page creation
- dynamic response to web page inputs

## 4 Communication

We communicate with each other both formally and informally.

Formal communication tends to be written and precise. Formal is for anything truly important, like grades. Formal is authoritative.

Informal communication tends to be more casual and impromptu. Informal is meant to be helpful and efficient. Reminders are informal. Emails are informal. Explanations are usually informal.

### 4.1 Me to You, Formal

I communicate formally, in writing, through (a) the syllabus, (b) the study guide, and (c) the learning management system.

(a) **Syllabus:** <http://byuh.doncolton.com/cis101/2141/syl.pdf> is the syllabus for this course. It tells our learning objectives and how you will be graded overall. You can rely on the syllabus. After class begins, it is almost never changed except to fix major errors.

(b) **Study Guide:** <http://byuh.doncolton.com/cis101/2141/sguide.pdf> is the study guide for this course. It includes a copy of the syllabus. The study guide is updated frequently throughout the

semester, as assignments are made and deadlines are established or updated.

**(b1) Calendar:** The study guide tells when things will happen. It contains specific due dates.

**(b2) Assignments:** The study guide tells what assignments have been made and how you will be graded, item by item. It provides current details and specific helps for each assignment. It provides guidance for taking the exams.

**(c) DCQuiz:** <https://dcquiz.byuh.edu/> is my learning management system. I use it to give tests. I use it to show you my grade books.

## 4.2 Me to You, Informal

My main informal channels to you are (a) word of mouth and (b) email.

**(a) Word of Mouth, including Lecture:** Class time is meant to be informative and helpful. But if I say anything truly crucial, I will also put it into the study guide.

**(b) Email:** My emails to you are meant to be helpful. But if I say anything truly crucial, I will also put it into the study guide. Normally I put CIS 101 at the front of the subject line in each email I send.

## 4.3 You to Me, Formal

Your formal channels to me, specifically how you turn in class work, are mainly via (a) the learning management system, (b) email, and (c) specifically requested projects.

**(a) DCQuiz:** To use my learning management system, you must log into it. Then, you can respond to questions I have posted. Each day there will be a “daily update”. I say more on that below. Exams will also be given using DCQuiz.

**(b) Email:** You will use formal email messages to submit some of the programs you write and to tell me certain other things. The study guide tells how to send formal emails, including where to send them, what subject line to use, and what to put in the body of the message.

**(c) Student Projects:** The study guide may tell you to submit certain work in the form of a webpage or web-based program. If so, it will say specifically

where to put it. I will go to that spot to grade it.

## 4.4 You to Me, Informal

Your informal channels to me, typically how you ask questions and get assistance, are mainly face to face and by email or chat.

**Face to Face:** If you need help with your class work, I am happy to look at it and offer assistance. Often this happens during class or during office hours. Often I will have you put your work on your computer screen, and then I will take a look at it while we talk face to face.

**Email / Chat:** You can also get assistance by sending me an email or doing a chat. I will do my best to respond to it in a reasonable and helpful way. If you want something formal, use the formal rules.

If you are writing about several different things you will usually get a faster response if you break it up into several smaller emails instead of one big email. I try to respond to a whole email at once, and not just part of it. I usually answer smaller and simpler emails faster than big ones.

## 5 Grading

I use a 60/70/80/90 model based on 1000 points.

### Based on 1000 points

|      |   |      |    |      |    |
|------|---|------|----|------|----|
| 930+ | A | 900+ | A- | 870+ | B+ |
| 830+ | B | 800+ | B- | 770+ | C+ |
| 730+ | C | 700+ | C- | 670+ | D+ |
| 630+ | D | 600+ | D- | 0+   | F  |

The points are divided up as follows.

- Effort 300
  - Daily Update 50
  - Study Time 250
- Achievement 700
  - Activities 135
  - Final Project 40
  - Exams 525

You need to earn a C or better (730 points or more) in the class if you plan to major in CS, IS, or IT. If you earn less, you must retake the class or change majors.

## 5.1 Tracking Your Grade

I keep an online grade book so you can see how your points are coming along. It also lets you compare them with other students in the class (without seeing their names).

<https://dcquiz.byuh.edu/> is my personal Learning Management System. That is where I maintain my online grade book.

Your points are organized into three grade books: Overall, Effort, and Activities.

**2141 CIS 101 Overall Grade Book:** The Overall includes the totals from Activity and Effort and adds your exam performance. It also shows your final grade.

**2141 CIS 101 Effort Grade Book:** The Effort tracks the daily updates and study time.

**2141 CIS 101 Activities Grade Book:** The Activities tracks your performance on in-class activities.

## 5.2 Effort: (50 points) Daily Update

Each day in class starts with the “daily update” (DU). It is my way of reminding you of due dates and deadlines, sharing updates and news, and taking roll. It is your way of saying something anonymously to each other and to me. It must be taken in class during the 10-minute window of time that starts 5 minutes before class and ends 5 minutes into class.

The DU is worth two points per class period, with 50 points expected (for 25 out of 37 class periods), and about 75 points possible. Anything beyond 50 is extra credit. It is also a reward for coming on time, or close enough that you can do the update.

As part of the Daily Update, once a week I will ask you how much time you spent studying the previous week. I will use your report to update your study time points.

## 5.3 Effort: (250 points) Study Time

We award points for study time (ST), which is time spent engaging with materials directly related to this course.

Each week you are invited to report, on your honor, how many hours you studied during the previous week, Sunday morning through Saturday night. We award two “effort” points per hour of “study,” for a goal of 18 points (9 hours, including class time) and a maximum of 20 points (10 hours) per week, whether there is a holiday or not.

There are 14 weeks.  $14 \times 18 = 252$ .  $14 \times 20 = 280$  (max). Anything beyond 250 points is extra credit.

Most students max out the study time points each week. This provides them with extra credit that helps ensure they get a good grade in the class.

**Carry Forward:** If you study more than the maximum time for which I will give credit, you are invited to report them, and also carry forward the extra hours and report them in the next week. For example, since 10 hours is the maximum that counts, if you studied 15 hours, you would report 15 hours of study, and I would count the first 10 hours. You would then take the remaining 5 hours and count it toward the following week.

There is no Carry Backward.

## 5.4 Effort Points are Optional

The effort points (daily update and study time) are there as a safety net. They are meant to be easy to earn. They help to make sure you will pass the class.

But when I calculate your final grade, I do it several ways:

- (a) Counting every point, based on 1000 total points.
- (b) Counting all but daily update and study time, based on 700 total points.

I grade several ways because some students have previous experience (or natural genius) and do not need to study as much.

I use whichever method gives you the best grade.

## 5.5 Activities: Daily (135 points)

On most days we will have an in-class activity assignment. Each will normally be worth 5 points.

Roughly 27 assignments  $\times$  5 points = 135 points. The total will be 135. Anything beyond that is extra credit.

The number of in-class activities is not perfectly predictable. The overall points will be adjusted so the full-credit values add up to 135 or more.

Points are assigned on a 0-to-5 basis as follows:

- 0: nothing found, or way too little.
- 1: It's a start. Runs without crashing.
- 3: Nice but missing something important.
- 4: Missing something minor.
- 5: Perfect. Totally meets the standards for achievement.

Bonus points may be given based on peer voting.

Some assignments may take two days and count double.

On activity work, you are encouraged to work with (but not just copy) your fellow students. We want everyone to get full credit on every assignment.

Every assignment will have ample opportunities for individual creativity. Duplicate work will break my heart.

## 5.6 Activities: Project (40 points)

### (40) Project Points

- 10 Project CGI: write a dynamic web page
- 10 Project Pictures: use img tags
- 10 Project Multi Input: process multiple inputs
- 10 Project Hidden Fields: pass state (counter, etc)

The final project is due by 23:59 on Tuesday, the day after the last day of class. I plan to grade it early on Wednesday unless you have asked me to grade yours earlier.

Project points are earned for performance on out-of-class work. 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.

**Your final project cannot just be something we did in class.** The in-class activities are good examples, and teach good principles, but they do not demonstrate understanding or creativity. If your project is based on something we did in class, it must

go beyond it in some substantial and significant way.

<http://dc.is2.byuh.edu/cis101.2141/> is the place to link your project. It is the Student Projects page for this class. Link it to the “proj” slot.

See the study guide for a more detailed presentation of the official project details.

## 5.7 Skill: Exams (525 points)

There are 21 exam tasks. Each is a program for you to do during one of the final exams. Each is worth 25 points. Points for each question can be earned only once.

There are several exams given during the semester. Each one is a “final exam” in the sense that it covers everything we learn during the semester, and by completing it, you earn the points for it as though you had done it on the day of the actual final. Except for the last exam, they are called “early final” exams. Each early final lasts for about one hour. The last final lasts for about three hours. One practice exam is also given, for no credit, to help you understand how to do the other tests.

### (525) Exam Points (21 tasks)

- 1 25p String Basic (1B)
- 2 25p Number Basic (2B)
- 3 25p Number Story (2S)
- 4 25p Number Decision (4D)
- 5 25p Number Decision Story (4S)
- 6 25p String Decision (5D)
- 7 25p String Decision Bracket (5B)
- 8 25p Repeat While (6W)
- 9 25p Repeat For (6F)
- 10 25p Repeat Last (6L)
- 11 25p Repeat Nested Loops (6N)
- 12 25p Lists Basic (7B)
- 13 25p Lists Loop (7L)
- 14 25p Arrays Basic (8B)
- 15 25p Arrays Loop (8L)
- 16 25p Split (8S)
- 17 25p Join (8J)
- 18 25p Subroutine Returns (9R)
- 19 25p Subroutine Positional Parameters (9P)
- 20 25p Subroutine Globals and Locals (9G)
- 21 25p Subroutine Variable Parameters (9V)

The study guide talks more about each of these tasks.

## 5.8 Other Extra Credit

Report an error in my formal communications (the published materials I provide), so I can fix it. In this class, the materials include the following:

- The course website, parts relating to this semester.
- The course syllabus.
- The course study guide.
- The course textbook, since I wrote it.

Each error reported can earn you extra credit. (Typos in my email messages are common and do not count.)

Syllabus errors (unless they are major) will probably be fixed only in the study guide. Check there before submitting it.

## 6 Calendar

We meet about 37 times plus the final.

The due date and deadline for things will be published in the study guide and mentioned in class. The study guide will be updated regularly throughout the semester.

### 6.1 Special Dates

|           |                                       |
|-----------|---------------------------------------|
| Mo Jan 06 | First Day of Instruction              |
| Fr Jan 17 | <b>exam 0</b> practice test           |
| Mo Jan 20 | No Class: Human Rights Day            |
| Fr Jan 24 | <b>exam 1</b>                         |
| Fr Feb 07 | <b>exam 2</b>                         |
| Mo Feb 17 | No Class: Presidents Day              |
| Fr Feb 21 | <b>exam 3</b>                         |
| Fr Mar 07 | <b>exam 4</b>                         |
| Fr Mar 21 | <b>exam 5</b>                         |
| We Mar 26 | No Class: Kuhio Day                   |
| Fr Apr 04 | <b>exam 6</b>                         |
| Mo Apr 07 | Last Day of Instruction               |
| Tu Apr 08 | All Late-Work Deadline                |
| We Apr 09 | <b>exam 7</b> Final Exam, 10:00–12:50 |

The exam dates will not change unless there is a fire or a flood or something. Exams happen about twice a month. They are closed-book, closed-notes,

closed-neighbor, etc. You can bring blank paper. **Some memorization is required.**

### 6.2 Excused Absences

There are many good reasons why students request special treatment. Instead of dealing with these as they arise, based on my years of experience, I have adopted general policies that are intended to accommodate all but the most difficult cases.

### 6.3 Reasonable Accommodation

This section covers special needs, including qualified special needs, as well as all other requests for special treatment.

I have carefully designed each of my classes to provide reasonable accommodation to those with special needs. Beyond that, further accommodation is usually considered to be unreasonable and only happens in extreme cases. Please see the paragraph on “Accommodating Special Needs” below for more information.

**Ample Time:** Specifically, I allow ample time on tests so that a well-prepared student can typically finish each test in half of the time allowed. This gives everyone essentially double the amount of time that should normally be needed.

**Exam Retakes:** I give the final exam seven times.

**Deadlines:** Most assignments are due soon after they are discussed, but I normally allow late work at full credit for several more weeks (except at the end of semester).

Even though I truly believe that these methods provide reasonable accommodation for almost everyone in almost every case, you might have a highly unusual situation for which I can and should do even more. You are welcome to see me about your situation.

## 7 Support

The major forms of support are (a) open lab, (b) study groups, and (c) tutoring.

If you still need help, please find me, even outside my posted office hours.

## 7.1 Office Hour / Open Lab

I have reserved GCB 111 on MWF 12:10 to 13:10 so my CIS 101 students (and others) can study in a lab setting and meet with me and each other. I allow the room as an Open Lab for your use either individually or in groups, for my class or for other classes. MWF 12:10 to 13:10 I will be present in GCB 111 or in my office to assist students that come.

## 7.2 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 (and errors) that you might never have considered on your own. You will benefit.

If you are struggling, 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.

Most of us are smart some of the time, and struggling some of the time. Study groups are good.

## 7.3 Tutoring

The CIS department provides tutoring in GCB 111, Monday through Friday, typically starting around 17:00 and ending around 23:00 (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.

Not all of the tutors know about everything. But all of the tutors should know which tutors do know about whatever you are asking about, so they can direct you toward the best time to get your questions answered.

The best way to work with 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 work with a tutor is to show them something in the textbook and ask about it.

The worst way to work with 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.

## 8 BYUH Learning Framework

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

### 8.1 Prepare for CIS 101

**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 your and others' understanding of the material.

**In CIS 101:** Make reading part of your study. 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 a general lecture.

### 8.2 Engage in CIS 101

**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 encouraged to help those that want assistance. It is amazing what you can learn by trying to help someone else.

### 8.3 Improve at CIS 101

**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, I normally allow you to see every answer submitted, every score given, and every comment I wrote, for every question. Review your answers and those of other students. See how your answers could be improved. If you feel lost, study the readings again or ask for help.

## 9 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.

### 9.1 Academic Integrity

We learn by watching others and then doing something similar.

Sometimes it is said that plagiarism is copying from one person, and research is “copying” from lots of people.

When you are having trouble with an assignment, I encourage you to look at not just one, but many examples of work done by others. Study the examples. See what you can learn from them. Do not automatically trust that they are right. They may be wrong.

Do not simply copy. Do your own work. When I review computer code, sometimes I see quirky ways of doing things. They appear to work even though they may be wrong. And then I see someone else that has done it exactly the same wrong way. This does not feel like “doing your own work.” Cut and paste is pretty much an honor code violation. Read and learn is totally okay. Copying other ideas is okay. I don’t want to see any cut and paste.

<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 aca-

demically 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.

**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.**

You must write your own programs. You can look at what other people have done, and you can show other people what you have done, but you are forbidden to copy it. Look at it, yes. Understand it, yes. Ask about it, yes. Explain it, yes. Copy it, no.

**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 programs by actually running them on the computer where you are sitting. Students caught cheating on an 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.

## 9.2 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.

## 9.3 Accommodating Special Needs

Brigham Young University–Hawai'i 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, please contact the students with Special Need Coordinator, Leilani A'una at 808-293-3518. Reasonable academic accommodations are reviewed for all students who have qualified documented disabilities. If you need assistance or if you feel you have been unlawfully discriminated against on the basis of disability, you may seek resolution through established grievance policy and procedures. You should contact the Human Resource Services at 808-780-8875.

## 9.4 Sexual Harassment

Title IX of the education amendments of 1972 prohibits sex discrimination against any participant in an educational program or activity that receives federal funds, including federal loans and grants. Title IX also covers student-to-student sexual harassment. If you encounter unlawful sexual harassment or gender-based discrimination, please contact the Human Resource Services at 808-780-8875 (24 hours).