

# ISIT 322 2016

## *Winter 2016*

Class: 5:30 to 7:40 PM on Monday and Wednesday

Office Hours: TBD

Link to this page: <http://bit.ly/isit322-2016>

Surviving My Courses: <http://bit.ly/surviving-my-courses>

We will develop mobile web applications and cordova applications that follow open standards and work across multiple platforms and browsers. The web applications should work on all major browsers on both Desktop and on Mobile devices. The cordova applications will target native application development for Android, IOS and Windows Phone. The technologies used in development work on Windows, Apple and Linux based machines.

Agile design principles and best practices provide the framework for our course structure. We will explore Test Driven Development and iterative design principles that emphasize short cycles and code that always works.

This course focuses on using HTML5, CSS3, JavaScript and Python based technologies to create web sites and applications mobile devices. We will use tend to avoid proprietary technologies, and no binary libraries such as Flash or Silverlight.

Many students may find it helpful to use the same tools I use. My primary focus is likely to be on WebStorm and PyCharm, though we may do some work in Eclipse, or on cloud based IDEs such as [Cloud9](#). If you are wedded to Visual Studio, feel free to continue down that path. A recent version of Visual Studio is installed on the machines in N252.

Other important skills include Git, Grunt and UML. We will probably use GenMyModel for UML diagramming.

## **Outcomes**

- Write applications based on Cordova/PhoneGap that run on Android, iOS or Windows Phone.
- Use AndroidStudio, WebStorm, Eclipse, Geany, NotePad++ or some other tool to write applications based on Cordova/PhoneGap. Eclipse running on Linux is our default programming environment.
- Access mobile device features including the file system, contacts lists, accelerometer, geonavigation resources, camera, and sensors.
- Write web applications using HTML 5, CSS 3 and JavaScript that run on the PC desktop,

Android, iOS or WP7.

- Understand the following Internet Protocols and Technologies:
  - HTTP, TCP/IP and SSH
  - URLs, REST, and Cookies
  - DNS servers, IP Addresses and IPv4, IPv6,
- Understand the role of HTML, CSS, JSON and XML in web applications
- Develop an in depth understanding of JavaScript functions and objects.
- Develop an understanding of Agile Design Principles
- Learn basic JavaScript patterns.
- Create server side code in NodeJS or Python.
- Learn to use database such as CouchDB, MongoDB or possibly MySQL
- Analyze the trends and directions of future Web applications and frameworks
- Learn about Web Servers, their functionality, configuration, and security
- Create web applications that are effective and scalable across multiple platforms
- Design web applications using appropriate design patterns and application frameworks
- Create web applications that use widely adopted JavaScript libraries
- Create web applications that meet appropriate security standards
- Use Git for version control.

We will also devote a considerable amount of time to understanding virtual machines, linux and cloud applications. Though you are free to use Windows and Visual Studio, this course is an excellent opportunity for you to become familiar with running Linux in a Virtual Machine. It is fundamental tenet of this course that it is always best to do as much work as possible in the cloud.

## Virtual Resources

We use a lot of virtual resources in this class. As with all software, things can go wrong. In such cases, frequently the best thing to do is reinstall. It often takes much less time to reinstall and set up a virtual machine than to troubleshoot a truly knotty problem. I have seen students spend three hours, eight hours, even days or weeks trying to solve a problem that could be fixed by a 5, 10, 15 or 30 minute reinstall. However long the re-install might take, it is unlikely to take a full three hours. Yet students frequently spent longer than that trying to track down a knotty problem. The skill you need to develop is a sixth sense that tells you: "I'm never going to troubleshoot this problem. The system is hosed. Time to re-install."

Learning to set up a virtual machine is an invaluable skill. The more practice you get setting up your tools, the better you will be at it. It's nice to know how to troubleshoot a problem, but it is learning how to install and setup the tools we use is an invaluable skill that can literally change your career course for the better.

With VirtualBox, I give you an instance of Ubuntu with many resources pre-configured on it. If your current instance of Ubuntu is hosed, you can, with practice, start over with a new instance in just 5 or 10 minutes. The same general principle is true on EC2: with practice you can learn to create a new instance and set it up in less than half an hour.

## Tools and Access to the Internet

Having good access to the Internet is an important part of this course. You will find that access to the Internet is dependent on two things:

- A good connection
- A properly configured machine

**To an unusually large degree, this course requires that students have reliable access to the Internet.** If you do not have a good connection at home, you should expect to have to spend time on the school computers, or at some other site where you can get reliable access to a computer.

Having a good connection is not enough. You also need a properly configured machine. **In many, perhaps most, cases, the only way to reliably repair a poorly configured machine is to reinstall the OS.** As we enter a new age of online computing, you should consider moving all your data to the cloud so that you can easily reformat the drives on your home machine when needed. On desktop machines, you should consider installing two physical drives, one for data, and one for your OS. Finally, you should consider renting a virtual machine in the cloud, and doing most of your work there.

You will also need access to a good code editor. We will work mostly with Eclipse and [Geany](#). As much as possible, I will try to rely on Eclipse, as it runs on Windows, Mac and Linux. We might also experiment with online, cloud based IDEs. On Windows, an excellent tool that you should be familiar with is NotePad++.

## Office Hours and Contact Information

I will attempt to reserve our room for several hours after class. These will be both my office hours, and a time when I am available to tutor and give extra help. There may be occasional times (right before thanksgiving for instance) when we won't hold class or when I won't be available after class. As a rule, however, I will be available for an hour or more after class on Mondays (and sometimes on Wednesdays at 7:40 PM) if anyone wants to stay late and discuss or learn more about mobile technology.

The best way to contact me about technical issues is after class or through the Discussion area in Canvas. If you have a non-technical private matter that needs to be addressed offline, then come speak to me or use:

**charles dot calvert at bellevue college dot education**

Please use that account for asking personal or private questions. I want everyone to benefit from the knowledge exchanged regarding technical questions, so please use the Canvas Discussion area for those kinds of questions. You may discover other email accounts that belong to me, but please do not use them to discuss matters related to our class. It is not that I object to being contacted on them, but simply that I might not check them regularly.

The following page may help you find course related content in the cloud:

Charlie in the Cloud: <http://bit.ly/1gTpyVh>

I've created a good deal of information related to our course at the following website:

<http://www.elvenware.com/charlie>

## Assignments

There will be regular assignments that will require that you have reliable, fast access to the internet. Use modern browsers, usually Chrome or FireFox, to access the web. Assignments are designed to give practical experience creating programs for us on desktop websites and mobile devices. Hands on exercises will be featured in many of the class sessions.

Assignments are due at 11:59 PM on the date indicated, with a three hour and 1 minute grace period. Each hour after that costs 1 point, up to a total of 3. Late assignments will therefore receive a maximum 3 point per day deduction up to 3 days. After that assignments are docked 10 points per week. Turning in projects very late is better than not turning them in at all. For instance, an assignment turned in two weeks later could still receive an 80. Eighty points is much better than zero points. Even fifty points is much better than zero points.

Especially during the first weeks of class, when you are still learning how the system works, consider turning projects in a day early to ensure that there are no last minute logistical problems.

If you need help, ask for it during or after class, or use the Canvas Discussion tool. I strongly suggest making regular use of the Canvas Discussion tool. It is possible to succeed without it, but you will find that goal increasingly elusive.

## Grading

Grades will be based on the following components:

| Component                        | Value |
|----------------------------------|-------|
| Midterm                          | 31%   |
| Final                            | 31%   |
| Assignments                      | 31%   |
| Hands On and Class Participation | 7%    |

- Each homework will be scored on a scale of 0 to 100 points, and the average of your homework scores will be worth 31% of your final grade.
- There will be one mid-term examination and one final examination, each graded on a scale of 0 to 100 points. Each of these tests will be worth 31% of your final grade.
- Exams will be open-book. They are designed to assess a student's ability to demonstrate how programming concepts are used in practice.
- In case of emergency, and with prior discussion with the instructor, arrangements may be made to take an exam at a different time. The final exam may not be taken early.
- Class participation, participation in online discussions, and your work during hands on labs will be reflected in your final score.

Grades will be calculated as follows:

| Percentage        | Grade | Points | Percentage       | Grade | Points |
|-------------------|-------|--------|------------------|-------|--------|
| <b>96 - 100</b>   | A     | 4.0    | <b>76 - 79.9</b> | C+    | 2.3    |
| <b>92 - 95.9</b>  | A-    | 3.7    | <b>72 - 75.9</b> | C     | 2.0    |
| <b>88 - 91.9</b>  | B+    | 3.3    | <b>70 - 71.9</b> | C-    | 1.7    |
| <b>84 - 87.9</b>  | B     | 3.0    | <b>66 - 69.9</b> | D+    | 1.3    |
| <b>80 - 83.9</b>  | B-    | 2.7    | <b>60 - 65.9</b> | D     | 1.0    |
| <b>Below 59.9</b> |       | F      |                  | 0.0   |        |

**Table 01: Grading**

## A Grade of 5

Sometimes I give students a grade of 5, and ask them to resubmit an assignment. This happens when something went wrong with the assignment submission process. Usually the penalty for re-submitting an assignment with a grade of 5 is small, or often there will be no penalty at all.

Please note that just making a comment on an assignment is not enough. You must resubmit it.

Suppose there are 30 students in a class. In order to check if anyone has made a new comment on an assignment, I would have to go through 30 student's assignments, perhaps once a day. Since there are 20 or 30 assignments in a typical course, that is not practical. By the end of the course, that would require me to look through 400 or 500 assignments each day.

If you see that you have gotten a grade of 5, please resubmit the assignment. Then it shows up in my Canvas TODO list, and I can know to go check it.

## **How to Succeed**

The best ways to succeed are to:

- Participate in the online Canvas Discussion
- Maintain a positive attitude, and if possible develop genuine enthusiasm
- Come to class regularly
- Complete all assignments and turn them in on time
- Come to the extra help sessions after class

## **How to Fail**

In general, the only way to get a truly terrible grade in this class is to have a truly terrible attitude. I'm strongly disinclined to flunk any student who comes to class regularly, turns in all their assignments, and maintains a positive attitude. I will be available to give you extra help, and I will generally look favorably on those who take advantage of these opportunities. Certainly everyone is always welcome to come to me with suggestions or requests, and students with good suggestions will be looked on with favor.

I hate giving really bad grades, but I do give them to students with low grades who don't come to class, who don't do the assignments, and who do not seek out extra help. Everyone is entitled to bad days, the occasional fit of uncontrolled temper, and moments of stalled, clueless inertia. If, however, a student continually loses their temper, continually complains, or remains inert for long periods of time, then they can sometimes force me to overcome my distaste for handing out bad grades. In particular, failing to turn in a majority of the assignments, or skipping the midterm and/or final is a path to failure. Anything is better than a zero on an exam or assignment.

I will sometimes give a student a twenty or thirty on an assignment. What that generally means is that I want you to do more work and turn the assignment in again. If you do the work requested, you will almost surely end up with a grade that will at least help you complete the course. There is just no excuse for not turning in the majority of assignments.

## **Withdrawal**

Each student should be familiar with the college withdrawal schedule. Students who do not officially withdraw will receive a grade calculated on the work they had completed.

## **Cheating**

I want to help people succeed in their professional careers. To have a good career, you need skill, a good work ethic, and integrity. Part of my job is to teach you the value of being honest. If I think a student is not honest, then I will make his failure an object lesson from which everyone

can learn.

I do not mind if students discuss a project. It is okay even to work together at times. But you may not share individual files, project modules, or entire projects. Not can you cut and paste code in order to share it.

Some people develop the mistaken idea that cheating or dishonesty can help them succeed. As a general rule, the best companies are simply allergic to anyone who lacks integrity. It is very unlikely that anyone will ever come up to you and say: "We didn't hire/can't keep you because your peers don't think you are honest." No one ever says anything, they simply don't want to work with you. You end up being laid off or shunted aside without any real explanation being offered. As a result, many people think they got away with dishonesty or cheating when in fact everyone knew they were dishonest, and shunned them as a result.

There are exceptions, but as a rule, if you are hoping for real success in your field, you have to build an inner voice that can alert you when you are tempted to be dishonest. You have to police yourself. In this class, I will have some mercy on you: if I think you are cheating, I will let you know, and I will do everything I can to end your career at Bellevue College. Thus you will have a chance to learn from your mistake, and others in the class can also benefit. That is much kinder than the treatment you will receive in the business world if people find you are chronically dishonest.

Cheating includes stealing work, and plagiarizing. A student who cheats will receive a zero for the work involved and a report of the incident may be sent to the Dean of Students for further action. Students submitting duplicate or substantially duplicate work will receive a zero for the work. For additional details, consult BCC's Student Responsibilities relating to Cheating and Plagiarism (an excerpt is available under BCC Campus Codes, Policies & Reports in the Student Handbook).

Some of my assignments ask you to do a small amount of writing. On those assignments, some students find it tempting to block copy text from the web and turn that in as if it were their own work. Please understand: that is plagiarizing. It is a serious offense! This is not an English course. I usually don't care about the quality of writing, I just want to be sure that it is your writing and not someone else's.

## **Inclusion**

Bellevue College is committed to maintaining an environment in which every member of the campus community feels welcome to participate in the life of the college, free from harassment and discrimination.

We value our different backgrounds at Bellevue College, and students, faculty, staff members, and administrators are to treat one another with dignity and respect.

<http://bellevuecollege.edu/about/goals/inclusion.asp>.

## General Notes

Students requiring special assistance must advise the instructor as early in the course as possible so that required arrangements can be made. Students must register with Disability Support Services (425) 564-2392 so that the instructor can be given official notification of the scope of accommodation required. If you require accommodation based on a documented disability, have emergency medical information to share, or need special arrangements in case of emergency evacuation; please make an appointment with me as soon as possible. If you would like to inquire about becoming a DSS student you may call 425-564-2498 or go in person to DSS (Disability Support Services). Please note that the instructor welcomes everyone and will be happy to work with anyone in this regard!

## Concerning Textbooks

This course is designed to teach you about a new field that is changing every day. We have not found a textbook that is organized to match our course content. So, while we have not selected a single textbook for the course, you may choose to use a number of texts as primary references. I will also frequently refer you to materials found on the web that will supplement our course. You will not be expected to master topics from a particular book. All topics that you will be responsible for understanding and using will be covered in detail in class.

I maintain a list of books and resources on the CloudNotes site:

<http://elvenware.com/charlie/books/CloudNotes/Isit320/Resources.html>

## Weather Emergencies

Official campus website to find out if the campus is closed due to weather is:

<https://bellevuecollege.edu/publicsafety/status/>.

## Please Don't Use the Printer

I do not think it is a good idea to print out our assignments or my posts. There are strong ecological and economic arguments against printing out the material from our cloud sites. However, these are not my only concern. You will find that I often add material to an assignment or an online page after it has been posted. If I am going to make a significant change in what is required to fulfill an assignment, or if I find a serious error in something I published, then I will make [announcements](#) to that effect. I will, however, also frequently make minor updates, or add clarifying comments to a post without formally announcing the fact. For instance, in the discussion area or in the hall after class someone might ask for a clarification about some fine point in an assignment. I will then answer the question in the Canvas Discussion Area, and add a clarifying update to the assignment. If you are working off a printed version of that assignment, then you will never see the update, no matter how many times you read the assignment. As a

result, I think it is best to always work off live documents.

It has been my experience that those who work primarily from online copies of my assignments do better than those who print them out. Perhaps this is just a coincidence, but I think it might have more to do with some students ability to become comfortable with working in the cloud.

## **That Sinking Feeling: Getting Help**

You will encounter a lot of new technologies in this class. There is a real danger that you might freeze, and find yourself doing nothing rather than making a mistake working with a technology that you don't fully understand.

I believe in learning by doing. I don't expect you to immediately master everything I teach, I just expect you to work to learn a few key features; to reach a level of modest proficiency.

Don't wait for me to explain everything in detail. The best course of action is to just plunge in and start working with the technology as best you can. The more you use the technology, the closer you will come to mastering it.

Because we will encounter so many technologies, there will be times when you will not get step by step instructions on how to use a particular tool. In those cases, use the Canvas Discussion area, stay after class and ask for help, perform searches on Google, and review the material I have presented or posted on the subject at hand.

Whatever happens, don't let weeks go by without making it clear that you are lost. It is not at all uncommon for a few students in any class at Bellevue College to lose focus. Being lost for a time is common, but staying lost for weeks is all wrong. It can, and usually does, lead to discouragement and ultimately failure. It is unfortunate when a student gives up, but it does happen. If you are trying hard, but not able to master a technology, do something to get my attention. I might think you are simply giving up, when in fact you are struggling hard. Let me know how you feel so I can help you. I can't hold your hand throughout the class, but I can help you learn if you do your part.

## **Weekly Schedule**

The following calendar provides

|            |                                                                |
|------------|----------------------------------------------------------------|
| 01: Jan 04 | Overview; JavaScript Basics, Git                               |
| 02: Jan 11 | JavaScript Basics, Networking Basics (HTTP), ThreeJs           |
| 03: Jan 18 | ThreeJs and Chat                                               |
| 04: Jan 25 | ThreeJs, jQuery, Ajax, S3, EC2                                 |
| 05: Feb 01 | AngularJs, NodeJs, Photos, Mapping and Location                |
| 06: Feb 08 | AngularJs, NodeJs, Photos, Mapping and Location                |
| 07: Feb 15 | AngularJs, MediaQueries, bootStrap, jQuery Mobile and jQueryUI |
| 08: Feb 22 | Cordova, Backbone                                              |

|            |                                                                       |
|------------|-----------------------------------------------------------------------|
| 09: Feb 29 | CouchDB, MongoDB and MySQL                                            |
| 10: Mar 07 | CouchDB, MongoDB and MySQL                                            |
| 11: Mar 14 | Hadoop and Project Review                                             |
| 12: Mar 21 | Review and Finals. Finals are December 8-10, quarter ends December 10 |

Basic facts about the quarter and our holidays are here:

<http://www.bellevuecollege.edu/enrollment/calendar/holidays/1314.asp>