GIMM 340: Mobile Web Development and IOT
Fall 2022 - Updated 11-30-2022

Meeting time and place

August 22nd, 2022 to December 9th, 2022 (Albertsons Library 111B)

Section 1: Thursday at 3:00 PM to 5:45 PM
Section 2: Thursday at 6:00 PM to 8:45 PM

Instructor

Jack Polifka (he/him)
Office Hours: Wednesdays from 7 - 8pm (Zoom), Fridays from 12 - 2pm (GIMM Lab), or by appointment
jackpolifka@boisestate.edu

Student Well-Being

If you are struggling for any reason (COVID, relationship, family, or life's stresses) and believe these may impact your performance in the course, I encourage you to contact the Dean of Students at (208) 426-1527 or email deanofstudents@boisestate.edu for support. Additionally, if you are comfortable doing so, please reach out to me and I will provide any resources or accommodations that I can. If you notice a significant change in your mood, sleep, feelings of hopelessness or a lack of self worth, consider connecting immediately with Counseling Services (1529 Belmont Street, Norco Building) at (208) 426-1459 or email healthservices@boisestate.edu.

Staying safe in this course during the COVID-19 pandemic

At Boise State, we're looking forward to another successful semester. This success depends on all of us taking small but necessary steps to keep students, faculty, staff and the local community healthy and safe during the pandemic. For its part, the university has put public health requirements measures in place to support our success.

For example, Boise State Public Health staff monitor case rates and perform contract tracing in every class where there may have been a COVID-19 exposure.

As students and faculty, our part of this work is to understand and adhere to Boise State's rules and strategies to maintain public health. If you are experiencing any COVID-19 symptoms, you should stay home, test, and wait for the results before attending in-person campus activities. Layered COVID-19 prevention strategies are outlined on this University's COVID-19 web page. And for the purpose of facilitating contact tracing of positive cases to prevent classroom/campus spread, you also need to sit in the same seat all semester.

You will select your seat at the first class meeting. Please note the seat number, as this seat will remain yours, unless seating arrangements are reassigned during the semester by the instructor. You will need to enter this seat number in MyBoiseState's student view, on the Schedule tab.

I encourage you to learn about other precautions you can take to keep yourself and your peers safe; you can find the latest recommendations on the Health Guidelines website. Please note that failing to follow these rules and precautions is a violation of Boise State's Student Code of Conduct and will subject you to university sanctions and discipline.

While facial coverings are not currently required in classrooms and most other campus buildings, students who feel more comfortable wearing a mask are encouraged to do so. The Centers for Disease Control and Prevention continue to view masking as "a critical public health tool" alongside "vaccination, self-testing, and physical distancing," and Boise State recommends the use of facial coverings to provide an extra layer of protection from COVID-19, especially during periods of time or in places associated with high transmission. As the University allows students and faculty to choose whether or not to wear a facial covering in classrooms, we will respect one another's decisions in this regard.

Specific protocols may change during the semester, and additional measures may become necessary as the public health situation evolves. Guidance for such change will come from the Boise State University Office of the President. Additional details regarding guidelines, protocols, etc., may be found on the University's COVID-19 website.

We are taking these and other health precautions so that this course and others can continue to meet in person. Of course, even implementing these strategies can't keep

us 100% safe from infection. Because we are breathing common air in the classroom and sitting close together for entire class meetings, all of us remain at risk of potential exposure to the virus. To preserve this learning community for the duration of the semester, it is imperative that we all engage in behaviors that protect the overall public health.

This course is specifically designed for the in-person learning environment. The face-to-face format of this course offers a number of benefits that appeal to many students. While I will accommodate the learning needs of students who need to isolate or quarantine, you should expect that this course will continue to meet in person all semester. Should you prefer a course that meets online or remotely, please talk with me, and we will see if another section of this course or a similar one is available.

Welcome

This course will focus on using the skills gained from GIMM 250, 260, 270, 285, 290, and 300 along with cloud computing to develop Internet of Things applications. Our applications will be built using various input systems (e.g., Amazon Echo Frames, Arduino, etc.), programming languages (e.g., HTML, CSS, JavaScript, Node.js, SQL, etc.), cloud computing resources (e.g., Heroku, Amazon Web Services, Git, etc.), and different methods of using data. At the same, we will examine some of the different ways technology affects our everyday lives. In the end, we will have the opportunity to create Internet of Things applications with the goal of improving our community.

Course learning outcomes

After successful completion of this course, students will be able to…

1. Evaluate the different consequences of technology and how they may affect an individual's everyday life
2. Construct a basic internet software architecture using cloud computing
3. Define what the Internet of Things is
4. Determine what type of problems the Internet of Things can solve
5. Collaborate with other students to implement an Internet of Things solution

Course format

This course will use a mixture of lectures, in-class activities, case-studies, programming assignments, and writing activities to achieve the course learning outcomes above. In-class activities will generally need to be handed-in at the end of the class period. Programming work will generally be introduced before the end of the class period and reviewed during the next week. Most programming assignments will require 1 - 3 hours to complete. All of these assignments will be done as a group. Members of each group will be determined during the 1st week of class.

Group Work

In college, group work can be difficult to manage alongside your own personal responsibilities. To help facilitate that groups are successful during this class, there will be weekly to bi-weekly check-ins with each group to understand how work is advancing and how work is being completed. If it is determined that a member of a group is not properly contributing to the success of the group during these check-ins, they will be warned that their behavior will not be tolerated. If it is determined that a member of a group is not properly contributing to the success of the group during these check-ins after being warned, they will receive an 'F' as a final grade for the course and be asked to leave the class.

Materials for class

One book is required to be purchased for this course. Additional readings may be needed during the course and will be announced when needed. Those reading materials will be free for download. What is needed for this course includes the following:

- Addiction by Design: Machine Gambling in Las Vegas by Natasha Dow Schüll

All software needed for the course will be free for download. Additional software may be needed during the course and will be announced when needed. What is needed for this course includes the following:

- Integrated development environments (IDE)
    - Recommended for programming: Visual Studio Code
    - Recommended for MySQL: MySQL Workbench

- Recommended for PostgreSQL: pgAdmin

Powerpoint and other handouts used in class will be on Canvas under the “Files” section.

Grading

Grading will be based on in-class assignments, programming assignments, book chapter discussion, smart school application, consequences of technology final paper, and smart city application. Each assignment will be handed-in via Canvas.

Grade Percentages:

Assignment Category	Percent of Final Grade
In-class Assignments	25%
Programming Assignments	20%
Book Chapter Discussion	10%
Consequences of Technology Final Paper	15%
Amazon Echo Frames Application & Commercial	30%

Final grades will be based on the following scale.

Letter Grade	Percentage
A+	97–100 %
A	93–96 %
A−	90–92 %
B+	87–89 %
B	83–86 %
B−	80–82 %

C+	77–79 %
C	73–76 %
C−	70–72 %
D+	67–69 %
D	63–66 %
D−	60–62 %
F	0–59 %

Assessments

The main assessments for this course will be an Amazon Echo Frames application and a final paper about the consequences of technology.

Late work policy

All assignments minus the final will be accepted until 11:59pm of the Saturday before finals week. Assignments handed in late may not receive feedback beyond a grade. Anything that does not follow this policy will be announced when appropriate. If illness, death in your family, or another emergency prevents you from completing an assignment on time and you still want feedback, please email me.

This class's community is inclusive

This course is developed to provide a welcoming environment and effective, equitable learning experience for all students. If you encounter barriers in this course, please bring them to my attention so that I may address them.

Students in this class represent a rich variety of backgrounds and perspectives. The College of Innovation and Design is committed to providing an atmosphere for learning that respects diversity and creates inclusive environments in our courses. While working together to build this community, we ask all members to:

- share their unique experiences, values, and beliefs.
- listen deeply to one another.
- honor the uniqueness of their peers.

- appreciate the opportunity we have to learn from each other in this community.
- use this opportunity together to discuss ways in which we can create an inclusive environment in this course and across the campus community.
- recognize opportunities to invite a community member to exhibit more inclusive, equitable speech or behavior—and then also invite them into further conversation. We also expect community members to respond with gratitude and to take a moment of reflection when they receive such an invitation, rather than react immediately from defensiveness.
- keep confidential any discussions that the community has of a personal (or professional) nature, unless the speaker has given explicit permission to share what they have said.
- respect the right of students to be addressed and referred to by the names and pronouns that correspond to their gender identities, including the use of non-binary pronouns.

I will use peoples' preferred names and pronouns.

Please let me know of your preferred or adopted name and gender pronoun(s), and I will make those changes to my own records and address you that way in all cases.

To change to a preferred name so that it displays on all BSU sites, including Canvas, contact the Registrar's Office at (208) 426-4249. Note that your legal name will still appear on BSU official and legal documents, as only a legal name change can alter your name in those contexts.

This course is accessible to students with disabilities.

I recognize that navigating your education and life is often more difficult if you have disabilities. I want you to achieve at your highest capacity in this class. If you have a disability, I need to know if you encounter inequitable opportunities in my course related to:

- accessing and understanding course materials
- engaging with course materials and other students in the course
- demonstrating your skills and knowledge on assignments and exams.

If you have a documented disability, you may be eligible for accommodations in all of your courses. To learn more, make an appointment with the university's Educational Access Center.

For students responsible for children

I recognize the unique challenges that can arise for students who are also parents. Any student needing to temporarily bring children or another dependent to class is welcome to do so to stay engaged with the class.

Academic integrity

When you graduate from Boise State, we want you to feel confident that your paper diploma represents strong skills, abilities, and knowledge that you developed through your coursework. This is academic integrity. When we all build and practice a culture of academic integrity in our programs, courses, and inside ourselves, we feel confident in the value of our degrees.

Academic integrity asks students to engage honestly with their coursework to develop new abilities. This means acting and working honestly, transparently, and ethically in every assignment and every interaction with a peer, professor, or research participant to support our community of academic excellence. If you are not sure what behaviors would be considered dishonest, please ask me and/ or read some examples inside Section 8 of the Student Code of Conduct (which offers 20+ descriptions of cheating, plagiarism, and unauthorized collaboration behaviors so that you can avoid them).

Academic integrity is everyone's responsibility. Boise State and I take academic misconduct like cheating and plagiarism very seriously because it can prevent student-learning: my greatest goal for you.

What is OK	**What is NOT OK** (This list is not inclusive. If you have any questions, please ask.)
• Programming is a group activity, so working with others on any programming assignments is fine (e.g., talking with each other to share ideas, one person explaining to other how to implement a specific functionality or topic) • Using code snippets from class assignments • Using code snippets from online sources	• Directly copying another person's work and handing it in as your work • Modifying another person's existing work and handing it in as your work • Sharing your project or assignment with someone else resulting in the one of the previous actions

- If someone does something in the "**What is NOT OK**" column above, I will talk with you and take action based on the number of offenses
    - **1st offense**; The assignment affected by such actions will be graded as a zero and the instance is reported to the Department Chair
    - **2nd offense**; Automatic 'F' for the course and the instance is reported to the Office of the Dean of Students

University resources

If you feel your studies are being compromised because of a lack of food, shelter, or other basic needs, know that the university has resources that may be able to help. You can talk to me and I can work to connect you with the right resources. Or you can contact the Dean of Students office and ask for help - deanofstudents@boisestate.edu.

The university has many resources designed to support you as a learner and human being. Among these are:

- Albertsons Library provides a treasure trove of physical and electronic resources.
    - As you enter the library, straight ahead you'll find the Reference Desk, where librarians can help you find the information and resources you need.
    - The Circulation Desk lets students borrow various technologies.
    - The MakerLab on the second floor offers tools for student use, and there are friendly staff in the MakerLab to help you learn how.
- The Writing Center offers individual consultations tailored to your needs, including making sense of writing assignment instructions, brainstorming, crafting a thesis, organizing an essay, revisions, citations, and more.
- Counseling Services helps you tap into your strengths and find resources to deal more effectively with concerns that impact your pursuit of personal and academic goals. It emphasizes prevention and early detection and provides a broad spectrum of short-term counseling, consultative, evaluative, teaching, and training functions. Counseling staff consists of licensed counselors, psychologists, and closely supervised trainees/post-graduate interns.
- The Gender Equity Center provides specialized, brief, no-cost, confidential support for campus members affected by:
    - Identity-related harassment
    - Sexual harassment, sexual assault, unhealthy relationships, and stalking
    - Life experiences related to gender, sexual orientation, and allyship
    - Life transitions and crisis
    - Personal, financial, or academic roadblocks

- Multicultural Student Services works with all students interested in equity and social justice, students from different cultures, countries and ethnicities. The staff understands cultural differences and perspectives, and knows what it's like living in a dominant culture. The training and the programs Multicultural Student Services provides can help you navigate through political correctness and into respectful dialogue. This center also provides:
    - Support and guidance for planning cultural festivals and events
    - In-center tutoring and studying lounge
    - Volunteer opportunities
    - Mentoring and Training
    - Programs and events
- Food assistance: If you are hungry and cannot afford to purchase food, the campus has some resources to help you. You can visit the campus food pantry or get free meals in the campus dining hall.
- The Boise State Student Basic Needs Collaborative can connect you with other resources you need to survive and thrive.

Tentative course schedule

Week	Date	Topic(s)	In-class Activity (ICA)	Programming Assignment (PA)	Reading (Due before next class)
1	August 25	Introduction / Consequences of Technology	ICA 1: Consequences of Technology (I)	PA 1: Consequences of Technology (I)	
2	September 1	The Internet of Things / Amazon Echo Frames Application	ICA 2: Brainstorming for Amazon Echo Frames Application		Addiction By Design (ABD) Intro A View of Cloud Computing - Armbrust et al. (2010) (**Encouraged**)
3	September 8	Cloud Computing Servies	ICA 3: Cloud Computing Services		ABD Ch 1
4	September 15	Cloud Computing / Alexa	ICA 4: Alexa Skill & Intents	PA 2: First Alexa Intent	ABD Ch 2
5	September 29	Consequences of Technology	ICA 5: Consequences of Technology (II)	PA 3: Consequences of Technology (II)	ABD Ch 3
6	September 22	Cloud Computing / SQL	ICA 6: Cloud Computing Databases	PA 4: Storing Alexa Intent Analytics	ABD Ch 4

7	October 6	Amazon Echo Frames Application	ICA 7: Amazon Echo Frames Application Peer Review		ABD Ch 5
8	October 13	Amazon Echo Frames Application			ABD Ch 6
9	October 20	Amazon Echo Frames Application			ABD Ch 7 Smart Cities: Concepts, Architectures, Research Opportunities - Khatoun & Zeadally (2016) (**Encouraged**) Barcelona bets on 'digital twin' as future of city planning (2022) (**Encouraged**)
10	October 27	Smart City Application	ICA 8: Brainstorming for Smart City Application		ABD Ch 8
11	November 3				ABD Ch 9
12	November 10	Arduino / Machine Learning	ICA 9: Arduino / Machine Learning	PA 5: Arduino / Machine Learning	ABD Ch 10
13	November 17	Website Using Cloud Computing			ABD Conclusion
	November 24	*Thanksgiving Break - No Class*			
14	December 1	Consequences of Technology	ICA 10: Consequences of Technology (III)	ICA 6: Consequences of Technology (III)	
15	December 8	Amazon Echo Frames Application			
16	December 15	Amazon Echo Frames Application	Amazon Echo Frames Application	Consequences of Technology Final Paper	