Boise State University
GIMM 350

Instructor: Dr. Daniel Hampikian danielhampikian@boisestate.edu
Office Hours: After class or by appointment

Course Goal and Description:
As game developers, you have the ability to bring your wildest ideas to life, to give tools of expression and the materials of dreams to your players, and to craft creative worlds, characters, and even your own rules of reality. There's nothing like making a game that someone plays for the first time and smiles, in this class you will learn how to create that experience in a virtual reality environment and gain the skills to create any kind of game that you can imagine by developing 5 types of games and improving on them throughout the semester. The course will also introduce you to design patterns, Virtual Reality and Augmented Reality development, object oriented programming, and advanced c# coding practices as well as some 3d modeling with blender. Depending on your effort it will prepare you for a variety of high paying and fun development jobs beyond just game development in industry. Finally, it will enable you to finish *prototyping* your final individual project for the GIMM program: a complete level of a virtual reality or augmented reality game.

Course Learning Outcomes:
After successful completion of this course, students will be able to…

1. Plan, prototype, and implement you individual VR/AR game using version control and planning software.
2. Be able to demonstrate knowledge of the basics of C# and the Unity API by prototyping a AR/VR game in the Unity environment.
3. Implementing at least 3 design patterns.
4. Be able to summarize the reason for using these design patterns and how the implementation works.
5. Begin writing and collecting reusable code in a utilities api you write and utilize throughout the rest of your GIMM development.
6. Create an API of reusable code snippets in a utilities file.
7. Learn how to save, store, and load permanent data
8. Gather and refine research techniques for learning beyond the class content

Materials/Texts:
Required:

- **Unity Games by Tutorials Third Edition** by the raywenderlich.com Tutorial Team 2017. Make sure you get the second edition or more recent!
- **Introduction to Game Design,** Prototyping, and Development

By Jeremy Gibson. You should have this book from a previous class where we will pick up where that class left off.

- **Ten Things Video Games Can Teach Us: (about life, philosophy and everything)** Jordan Erica Webber, Daniel Griliopoulos

Optional:

- **Unity AR & VR by Tutorials**, Jimmy Alamparambil, Matt Larson, Jonathan Ogle-Barrington & Eric Van de Kerckhove 2019
- **The Grasshopper**
  By Bernard Suits (A copy is on blackboard)

Course Requirements: Whatever tasks and assignments you include in your course should align with the learning outcomes you have defined.

- You must attend every class to complete the in class exercises which are due at the end of class. Sometimes these will be written quizzes so that you get familiar with c# techniques and don't over-rely on google knowing.
- There will be one final project which is getting a working prototype of a level of your GIMM individual game project functional in virtual reality. At the end of the semester we will demo all projects and your peers will have a chance to experience your work.

Grading information:

- In class assignments: 35%
- Demonstrates ability to set up and develop with both AR and VR: 5%.
  - At some point in the class, it is your responsibility to get checked off for this demo to me. For this you will need to show you can set up and develop on an oculus, and you can deploy and develop an AR game on a phone or tablet. You can try this as many times as there is class time but if you don't get checked off for this ability you will lose 5% of your grade.
- Each milestone completed on time and completed final prototype: 60%
  - Only the final prototype will be evaluated on quality of gameplay and code design, the other milestones will be evaluated on the basis of completion on time to keep you on schedule for your final project.
- Late assignments will not be accepted except for documented emergencies.
- Attendance is mandatory. You will get a 0 for the in class assignment if you are not present, late and miss it, or if you leave early.

Class Structure:

- Each class will begin and end with a timeboxed in class assignment designed to improve your abilities. A fair attempt at these with some working code will earn you a low B if the assignment is not finished or does not function as specified. I will check these off every day by looking at your code. To get an A on these you must meet the specifications in the appropriate amount of time. If you are late or leave early or absent, you will receive a 0 for that class. Only documented medical excuses will be accepted as a reason to not be in class.

- To prepare for these assignments, there will be announcements directing you to studying material each week for the next week's in class exercises.
- In the middle of class, I will ask that you set up a VR station in groups of three and take turns using that VR rig to do development on your individual games. We will do this for at least an hour every day, and you must rotate who is setting up the Oculus each time in your group. During these in class work sessions one person should be working on AR, one person on VR, and one person on the textbook assignments. If you are not working on something for my class you will receive a 0 for class participation that day. All other class time will be either in class demonstration and explanation of some coding technique or design pattern or in class discussion of some philosophical, psychological, sociological, or case study of gameplay, often using the book: Ten Things Video Games Can Teach Us: (about life, philosophy and everything).

Other Expectations: Please be respectful and considerate of your peers and other people's points of view. There will be a lot of discussion in this class so remember to be supportive and open minded at all times even when you have a different opinion. When making your games, make sure that they are not offensive or derogatory to any groups or I will ask you to rework them. I am always available for you to discuss any concerns or questions you have about the class, so please come to me if there is anything going on in the class that makes you feel uncomfortable that I can help to change.

Student Conduct and Academic Integrity: Suggested language below.

In order to create a safe space for learning, I expect all of us (peer mentors, students and myself) to exhibit behavior that reflects Boise State's Statement of Shared Values (http://deanofstudents.boisestate.edu/statement-of-shared-values/) and is characterized by

Academic Excellence	**Caring**	**Citizenship**	**Fairness**
Respect	**Responsibility**	**Trustworthiness**	

In addition, students in this course are expected to uphold standards outlined in the Boise State University Student Code of Conduct (http://deanofstudents.boisestate.edu/student-code-of-conduct/). Any work submitted by a student in this course for academic credit will be the student's own work. For this course, collaboration is allowed in the following instances: group work in team assignments, using unity asset store for prototype resources, using stackoverflow or similiar sites for coding solutions WITH ATTRIBUTIONS!!! To the website and author of the solution.

Accommodations for students with disabilities:
Students with disabilities needing accommodations to fully participate in this class should contact the Educational Access Center (EAC). All accommodations must be approved through the EAC prior to being implemented. To learn more about the accommodation process, visit the EAC's website at https://eac.boisestate.edu/new-eac-students/.

Inclusivity Statement:

We understand that students in this class represent a rich variety of backgrounds and perspectives. The GIMM program/department is committed to providing an atmosphere for learning that respects diversity. While working together to build this community we ask all members to:

- share their unique experiences, values and beliefs
- be open to the views of others
- honor the uniqueness of their colleagues
- appreciate the opportunity that we have to learn from each other in this community
- value each other's opinions and communicate in a civil manner
- keep confidential discussions that the community has of a personal (or professional) nature
- use this opportunity together to discuss ways in which we can create an inclusive environment in this course and across the campus community

Planning for Success: Read the chapters we will be working on for each class before class for success, as well as any external reading or coding exercises I assign that week. Always come to class prepared with a laptop or a drive with your work on it ready to develop games. Work on your milestones at least every other day for at least a couple hours, they take a lot of time and effort to complete but the reward is the ability to be a full fledged game developer by the end of this course.

Milestones Overview (assigned on blackboards):

- Milestone 1 **Due 9/13**: (submit via blackboard with comments the following)
    - Finished Introduction to Game Design Chapter 31 with at least 3 personal additions and explanations for them including at least one weapon class using fireDelegate,
    - Finished code from sixth section in Unity Games by Tutorials with code and comments explaining what any code does that is in that section.
    - Explain in comments how delegate design pattern is used,
    - Plan and timeline for individual game on Trello, submit screen shot of this.
    - Utilities file and research strategy file on github with some code checked in, submit the link
    - Explain in comments how the scope of game has been narrowed down and how VR/AR adds to the user experience in that game)
- Milestone 2 **Due 10/11**:
    - gather assets to use as placeholders in game creation. Consider what assets are needed to complete a playable prototype for one level or one objective. Write up your plan for using each asset and put that in the comments and submit a screen shot of your assets.
    - Section V in Unity Games by Tutorials (tower defense) of completed working code with your individual improvements and creations added from our textbook due, zip the project and submit via blackboard. Explain in comments what your individual creations are.

    - Update on your timeline for making your individual prototype due, screenshot of trello and what is done and what isn't. Put in comments any changes to your plan.
- Milestone 3 **Due 11/8**:
    - the VR/AR prototype beginning functionality with player movement, animated items, and a proof of concepts playable ar or vr element in your prototype
    - The first Section of completed working code with your individual improvements and creations added from our textbook.
- Milestone 4 **Due 12/6**:
    - The finished though not yet polished implementation of a main task for a player to do in a level and if applicable win/lose conditions that another team member has played and given you feedback on (pu their feedback in the comments)
    - The second Section of completed working code with your individual improvements and creations added from our textbook should be zipped and submitted.
    - The c# files that enable you to save permanent data (we will cover this in class) should be backed up on github or in your utilities file, submit a link to this repo.
- Milestone 5 **Due 12/13**:
    - The complete and polished playable prototype level with improvements based on feedback from your team members, additional obstacles for the player to overcome, and a fully functional ui menu, start screen, pause screen, end screen. Zip file or share a copy on google drive. Address in comments how you responded to feedback in development.
    - The fourth Section of completed working code with your individual improvements and creations (from blender) added from our textbook is due.
    - Submit your utilities file and a document explaining your current research strategies, how these improved over the semester, and some future ideas for improving them further.