

CIS 487 Sections 001/002

Game Design 1

3 Credit Hours, Fall 2021

6:00-8:45 W, Lecture, 2380/2382 ELB in-person and on-line

Contact Information:

- Professor Bruce R. Maxim
 - Email: bmaxim@umich.edu
 - Phone Number: 313-536-9155
 - Office Hours: 3-5 T W Th by appt.
 - Office Location: 233 CIS
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Course Description:

The study of the technology, science, and art involved in the creation of computer games. The focus of the course will be hands-on development of computer games. Students will study a variety of software technologies relevant to computer game design, including programming languages, scripting languages, operating systems, file systems, networks, simulation engines, and multi-media design systems. Lecture and discussion topics will be taken from several areas of computer science: simulation and modeling, computer graphics, artificial intelligence, real-time processing, game theory, software engineering, human computer interaction, graphic design, and game aesthetics

Dearborn Discovery Core Category and Goals:

- None

Program Learning Goals:

- Our graduates will be successfully employed in a computer and information science-related field or another career path, in an industrial, commercial, academic, governmental, or non-governmental organization, or will be a successful graduate student in a program preparing them for such employment
- Our graduates will lead and participate in culturally diverse teams, becoming global collaborators and adapting to an ever changing field.
- Our graduates will continue their professional development by obtaining continuing education credits, professional registration or certifications, or post-graduate study credits or degrees

Course Objectives:

a. Outcomes of instruction

- The student will be able to apply techniques for play-testing computer games
- The student will be able to assess the quality of game products
- The student will be able to create analysis models for a game software product
- The student will be able to participate in the peer review of software engineering documents and software products

b. Student outcomes addressed in this course

- Outcome 1 – Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Outcome 2 – Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Outcome 3 – Communicate effectively in a variety of professional contexts.
- Outcome 5 – Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

Required Materials and/or Technology:

- **REQUIRED:** Teach Yourself Unity Game Development in 24 Hours by Geig, Sams, 2022.
- **RECOMMENDED:** Game Design Workshop by Fullerton, CRC Press, 2018.

: Introduction to Game Design, Prototyping, and Development by Gibson-Bond, Addison-Wesley, 2022

- **TECHNOLOGY:** Unity 2021.X or Unity 2022.X and multimedia editing tools.
- **URL:** <http://www-personal.umd.umich.edu/~bmaxim/>
<http://groups.engin.umd.umich.edu/CIS/course.des/cis487.html>

Assignments and Grading Distributions:

6 Project Assignments (Written and Oral)	30%
2 Final Reports	20%
2 Working Games	30%
8 Activity Modules	20%

97-100%	A+	83-86%	B	70-72%	C-
93-96%	A	80-82%	B-	67-69%	D+
90-92%	A-	77-79%	C+	63-66%	D
87-89%	B+	73-76%	C	60-62%	D-

Tentative Course Outline and Schedule:

Date	Activity, Content, Assignments
Module 1 Aug 31	Video Game Evaluation Criteria, Intellectual Property B1-B6, G1
Module 2 Sept 07	Game Design, Story Telling, Puzzle Design, Unity Basic F1-F5, B8, B12, B13, B17, G1
Sept 14	Game Evaluations - Peer reviews done at home or in 2080/2982 ELB (Star Dock Developers at 5:00 pm – location TBA)
Module 3 Sept 28	Game Play, Balance, Prototyping F6-F8, B9, B11, G2-G3, G7-G8, G11
Module 4 Oct 05	Design Documents, 2D Physics B7, B18-B27, Notes, G9, G12, G13
Module 5 Oct 12	User Experience Design, Agile, SCRUM B12, B14, G14-G15
Oct 19	2D Design Document and Prototype Reviews (reviews assigned) Peer reviews done at home
Module 6 Oct 26	Sound Design, Level Design, Sprite Animation, and Movement B16, Notes, G17-G18, G21
Module 7 Oct 27	Terrain Construction, Physics, Game AI B28, B29, B35, G4-G5
Nov 02	2D Game Festival (reviews assigned) Peer reviews done in 2046 ELB or at home
Module 8 Nov 09	Team Organization, Game Production, and Playtesting F9-F16, B10, B15, G23-G24

Date	Activity, Content, Assignments
Nov 16	3D Game Concept Presentations (reviews assigned) Peer reviews done in 2382 or at home
Nov 19 to Nov 27	Thanksgiving Vacation – no class
Nov 30	Team Meetings On-line
Dec 07	Alpha Prototype Demos (reviews assigned) Peer reviews done in 2046 or at home
Dec 14	CIS 3D Game Festival 6:30-9:30 Peer reviews done in 2046 or at home

Instructor or Course Specific Policies:

A student enrolled in a course (lecture, laboratory, recitation, colloquium, seminar, or other university approved format) is expected to participate every scheduled session of the course. The instructor of each course will make known to the students the course attendance policy with respect to student absences. It is the student's responsibility to be aware of this policy. The instructor makes the final decision to excuse or not to excuse an absence.

Presence or participation is also expected in online courses. Participation in online courses can take various forms; it is the instructor who determines what form of presence or participation is expected. Students enrolled in online courses are responsible for being aware of that policy/expectation. An instructor is entitled to give a failing grade for excessive absences or for a student who stops participating in class at some point during the semester.

The Faculty of the University of Michigan - Dearborn, College of Engineering and Computer Science (CECS) believe that our students are honorable, ethical, trustworthy people. Students who engage in cheating of any kind, place the academic integrity and reputation of our university and our college in jeopardy.

To ensure that all CECS students receive an equitable education and are prepared for the workforce, the [University of Michigan - Dearborn Academic Code of Conduct](#) will be strictly enforced in all CECS courses. All CECS students are required to read, understand, and follow the Academic Code of Conduct, as well as any additional rules that the course instructor provides. Students who violate the Academic Code of Conduct or course rules, are subject to

all penalties indicated, including failing the course, potential loss of scholarship funds or expulsion from the university.

Cheating includes, but is not limited to:

- Receiving assistance of any kind, on any individual, graded assignment or exam
- Providing assistance of any kind, on an individual, graded assignment or exam
- Using materials that are prohibited on any graded assignment or exam
- Test/Exam Parties - i.e., completing an individual exam as a group project
- Collusion/Deception of any kind, including but not limited to:
 - coordinating with others to obtain or distribute prohibited or unpublished materials
 - giving false information to receive time extensions or re-takes
 - obtaining and using previous exams not provided by the instructor
- Using a mobile device (including smart watches) to communicate with others during an exam
- Paying another person to complete coursework, including exams
- Receiving payment to complete another student's work, including exams
- Requesting and using help from Chegg, Course Hero or any other such service
- Submitting examination information to Chegg, Course Hero or any other such service
- Plagiarism - using another person's work without properly citing
- Storing equations or solutions in a calculator to use on a quiz or exam when not permitted
- Screenshots of Canvas quizzes or exams
- Any "hacks" used to access Canvas content or other materials before released
- Any other dishonest action that violates course rules and/or the Academic Code of Conduct

If you are questioning an action you are about to take and cannot reach your instructor to verify, it is likely that you should not proceed with that action. Oral exams may be given to determine if a student understands the course material.

Course lectures may be audio/video recorded and made available to other students in this course. As part of your participation in this course, you may be recorded. If you do not wish to be recorded, please contact bmaxim@umihc.edu the first week of class (or as soon as you enroll in the course, whichever is latest) to discuss alternative arrangements.

Food Pantry

The pantry exists to support individuals on their journey as they work toward achieving their goals. We are committed to increasing access to food as a key to success, by assisting any student in need! If you need access or have questions, please contact the Office of Student Life by phone at 313-593-5390, by email at umdearbornpantry@umich.edu.

Vaccination & Face Covering Policy

In order to protect our classes, campus, and community from COVID-19 infections, please review Dearborn's [COVID Response website](#) for the latest policies regarding vaccination requirements and optional masking on campus.

Library Resources

The library's here to help! Go to the Mardigian Library website at library.umd.umich.edu for information about accessing research help, accessing the library's [online databases](#), [journal articles](#), and [books/ebooks](#), and checking out physical items from the library. Research librarians will be available to help you with your research needs through [live chat](#), [text](#), [email](#), and [virtual appointments](#), as well as in the library for walk-in help. Check-out for [books](#), [course reserves](#), and [loanable technology \(such as Chromebooks\)](#) is also available at the Library Info Desk, and our four floors are open for individual study and group work. Feel free to ask the Mardigian any of your questions at library.umd.umich.edu/ask.

University-Wide Policies or Statements Relevant to Courses:

Please see the 'Course Policies' Menu on Canvas for information on the following topics. To find the 'Course Policies' Menu on Canvas, log into any course in Canvas, and then on the blue ribbon on the far left scroll down to 'Course Policies' and click on it. This opens a white ribbon with individual links to UM-Dearborn websites on the following topics:

- University Attendance Policy
- Academic Integrity Policy
- Counseling
- Disability and Accessibility Services
- Safety Statement
- Harassment, Sexual Violence, Bias, and Discrimination