IGME 689 - Vintage Computing

Spring 2025

Instructor: Nicolas LaLone
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Office Location: GOL-2519

Office Hours: **T/R – 9:00AM – 1:00PM**
Class Time: T/R – 2:00PM – 3:15PM
Class Location: MSS - 3110

1. General Course Information

1.1. Course Description

This immersive design course will explore development for the Atari VCS (2600) through 6502 Assembly. Students will gain hands-on experience with the earliest facets of game development by learning how to "chase the beam." In addition to 6502 Assembly, this course will provide an end-to-end development to publishing pipeline with students given the capacity to print their games to circuit and play them on the Atari VCS (2600) hardware in addition to the Stella emulator. Previous programming experience is required, but no previous knowledge of Assembly is necessary.

1.2. Course Objective

Recent trends in game design have seen an increased awareness of so-called "vintage" platforms. The re-release of the Atari VCS (2600) as the Atari VCS (2600)+ offers a unique opportunity to glimpse the earliest days of game design and development. This opportunity is unique in that it is not a re-considered platform like PICO-8, but a literal antique being made new and relevant again.

The objective of this course is to expose students to foundational concepts, terminologies, mental models, and technologies present during the earliest days of game design. Students taking the course will be asked to form development teams, write game design documents, and realize those game documents through this course.

1.3. Course Assumptions

Students enrolling in this class are assumed to have the following capacities.

- File management.
- An understanding of Github.
- Curiosity about how game development began.
- Good communication skills.

Throughout the semester, you will be asked to complete several game analyses, source code analyses, and to complete several readings. Students should expect to spend 6-10 hours outside of class per week to complete readings, assignments, and development tasks.

2. Course Materials

2.1. Textbook, Software, and Misc

Required: There are 2 textbooks for this course:

- Montfort, Nick, and Ian Bogost. *Racing the beam: The Atari video computer system*. Mit Press, 2020.
- Hugg, Steven. *Making games for the Atari 2600*. Puzzling Plans LLC, 2016.

Required: In addition to the two textbooks, we will be using 1 of 2 IDEs:

- https://8bitworkshop.com/v3.11.0/?file=vcslib%2Fdemo_vcslib.c&platform=vcs

Required: Finally, we will be using an emulator:

- Stella: "A Multi-Platform Atari 2600 VCS Emulator"
- https://stella-emu.github.io/

Optional: you might consider getting an Atari 2600+ so you can play at home as well as a Harmony Cartridge.

2.2. myCourses

The myCourses system will be used for facilitation of the course. I know everyone uses myCourses differently, so I'll try and bring you through my way of organizing and hopefully it isn't too obnoxious. If it is, tell me how and why.

2.3. Other Materials

We will use Discord outside of class meeting times so that folks can ask each other questions. No one works alone in Tech we all will be available should you need us (and you will).

In addition, I will suggest 3 VCS development supplemental courses in case you need them:

- Pikuma 2600 Course ($30.00)
- 8Blit Programming for the 2600 playlist || 8Blit Github with Sources
- Stella Programmers Guide

3. Administrative Information

3.1. Grades

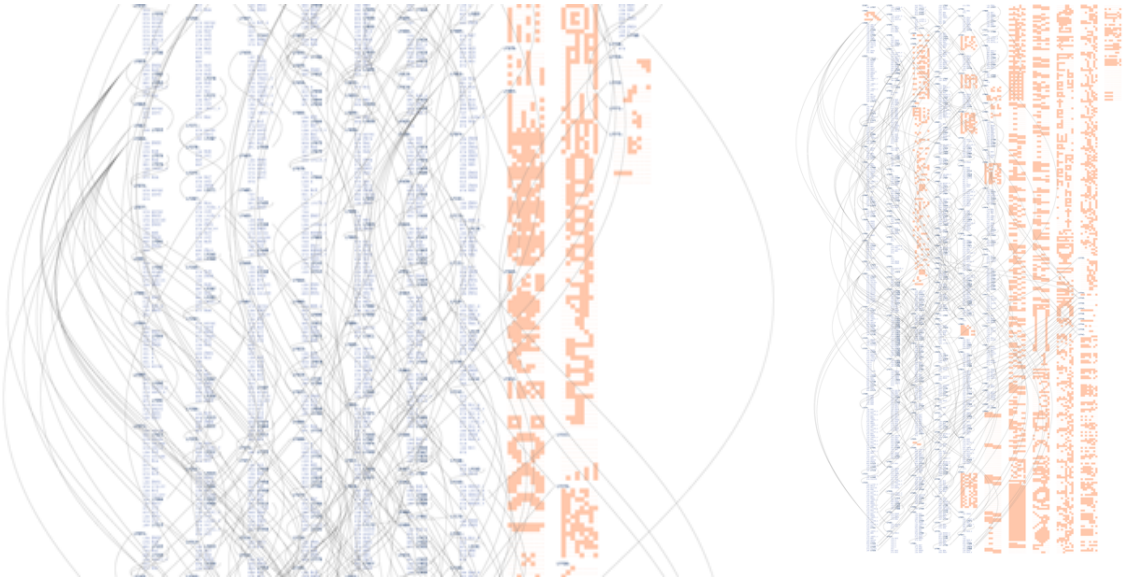
Grades will be assigned according to points earned throughout the semester. These points are based on the following categories:

3.2. Categories and Letter Grade Thresholds (+ only in this course):

Item	#	per	total	%
Readings	5	40	200	20%
Game and Source Analysis	6	50	300	20%
Game Development	1	500	500	50%
Total			1000	100%

Grade	Points
A	900-1000
B+	800-899
C+	700-799
D+	600-699
F	< 600

There is no curve or curving in this course as there are no calculations or need to round. In addition, no incompletes will be given. Should you not like your grade on any given assignment, simply correct the assignment, turn it back in, and let me know you have done so by the end of the semester. In fact, talking to me is probably the easiest way to get and keep your grade afloat.



Source Code can be beautiful. Do you know which games these are?

3.3. Course Organization

The course is mostly organized around DAY1 = talky and DAY2 = demos. After 11 weeks, we will retire to development only. This should leave you around 5 weeks for your groups to finish your game. Remember 1 very, very important thing: E.T. for Atari was finished in 5 weeks. At the very least, your game will be better than the game that destroyed the game industry.

3.4. Readings

The main reading for this course is going to come out of our 2 texts, *Racing the Beam* and *Making Games for the Atari 2600.* We won't really be doing code-based exercises in this course but will be doing tutorials and paired readings and providing some thoughts on what you do and do not understand. Generally, it will simply be: Play the game from that chapter, read the chapter, provide some reactions. We will talk about what "reactions" mean in class but generally, I want to see some stream of consciousness writing about how what you're reading and playing relates to games as they are now.

3.5. Source Code Assignments

There are a lot of source code files out there for the Atari 2600. For each of these assignments, they will follow the reading of the week before. So for example, Combat is the first game discussed in *Racing the Beam* and we will then evaluate its source code which is located here. You will go through the code based on the assigned reading from our other textbook and provide some insight of some labels or affordances for these games. These should be as long as necessary and will mostly fall under the speculative portion of things at first but be more informed later.

3.6. Final Project

For the final project, you/your group will be creating a game for 2600. We will meet 4 times over the semester to get your development started and twice during development weeks via Discord or in person. At each meeting, please take notes and upload these to your GitHub repository for the game. The final project assignment has 5 requirements that must be met and assembled in a zip file. There will be documents, an .asm file, and 1 .bin. The documents will be:

Documents:

1. Box art, instructions, and cartridge label.
2. Well-commented source code
3. List of 10 games that inspired your creation.
4. A post mortem using this template filled out by the whole team as 1.

Finally, you will have the option to upload your game and have it physically printed. You can see the service here at Atari Age and it costs around $30.00 per copy.

Printing the box is a little more difficult and we can cross that bridge when we get to it.

Each of you have the option to submit these to various contests and festivals for class in addition to placing the ROM and Source Code in your portfolio. It is each of yours and you should celebrate your work.

Note: If you are unsatisfied with your game, I have heard tales of folks working on things like this outside of class.

4. Policies and Procedures

4.1. Acceptable and Unacceptable Use of Generative AI

The use of generative AI tools (e.g. ChatGPT, Dall-e, etc.) is permitted in this course for the following activities:

- Brainstorming and refining your ideas,
- Fine tuning your research questions,
- Finding information on your topic,
- Drafting an outline to organize your thoughts, and
- Checking grammar and style.

The use of generative AI tools is not permitted in this course for the following activities:

- Impersonating you in classroom contexts, such as by using the tool to compose discussion board prompts assigned to you or content that you put into a Zoom chat.
- Completing group work that your group has assigned to you, unless it is mutually agreed upon that you may use the tool.
- Writing a draft of a writing assignment.
- Writing entire sentences, paragraphs, or papers to complete class assignments.

You are responsible for the information you submit based on an AI query (for instance, that it does not violate intellectual property laws, or contain misinformation or unethical content). Your use of AI tools must be properly documented and cited to stay within RIT policies on academic dishonesty (see below). For example, the use of APA citations.

Consequences: Any assignment that is found to have used generative AI tools in unauthorized ways will result in being given a new project to do within 3 days.

When in doubt about permitted usage, please ask for clarification.

4.2. Academic Dishonesty

Students are expected to be familiar with and abide by the Academic Honesty Policy as stated in the RIT Student Rights and Responsibilities.

You may review the posted policy on the RIT Student Rights and Responsibilities web site (http://www.rit.edu/studentaffairs/studentconduct/rr_academicdishonesty.php).

This policy covers all courses at RIT unless otherwise noted by the instructor, the department, or the college in which the course is offered.

Plagiarism in any format is a mistake on the part of the instructor as well as the student. As such, any students caught plagiarizing will be required to redo a new assignment and we will talk about it along the way. If you are unsure of what constitutes plagiarism and how to avoid it, err on the side of caution and consult myself as well as this guide:

https://library.rit.edu/instruction/dl/stud.html or the instructor for assistance.

4.3. ADA Statement

RIT is committed to fostering an environment where students with disabilities have the same access to academic programs, support services, social events, and physical facilities as every other student.

Please review the posted policy in the Students Rights & Responsibilities (http://www.rit.edu/studentaffairs/studentconduct/rr_disabilitiesservices.php) for further information and details on the application for accommodations.

The course will be accommodated for disabilities provided that they disclosed to the instructor the first week of classes. Do not wait until you are doing poorly in the course to request accommodation; poor grades will not be altered once earned. You must have current documentation from RIT's Office for Disability Services (ODS) that confirms your disability status and supports your request for academic adjustments, auxiliary aids, and services: http://www.rit.edu/studentaffairs/disabilityservices/index.php

4.4. Discrimination Statement

RIT is committed to providing a safe learning environment, free of harassment and discrimination as articulated in our university policies located on our governance website. RIT's policies require faculty to share information about incidents of gender-based discrimination and harassment with RIT's Title IX coordinator or deputy coordinators, regardless of whether the incidents are stated to them in person or shared by students as part of their coursework. If you have a concern related to gender-based discrimination and/or harassment and prefer to have a confidential discussion, assistance is available from one of RIT's confidential resources on campus (listed below).

1. The Center for Women & Gender: Campus Center Room 1760;
    a. 585-475-7464;
    b. CARES **(available 24 hours/7 days a week)** Call or text 585-295-3533.
2. RIT Student Health Center – August Health Center/1st floor;
    a. 585-475-2255.
3. RIT Counseling Center - August Health Center /2nd floor - 2100;
    a. 585-475-2261.
4. The Ombuds Office – SAU/Room 1114;
    a. 585-475-7200 or 585- 475-2876.
5. The Center for Religious Life – Schmitt Interfaith Center/Rm1400;
    a. 585-475-2137.
6. NTID Counseling & Academic Advising Services – 2nd Floor Lynden B. Johnson;
    a. 585-475-6468 (v),
    b. 585-286-4070 (vp).

4.5. Title IX Statement

RIT is committed to providing a safe learning environment, free of harassment and discrimination as articulated in our university policies located on our governance website. RIT's policies require faculty to share information about incidents of gender based discrimination and harassment with RIT's Title IX coordinator or deputy coordinators when incidents are stated to them directly. The information you provide to a non-confidential resource which includes faculty will be relayed only as necessary for the Title IX Coordinator to investigate and/or seek resolution. Even RIT Offices and employees who cannot guarantee confidentiality will maintain your privacy to the greatest extent possible.

If an individual discloses information during a public awareness event, a protest, during a class project, or advocacy event, RIT is not obligated to investigate based on this public disclosure. RIT may however use this information to further educate faculty, staff and students about prevention efforts and available resources.

If you would like to report an incident of gender based discrimination or harassment directly you may do so by using the online Sexual Harassment, Discrimination and Sexual Misconduct Reporting or anonymously by using the Compliance and Ethics Hotline.

If you have a concern related to gender-based discrimination and/or harassment and prefer to have a confidential discussion, assistance is available from any of RIT's confidential resources (listed below).

- RIT Counseling and Psychological Services
    - 585-475-2261 (V)
    - 585-475-6897 (TTY) www.rit.edu/counseling
- RIT Student Health Center
    - 585-475-2255 (V)
    - www.rit.edu/studentaffairs/studenthealth
- RIT Ombuds Office
    - 585-475-7357
    - 585-475-6424 585-286-4677 (VP)
    - www.rit.edu/ombuds/contact-us
- NTID Counseling and Academic Advising
    - 585-475-6400
    - www.ntid.rit.edu/counselingdept
- Center for Religious Life
    - 585-475-2137
    - www.rit.edu/studentaffairs/religion

Course Schedule and Outline

#	Dates (Sunday)	Racing Chapter	Making Chapter	Read or Source?	Game Focus	6502 Concept	Team Meeting
1	1-12	None	None	None	None	On Chasing the Beam	
2	1-19	1-2	Yes	R	Combat	IDE | Tools Getting Started	
3	1-26	1-4	Yes	S	Combat	Playfields	
4	2-2	3	Yes	R	Adventure	Asymmetry & Sprites	
5	2-9	5-6	Yes	S	Adventure	Player Input	
6	2-16	4	Yes	R	Pac Man	Enemy Behaviors	
7	2-23	7-9	Yes	S	Pac Man	Score Keeping	
8	3-2	5	Yes	R	Yars Revenge	Intersect	
9	3-9	10-13	No	S	Yars Revenge	Intersect	
10	3-16	6	Yes	R	Pitfall	Lives	
11	3-23	14-17	Yes	S	Pitfall	Polish	
12 to 16	3-30 to 4-30		No		Dev Time	As Needed	4 required check-ins