Georgia State University
College of Education and Human Development
Department of Learning Sciences - Learning Technologies

LT 3737/7777
Inventing to Learn: Teaching and Learning with Maker Technologies
CRN 85297 (3737) / 85298 (7777)

Fall 2025
Dr. Jonathan D. Cohen
Office: CEHD 233
Email (outside of iCollege): jcohen@gsu.edu
Online and Face-to-Face Office Hours: By appointment

Course Description:

Bulletin Description: This course prepares educators to take advantage of maker technologies to support student learning. Students will learn to use a variety of technologies, including 3D printers and microcontrollers, while also exploring various pedagogical strategies that leverage these technologies.

Further Description: Technology has progressed to the point to where technologies that were previously the domain of industry are now available and accessible to the masses. The increased accessibility of these technologies has given rise to the maker movement, a do-it-yourself (DIY) ethos in which makers construct, deconstruct, and/or reconstruct a variety of artifacts, from robots to wearable technology to mixed reality games.

As the maker movement has grown, so has schools' interest in leveraging the movement to support student learning. This course aims to provide a space in which educators can explore both maker technologies and the various pedagogies that leverage this technology. Students will leave this course with technological and pedagogical knowledge that will place them in the forefront of this educational movement.

Course Goals:

The goals of the course are for students to develop: 1) a belief in the potential for making to support teaching and learning, 2) the technological knowledge necessary to know when and how to use the technology in various educational situations, and 3) confidence in their ability to design maker-based educational curriculum.

Course Objectives:

- Increase knowledge of maker technologies that can be used for educational purposes
- Explore issues related to making, social justice, democratization of production, and equity
- Develop curricular units that model the various pedagogies associated with hands-on, technology-enabled learning
- Work with various maker software and hardware to produce quality educational products
- Understand and apply appropriate learning theories and pedagogies

Required Course Materials:

Clapp, E. P., Ross, J., Ryan, J. O., & Tishman, S. (2016). *Maker-centered learning: Empowering young people to shape their worlds*. John Wiley & Sons.

All other required course readings will be made available digitally. Any class activities will be able to be completed without the purchase of any additional hardware or software beyond what you use to access the internet.

You may also need a notebook that you can use as a design journal for this course.

Course Activities:

This course will likely function differently than any other course you've taken. The course content is organized into modules. Each module is organized around a particular topic, such as maker theories, or microcontrollers. You will be required to complete certain modules, but you will also be able to choose which of the other modules you'll complete. So, if you're interested primarily in curriculum design, you'll be able to focus on that by completing modules related to that. If digital fabrication is more your thing, then you can choose to focus more on those modules. Each module ends with some type of assignment, and upon completion of those assignments, you'll receive points in the course. Students may work cooperatively on most of the modules except where noted otherwise, but each student must demonstrate that they can complete the concluding activity individually.

In addition to your work on modules, I will also assign weekly work to be completed. This work will include reading/writing assignments and other types of activities.

Your work on these modules and the weekly assignments will determine 80% of your final grade. 10% will be determined by your work on a final portfolio, in which you will highlight your accomplishments from the semester and provide a written reflection on your learning. The final 10% will be determined by your participation in the course. See rubric for assessing student participation for more.

The course website is http://inventingtolearn.org/.

Additional Course Information:

The following provides more information on course responsibilities and expectations, for you and your instructor.

Attendance

Students who want to do well in this course will attend class following the class attendance policy. **You will need an excused absence due to illness**. GSU has a process for students seeking excused absences of longer than one week due to illness through the Dean of Students Office. Please see https://deanofstudents.gsu.edu/student-assistance/#professor for more details.

Should a student test COVID positive, any accommodations to the class attendance policy will be informed by evolving guidance from the CDC on quarantine. In most cases there will be no major change to mode of course delivery, so students will be responsible for collecting notes for missed in-person classes and making up any work they miss during quarantine

Students who need accommodations for a disability should contact the Access and Accommodations Center at https://access.gsu.edu/.

Diversity, Inclusivity, and Respect

As your teacher, I value human diversity in my classes whether expressed through race and ethnicity, culture, political and social views, religious and spiritual beliefs, language and geographic characteristics, gender, gender identities and sexual orientations, learning and physical abilities, age, and social or economic classes. I promise to respect the value of every student in this class, and all of my students are encouraged to share his or her unique perspective as an individual, not as a representative of any category. Multicultural and intercultural awareness and competencies are key leadership skills, and we intend to present material and classroom activities that respect and celebrate diversity of thought, background, and experience. One part of your collegiate education is to challenge assumptions and to provide new and sometimes challenging ways of looking at issues, however if you ever feel uncomfortable regarding content or perspectives that are presented or discussed by myself, guest speakers, or other students I encourage you to contact me immediately so that we can discuss those feelings. I would like to use your preferred language when addressing you, so please let me know if your preferred name (or the pronunciation of that name) differ from what we are using and we ask that each of you let us know your preferred gender pronouns. Your suggestions on how to incorporate diversity in this course in a meaningful way are appreciated and encouraged.

Student Computer Access Requirement

Each student enrolled at Georgia State University must have access to a computer, and any course offered at the university may require computer-based work. It is the responsibility of each student to ensure his or her access to a computer. For more information, see the Student Computer Access Requirement in the GSU catalogs.

Academic Honesty

I take issues of academic honesty very seriously. The short-term benefits of taking shortcuts with your work can have profound long-term consequences. Often, situations relating to academic dishonesty can be the result of a lack of communication between the student and the instructor. I encourage you to remain in good contact with me about your work, and if you have any questions about an assignment or if you are concerned about your ability to make a deadline, please do not hesitate to get in touch with me.

Academic dishonesty is a serious violation of the trust upon which the success of our University depends. Cheating and plagiarism can not only result in a poor grade and penalties from the University, but it can cause your mentors and peers to mistrust you and could keep you from developing the habits to make you a successful student and a successful worker in your future career. The University's policy on academic honesty is published in the Student Handbook, https://deanofstudents.gsu.edu/files/2019/07/Academic-Honesty-Policy.pdf, and includes dishonest actions such as cheating, plagiarism and facilitating academic dishonesty. Please be aware that violations of this policy will result in a grade of "F" for the assignment or the course. If you have any questions about the policy or are unsure if something you're about to do counts as academic dishonesty, please come to my office hours and we can discuss it.

Late Assessments/Assignments

You are responsible for pacing your work in this course. Obviously, waiting until the last moment to complete modules is a bad idea. There will be deadlines for reaching certain milestones for completing modules, and points will be deducted for not reaching these milestones. Weekly assignments are due prior to the start of class on the due date and will be accepted up to two weeks after the due date for half credit.

Professionalism

LT 3737/7777 is a professional education community, regardless of whether you are a novice or veteran educator. To that end, each member of the class will be expected to treat members of their community with respect and to offer cooperation and assistance at all times. The instructor will address individually any member of the class who display less-than-professional behavior, after which continued lack of professionalism will result in a grade deduction.

Students with Disabilities

Pursuant to the provisions of Section 504 of the Rehabilitation Act and the Americans with Disabilities Act, it is the responsibility of the instructor to make reasonable accommodations for students who have disabilities. If any conditions are present which influence the ability to learn or to participate in class activities, it is the **student's**

responsibility to register with the Office of Disability Services at Georgia State before an instructor can modify instruction or expectations. The Office of Disability Services may be contacted at 404-413-1560. Any student with a disability who may require special accommodations is requested to make an appointment with the instructor at the beginning of the semester. Students must self-identify so that arrangements can be made according to the University's policies and guidelines provided by the Office of Disability Services.

Emergency Withdrawal

Emergency withdrawals maybe granted to students who experience non-academic emergencies which interfere or prevent the completion of their coursework. Typically, hardships (non-academic emergencies) tend to fall into one of three categories: medical, personal, and financial. Georgia State University's Office of the Dean of Students and/or the Hardship Withdrawal Committee are very selective in granting partial hardship withdrawals. Students are solely responsible for the hardship withdrawal application. For more information see the [Emergency Withdrawal Policy](#) online.

Student Evaluation of Instruction

Your constructive assessment of this course plays an indispensable role in shaping education at Georgia State. Upon completing the course, please take the time to fill out the online course evaluation.

Connectivity Expectations

As GSU students, you are provided with a GSU Internet account. It is your responsibility to immediately make sure your account (UserID and password) is active and up to date. We will use the course website primarily, though we may also use iCollege at times as well. It is your responsibility to check your e-mail on a regular basis (at *least* three times each week) to make sure you keep current with the course.

This course is not competitively graded. Therefore, you are encouraged also to use e-mail to communicate with me and your classmates to ask questions, gain feedback, and to discuss class topics.

Student Assessment:

All work for this course must be completed on time. Do your best work. Simply completing the assignments as described will not necessarily result in an "A" grade. Remember, grades are earned, not given.

Incomplete grades will not be awarded for this course unless you suffer from extraordinary adversity (legitimate medical emergencies, death in the family, etc.).

Grading Scale

This course follows the +/- grading system, so the grading scale is as follows.

| A+ 98-100 | B+ 88-89 | C+ 78-79 | D 60-69 |

A 94-97	B 84-87	C 74-77	
A- 90-93	B- 80-83	C- 70-73	

Final Grade Breakdown:

Modules and Assignments - 80%

Final project - 10%

Participation - 10%
Students will be rewarded for punctuality, attendance, effort during in-class activities, and general contributions to the culture of the class.

(Please note that this is subject to change.)

Rubric for Assessing Student Participation

	Exemplary	Proficient	Developing	Unacceptable
Punctuality	Student is always in the classroom at the appropriate time and is present the whole class period.	Student is almost always in the classroom at the appropriate time and is usually present the whole class period.	Student is sometimes in the classroom at the appropriate time and is sometimes present the whole class period.	Student is frequently late and leaves early.
Attendance	Student is present for each class meeting, and/or consistently communicates with the instructor about excused absences.	Student is present for most class meetings, and/or usually communicates with the instructor about excused absences.	Student has a number of unexcused absences, and/or rarely (if ever) communicates with the instructor about excused absences.	Student rarely shows up to class and does not communicate with the instructor about the absences.
Engagement	Student is focused in class, and works constructively with others.	Student is usually focused in class, and works constructively with others.	Student does not use class time to work on modules or to disrupt others from working constructively.	Student distracts others and spends a lot of time using technology to do unrelated tasks. Get off your phone.