

SPP 597M1, SPP597M2, SPP597M3

LIBRM1, LIBRM2, LIBRM3

Makerspace Leadership and Outreach - 1 cr

Special Fall 2019 Edition!

**Building a UMass Amherst All-Campus Maker Community and
Launching the All-Campus Makerspace Version 1.0**

Fridays 2:30-3:45 pm

Agriculture Engineering Room 120

(and sometimes Room 114 or Library Digital Media Lab)

Faculty Facilitators:

Steve Acquah – Coordinator, Digital Media Lab, Du Bois Library. In addition to co-facilitating the course with Charlie, Steve and his team at the DML serve as technical assistance to the teams, especially in areas such as Digital Production, 3D design and printing, and Virtual Reality makerspace projects.

Office: Digital Media Lab, 3rd Floor

Email: acquah@umass.edu

Office hours: by appointment

Charlie Schweik – Dept of Environmental Conservation and School of Public Policy (cschweik@pubpol.umass.edu). Charlie has expertise in the broad phenomenon called ‘Commons-based Peer Production’ that drives the open science/maker movement.

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Office hours: by appointment

COURSE DESCRIPTION

Introduction: What is a makerspace?

A makerspace is a physical location where people gather to share resources and knowledge, work on projects, network, and build. The ‘Maker Culture’ emphasizes learning through doing-it-yourself, or doing-it-together, in a social environment and utilizing open access licensed materials available on the Internet. Often, but not always, projects focus on open source technologies such as Arduino Microcontrollers, 3D design and printing, and other such technologies. If you’ve ever attended the International Makerfaire in NY City – that sadly has been postponed this year – you see all kinds of

maker projects and gadgetry and how much fun and serious learning (!) can be accomplished through the open maker paradigm. Check out the maker community at <https://makerfaire.com/>.

Want more on makerspaces? See the below resources:

- What is a makerspace?
<http://renovatedlearning.com/2015/04/02/defining-makerspaces-part-1/>
- Makerspaces and the maker mindset (an interview with John Spencer): <https://www.cultofpedagogy.com/makerspace/>
- Open educational resources (OER) in library makerspaces:
<https://www.slj.com/2015/10/technology/a-librarians-guide-to-oer-in-the-maker-space/#>

Four “un-tapped” potentialities of Making and Makerspaces in Higher Education

“Making” at university campuses worldwide has four great untapped “potentials” and students in this class, will be leading the way.

What doesn’t stand out in the NY City Makerfaire event is the potential of the “maker paradigm” for advancing science, or addressing social issues, in a meaningful and serious way. Course Facilitator Schweik wrote this opinion piece in Inside Higher Education [\[https://www.insidehighered.com/users/charles-m-schweik\]](https://www.insidehighered.com/users/charles-m-schweik) that lists four important and somewhat untapped “potentialities” the maker movement brings to higher education:

(1) The need for **leadership connecting “maker principles” to real, robust science.**

(2) The potential of **longitudinal making**; The value of semester-to-semester passing the baton to different maker teams working on the same long-term project. This is why we are now offering three different sections of this course – so students can work on projects across semesters.

(3) The potential of **cross-organizational making**; The value and potential of establishing maker teams at different universities or organizations, working in parallel on the same or different versions of projects (called “forks” in open source software).

and,

(4) The **potential of applying “maker principles” to other scientific areas, such as public policy analysis.** “Making”, to date, really is around the physical construction of products, or it can be in software, or both. But I see no reason why the “making principles” and “approach” can’t be ported into other areas, such as social science or public policy analysis. We encourage students in the social sciences to explore this.

Projects we undertake in this seminar will relate to one, if not more, of these four potentials.

Seminar specifics

In this interdisciplinary, project-based seminar, we will examine innovative approaches to problem-solving through ‘makerspace principles.’ This year, ideally -- but not necessarily in all cases -- we’d like you to work on a project that addresses a problem or a challenge listed in one of [United Nation’s 17 Sustainable Development Goals \(SDG\)](#).

The main goal of this seminar is for you to either continue to work on an existing project or start a new one and make progress on the project (under the constraints of a 1-cr class). The intent is to engage your creative problem-solving skills and, ideally, work within teams toward a shared solution.

You have a choice of several project options:

1. **Join and build upon an existing, “longitudinal” project** that is already underway;
 - a. Chlorine in Water Sensor (Sameer Kamath, Joseph Maloyan - active students; a cross-organizational project with Rob Ryan-Silva of DAI, Washington, DC)
 - b. Gravity light
 - c. Autonomous boat (Cobie Yung - active student)

2. **Begin a new project already conceptualized** by the facilitators;
 - a. UMass Net-Zero Energy 2030 research project
 - b. Several new project proposals working with Rob Ryan-Silva of the company DAI in Washington DC
 - c. Lead the formation of a new All-Campus Makerspace Student Club
 - d. Documentary filmmaker project for SolutionsU (cross-organizational project. See <https://solutionsu.solutionsjournalism.org>)
 - e. Microbit outreach workshop for elementary to high school students working with Barry Chua in Singapore (cross-organizational project)

3. **Propose a new project driven by your own interests.**

ASSIGNMENTS

1. **Project Proposal:** Each student will write a short project proposal in the style of a funding proposal with estimates of the parts/components required at the start of the semester.
2. **Literature Survey:** Students will complete a literature survey related to their project idea. No longer than 1 page.
3. **In-class brief project update presentations, 2 times during the semester**
4. **Project Notes/Documentation:** Student teams should document their progress as they go, using some form of collaborative writing tool. If you require additional technology support, please notify your instructor as soon as possible.
5. **Final Presentation and project summary document:** As innovative, entrepreneurial thinkers, your team will make an end-of-semester presentation to the class.

GRADING

Grading for this class will be based on a simple Satisfactory/Unsatisfactory scheme rather than the standard letter grading system. Grades will be assigned based on the student performance on the assignments above. **IMPORTANT NOTE: You are expected to work regularly outside of class in addition to the class time. At least 2-3 hours a week.**

Attendance

All class meetings are required. Students should notify the instructor via email if possible, before class, if they will be absent.

Learning Management System (LMS)

All course materials and written assignments will be managed in Moodle. All communications to instructors may be sent via Moodle.

Accommodation Statement

The University of Massachusetts Amherst is committed to providing an equal educational opportunity for all students. If you have a documented physical, psychological, or learning disability on file with Disability Services (DS), you may be eligible for reasonable academic accommodations to help you

succeed in this course. If you have a documented disability that requires an accommodation, please notify me within the first two weeks of the semester so that we may make appropriate arrangements.

Academic Honesty Statement

Since the integrity of the academic enterprise of any institution of higher education requires honesty in scholarship and research, academic honesty is required of all students at the University of Massachusetts Amherst. Academic dishonesty is prohibited in all programs of the University. Academic dishonesty includes but is not limited to: cheating, fabrication, plagiarism, and facilitating dishonesty. Appropriate sanctions may be imposed on any student who has committed an act of academic dishonesty. Instructors should take reasonable steps to address academic misconduct. Any person who has reason to believe that a student has committed academic dishonesty should bring such information to the attention of the appropriate course instructor as soon as possible. Instances of academic dishonesty not related to a specific course should be brought to the attention of the appropriate department Head or Chair. Since students are expected to be familiar with this policy and the commonly accepted standards of academic integrity, ignorance of such standards is not normally sufficient evidence of lack of intent (<https://www.umass.edu/honesty/>).

Class Participation

Class time will usually be used for project work and periodic project updates. You will be expected to participate in all activities and attend the seminar. If you will be absent for some reason, please let the co-facilitators know.

COURSE SCHEDULE

Date	Topic	Homework
9/6	Introduction to class	Watch Schweik introductory video for next meeting
9/13	Projects and project teams identified	Project proposal document
9/20	Project proposal drafts due (prior to class). Discussion of project proposals in class.	Equipment list needed for ordering
9/27	Project work day	Literature review/survey
10/4	Literature survey due	

10/11	Project work day	Project notes/documentation
10/18	Project work day	Project notes/documentation
10/25	Project progress update day	
11/1	Project work day	Project notes/documentation
11/8	Project work day	Project notes/documentation
11/15	Project work day	Project notes/documentation
11/22	Project progress update day	
11/29	Thanksgiving recess	
12/6	Project work day	Final presentation and summary document
TBD - Week of 12/11	Project presentations and summary document due	