Interdisciplinary Experiences (3IE1/2/3)

Fall 2015 Modules

Grant Writing: Integrating Science, Sustainability and Community (ARTSSCI/ISCI 3IE1)

**Instructor:** Chad Harvey

The ability to research, write and apply for grant funding is a skill that is truly interdisciplinary. Whether an individual is pursuing a career in academics, government, or private industry, proficiency in grant writing is necessary and a highly marketable asset. Students will experience the entire grant writing process, from research of potential funding sources; scripting an appropriate background, purpose, budget and timeline; to writing and submission of the finished grant application.

Grants will be sought to support and maintain community outreach initiatives here at McMaster. Examples of these initiatives include the McMaster Teaching & Community Garden (MTCG), McMaster Outdoor Learning Space (MOLS), McMaster Eco-Lab (MEL), and McMarsh, a reclamation project for Lot M. Students who register in this module will be contacted by the instructor in order to determine their meeting schedule.

**Enrolment Limit:** 8 students

**Application Deadline:** 9 September 2015 at 1pm

Electronics for the Rest of Us! Part I (ARTSSCI/ISCI 3IE1)

**Instructors:** Dale Askey, Jason Brodeur, John Fink and Matt McCallow

To most of us, the workings of the electronic devices that accompany (and enable!) our everyday lives often seem mysterious and opaque — an area of concern for only the most qualified ‘techies’. Though a basic understanding of electronics and programming is generally viewed as a core competency for 21st century success, these topics remain intimidating, as they often appear inaccessible to many students from non-technical backgrounds. **This doesn’t need to be the case.**

The development and widespread availability of inexpensive, user-friendly and well-documented electronics — such as the Arduino — has made learning and developing these skills accessible (and dare we say, even fun) for students of every age. Such resources now make it possible for even the most inexperienced student to create with electronics, while simultaneously reaping the educational benefits associated with the application of logic and rules to make cool stuff.

Over the span of 3 classes (1-3 October 2015) and open access to equipment and documentation, students will be introduced to the world of simple electronics and programming, and will have an opportunity to develop their skills by designing and building an electronic device of choice. There is no fee to attend this course and all materials will be provided.

**Module Schedule:**

1 October from 7pm-9pm (SCDS)
Kentucky Caving Fieldtrip (ARTSSCI/ISCI 3IE1)

**Instructors:** John Maclachlan and Chad Harvey

This is a four-day fieldtrip to Cave City, Kentucky (15-18 October 2015) to explore karstic geomorphology, perform underground biological inventories, discuss the rich local caving history, and consider the environmental issues caused by mismanagement of these natural features. Among the caves visited will be the Hidden River Cave System, Cub Run Cave and an extensive tour of the largest cave system in the world, Mammoth Cave. Student evaluation will be based upon a pre-trip assignment, course participation, and a post-course reflection.

Please note that there is a $350 trip fee to cover accommodations, transportation, and park entrance fees. A $100 deposit is due upon application submission. All participants must have a valid passport for travel to the U.S.A. Proof of valid passport must also be submitted with the application.

**Enrolment Limit:** 18 students
**Application Deadline:** 9 September 2015 at 1:00pm

Exploring Celestial Phenomena in the Planetarium (ARTSSCI/ISCI 3IE1)

**Instructor:** Robert Cockcroft

You probably don’t have the time to watch celestial motions in real time, and even if you did they are so slow that they are hard to perceive. The immersive environment in a planetarium provides a unique perspective that not only simulates the real night sky, but allows its manipulation. The simulation can easily and quickly display celestial motions on many different timescales, from daily motion to motion over millennia, and can relocate the observer so that the simulation is centred at different locations around the Earth or from other celestial bodies in the Solar System.

Appreciating the motions of the celestial sphere is Important for making observations, predictions and understanding various astronomical phenomena. During this course, you will explore several such phenomena by observing them in the planetarium, and suggesting plausible hypotheses for their cause. As time and interest permits, you may also learn how to operate the planetarium and/or make or adapt simple software scripts.

The course will run on six consecutive Tuesday evenings in Term 1: Oct 20 and 27, and Nov 3, 10, 17 and 24.

**Enrolment Limit:** 20 students
**Application Deadline:** 9 September 2015 at 1pm
Winter 2016 Modules

**A Celebration of Winter as Place (ARTSSCI/ISCI 3IE1)**

**Instructors**: Patrick Byrne

Winter is the misunderstood season. We will explore winter as a fundamental expression of Canadian identity through the lenses of history, geography, and literature. While travelling by snowshoes and skis, and of course sitting around the fire, we will examine key stories and characters in our Canadian understanding of winter, including Franklin, wendigos, Sam Magee, and Grey Owl. This exploration will also include the “idea of North” and the Norwegian friluftsliv approach to winter outdoor life. The central goal is to embrace the winter season as a “place” in our personal psyche and Canadian consciousness.

To do this we must be active in a thriving winter place where we are engaged in winter chores of chopping wood for our fires, drawing water from our ice hole, and clearing roofs of burdensome snow. We will learn the key winter activities of snowshoeing, cross-country skiing, building a snow shelter (Quinzee) and setting up a wall tent wood stove camp. This course will take place in Algonquin Park from 12-15 February 2016.

Please note that there is a $200 trip fee to cover accommodations, transportation, and equipment rentals. A $100 deposit is due upon application submission.

**Enrolment limit**: 15 students

**Application Deadline**: 9 September 2015 at 1pm

**Electronics for the Rest of Us, Part II: Adventure in the Making (ARTSSCI/ISCI 3IE1)**

**Instructors**: Dale Askey, Jason Brodeur, John Fink and Matt McCallow

**Prerequisite**: Electronics for the Rest of Us! Or permission of the instructor

In this intermediate-level course, students will further develop their electronic prototyping and production skills to conceptualize, design and prototype a working electronic device. Individually or in groups, students will work in an internally-motivated manner, where instructors provide support, resources, instruction and guidance as needed. Students may choose to work with their previously-purchased Arduino devices and peripherals, or may consider other devices such as Raspberry Pis, Beaglebone boards, Phidgets and Microsoft Kinects.

**Enrolment limit**: 20 students

**Application Deadline**: 6 January 2016 at 1pm