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<b>Lecturer:</b>	Andrew McPherson (a.mcpherson@qmul.ac.uk)
<b>Teaching Assistants:</b>	Liam Donovan (l.b.donovan@qmul.ac.uk) Lida Theodorou (l.theodorou@se13.qmul.ac.uk)
<b>Schedule and Location:</b>	Tuesdays, 10am-12pm Wednesdays, 2pm-4pm (both in MAT G2 Teaching Lab)
<b>Office Hours:</b>	Andrew: Tuesdays 12-1pm (G2) and by appointment (E108) Liam: TBD Lida: TBD

**Description:**

This is a Master's level module in developing real-time interactive digital media systems. It will focus on graphics and sound programming and basic electronic hardware design for sensors and human-computer interfaces. The module will introduce widely-used tools and development environments including Arduino (hardware); Processing (graphics); Max/MSP, Jitter and SuperCollider (audio/video).

The class will consist of a combination of lectures, lab sessions, short assignments and larger individual/group projects. In general, each class period will contain both the presentation of new material (lecture) and an interactive lab session.

**Prerequisites:**

There are no formal prerequisites other than creativity and good writing skills.

**Assessment:**

This course is assessed entirely through coursework; there are no exams. The breakdown is as follows (please see the individual project handouts for more details):

- 10% Two short assignments (covering Arduino and Processing)
- 40% Project 1: Build an interactive digital media controller from recycled equipment
- 50% Project 2: Open-ended final project and public presentation

**Reading:**

Selected readings will be assigned throughout the term. There is no textbook, but the following sources may be of use:

- Tutorials for Arduino, Processing & Max/MSP (included with software and online)
- M. Margolis and N. Weldin, *Arduino Cookbook* (O'Reilly 2011)
- E. Miranda and M. Wanderley, *New Digital Musical Instruments* (A-R Editions, 2006)
- C. Reas and B. Fry, *Processing: A Programming Handbook for Visual Designers and Artists* (MIT Press, 2007)
- D. Shiffman. *Learning Processing: A Beginner's Guide to Programming Images, Animation, and Interaction* (Morgan Kaufmann, 2008)

**Reading (continued):**

C. Roads, *The Computer Music Tutorial* (MIT Press, 1996)

S. Wilson, D. Cottle, N. Collins, *The SuperCollider Book* (MIT Press, 2011)

**Objectives and Key Skills:**

This module aims to bring students to an advanced level of ability in designing, implementing, presenting and critiquing interactive digital media systems, all core skills for the Creative Economy. By the end of the course, students should:

- Understand the state-of-the-art in interactive digital multimedia systems, their historical development and context, and notable current trends.
- Be familiar with common digital media platforms including Max/MSP, Processing and Arduino.
- Be able to design and construct interactive audiovisual systems.
- Be able to communicate and present projects in a professional manner, both orally and in writing.
- Know where to find current research publications in interactive digital media, including relevant conferences and journals.
- Be capable of developing new programming skills independently.

**Approximate Schedule:**

Weeks 1-2 (23 Sep - 1 Oct)	Interfacing with the physical world (Arduino) <i>Assignment 1 due (3 October): Arduino</i>
Weeks 3-4 (7 Oct - 15 Oct)	Programming for communication & graphics (Processing) <i>Assignment 2 due (17 October): Processing</i>
Weeks 5-6 (21 Oct - 29 Oct)	Sound, music & video (Max/MSP, Jitter)
Week 7 (4-5 November)	<i>Project 1 due : presentation and report</i>
Weeks 8-9 (11 Nov - 19 Nov)	Further hardware topics
Weeks 10-11 (25 Nov - 3 Dec)	Interactive media: putting the pieces together
Week 12 (9-10 Dec)	<i>Project 2 due: presentation and report</i>