Instructor: Cam McKittrick  
(email: cmckittr@uwaterloo.ca or c.mckittrick@icloud.com)

Class time: Tuesdays, 4:30-6:20

Location: Conrad Grebel College, Room 1208

Office hours: By appointment after class meetings on Tuesdays—email in advance or see me at end of each class meeting.

Prerequisite: Music 100 or the consent of the instructor.

Course Description
This course will be a hands-on introduction to the core concepts of music technology. Students will learn about recording, audio editing, digital signal processing, and MIDI, and will integrate these skills in the creation of original pieces of music. Class instruction will be complemented by individual work in the Conrad Grebel Digital Music Lab. In-class and out-of-class repertoire review will provide historical and aesthetic context for your own work.

Materials
There is an $80.00 lab fee and a $25.00 deposit for a key to the studio – the paperwork for obtaining a key will be handed out on the first day of class.

Backup storage is required—you are responsible to keep all of your digital files safe by backing them up—at least three copies are recommended; options for backup will be discussed in class.

Required Materials:

1. *Ableton Live Intro 10* (or Studio or Suite) through ableton.com
   - *Live Intro* is available for $119 and will allow you to complete many of your assignments with flexibility. We will also use the software in class to build mastery of various techniques.
   - **Cracked/illegal copies of the software cannot be used**

2. An audio editor. *Audacity* will work well and it’s free:

Materials Note: All lab assignments can be completed in the Conrad Grebel College Electronic Music Studio. Optionally, if you own the software used in the Lab, you may complete most assignments using your personal computer at your own cost and maintenance. You must also ensure your assignment opens and runs successfully in the Lab before submission. *Regardless, all students pay the required lab fee.*

Objectives: At the end of this course you should:

- Understand the rudiments of microphone technique
- Feel comfortable using digital audio workstations
- Understand the rudiments of the MIDI protocol
- Possess introductory knowledge of electronic and computer music repertoire and techniques

Topics to be covered

Basics:
Listening
“‘What is sound?’” – some basic physical concepts
“‘What is digital sound?’” – important things to know about digital sound

Context:
Creating music on the computer: How did we get here?
The repertoire and aesthetic of electronic music

Recording:
Mixers, microphones, and how to use them
Getting sound into the computer

Audio Editing:
Digital Audio Applications overview and practical use
Reading a wave-form
Cutting, pasting, and moving things around
Cross-fading
Managing files

Digital Signal Processing:
Effects – basic categories: what they are, and what they do
‘Transparent’ and ‘Artistic’ use of effects
Envelope automation
Signal path

MIDI:
What it is, and how it works
Recording a keyboard performance onto the computer & playing it back
Editing MIDI data: quantization, cutting, pasting, etc...
Automation in MIDI
Software synthesizers and the history of sound synthesis

Sequencing:
  Getting audio and MIDI coordinated
  Thinking in tempo: loops, rhythm, et al…

Music notation software (introduction only)

Mixing & Mastering:
  Using volume and EQ to mix a session
  Getting a piece ready for different media

Looking forward:
  Alternative performance interfaces for digital music

Course Evaluation

<table>
<thead>
<tr>
<th>Evaluation Item</th>
<th>Weighting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments (Best 5 of 6)</td>
<td>75%</td>
<td>Demonstrate basic skills in digital audio (listening, recording, analyzing, editing, processing, mixing, etc.) and knowledge of common software examples</td>
</tr>
<tr>
<td>Final Project</td>
<td>25%</td>
<td>A project of your own design, crafted to demonstrate mastery of applicable course topics married to your individual pursuits</td>
</tr>
</tbody>
</table>

A course listening list will be drawn partially from volumes 1-4 of “The Anthology of Noise and Electronic Music,” available in the Conrad Grebel Library. Other recordings will be available as directed in class. Details concerning the assignments and projects will be covered in class and will be available from the WATERLOO LEARN course site in written form.

Policies

Attendance & Late Work
Attendance for this class is very important, due to the amount of material to cover and the fact that we meet only once a week. Missing a class will leave you significantly behind in relation to everyone else, and may also hinder your ability to complete the term assignments. While there is no attendance mark in the grading scheme, late assignments will receive a 10% per day deduction at the discretion of the instructor. Also, requests for out-of-class help will be less enthusiastically received if they follow on the heels of unexplained absences from class.

Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo are expected to promote honesty, trust, fairness, respect and responsibility.
**Discipline:** A student is expected to know what constitutes academic integrity, to avoid committing academic offences, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about “rules” for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to Policy 71 - Student Discipline, http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm

**Grievance:** A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70 - Student Petitions and Grievances, Section 4, http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm

**Appeals:** A student may appeal the finding and/or penalty in a decision made under Policy 70 - Student Petitions and Grievances (other than regarding a petition) or Policy 71 - Student Discipline if a ground for an appeal can be established. Read Policy 72 - Student Appeals, http://www.adm.uwaterloo.ca/infosec/Policies/policy72.htm Academic Integrity website (Arts): http://arts.uwaterloo.ca/arts/ugrad/academic_responsibility.html Academic Integrity Office (UW): http://uwwaterloo.ca/academicintegrity/

**Accommodation for Students with Disabilities:** Note for students with disabilities: The Office for Persons with Disabilities (OPD), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the OPD at the beginning of each academic term.

Turnitin.com: Text matching software (Turnitin®) may be used to screen assignments in this course. Turnitin® is used to verify that all materials and sources in assignments are documented. Students' submissions are stored on a U.S. server, therefore students must be given an alternative (e.g., scaffolded assignment or annotated bibliography), if they are concerned about their privacy and/or security. Students will be given due notice, in the first week of the term and/or at the time assignment details are provided, about arrangements and alternatives for the use of Turnitin in this course.

It is the responsibility of the student to notify the instructor if they, in the first week of term or at the time assignment details are provided, wish to submit alternate assignment.