Course Title

Creative Experiments with Emerging Music Technologies.

Course Number
REMU-UT.9815001

SAMPLE SYLLABUS

Lecturer Contact Information
Moritz Simon Geist
moritz.geist@nyu.edu

Course Details

<table>
<thead>
<tr>
<th>Session</th>
<th>Date</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>31.Aug</td>
<td>3:30pm - 6:15pm</td>
<td>NYU Berlin, St. Agnes, Seminar Room 1</td>
</tr>
<tr>
<td>2</td>
<td>14.Sept</td>
<td>3:30pm - 6:15pm</td>
<td>NYU Berlin, St. Agnes, Seminar Room 1</td>
</tr>
<tr>
<td>3</td>
<td>28.Sept</td>
<td>3:30pm - 6:15pm</td>
<td>NYU Berlin, St. Agnes, Seminar Room 1</td>
</tr>
<tr>
<td>4</td>
<td>12.Oct</td>
<td>3:30pm - 6:15pm</td>
<td>NYU Berlin, St. Agnes, Seminar Room 1</td>
</tr>
<tr>
<td>5</td>
<td>26.Oct</td>
<td>3:30pm - 6:15pm</td>
<td>Fablab Berlin</td>
</tr>
<tr>
<td>6</td>
<td>9. Nov</td>
<td>3:30pm - 6:15pm</td>
<td>NYU Berlin, St. Agnes, Seminar Room 1</td>
</tr>
<tr>
<td>7</td>
<td>23. Nov</td>
<td>3:30pm - 6:15pm</td>
<td>Kulturbrauerei</td>
</tr>
</tbody>
</table>

Prerequisites
No special acquirement like programming or electronic skills is presupposed. As this course is intended for students from different disciplines, the content will flexibly be adapted to the level of knowledge of the students, especially for students with no technical background.

Units earned: 2

Course Description
This course introduces students to innovative and cutting-edge technologies of sound, video, and interface design. The course consists of both a theoretical and a hands-on part.

Music and creative technologies have shifted in the past years from preset-focused black-box devices to open and hackable hard- and software. Examples are MaxMSP (Ableton), the Kinect Motion sensor, VR-Plattforms or open source music instruments like Korgs Mono series, Littlebits or Bastl Kits. This shift enables artists today to better understand the inner workings of instruments and engage a very different working process: Devices can be created and manipulated more easily, forming future tools and creating a rich variety of different media.

Course Objective
- To introduce students to the current state of music hardware and software for sound, visual and interface creation and interaction.
• To expose students to various technologies for the development of their own performative work.

• To enable students to more easily evaluate and judge existing and future tools and technologies.

• To help students master a vocabulary relevant to contemporary music tech scene concerning hardware and software.

• To improve and enhance students’ ability to think through and articulate ideas about music technology in historical and contemporary perspective.

**Assessment Components**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage of Total Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Participation</td>
<td>Counts toward 20%</td>
</tr>
<tr>
<td>Mid-term test (see below)</td>
<td>Counts toward 30%</td>
</tr>
<tr>
<td>Final Presentation</td>
<td>Counts toward 50%</td>
</tr>
</tbody>
</table>
  • Performance (10 – 15min) |                           |
  • Working hardware device  |                           |
  • Paper of 10-15 pages     |                           |

The mid-term test is 25 minutes long. It consists of about 7 questions, 4 as multiple choice, 2-3 as free text of 50-100 words.

Students are working in a group of 2-3 to finish their project for the final presentation. The final presentation can consist of either one of:

  • a 10 – 15min performance,
  • a working hardware device

The grading for the devices / performance will consist of a weighted sum of the following parameters:

1. **Technical aspects (SUM 45%)**
   1.1 Is the device / performance finished and working? (15%)
   1.2 Stability (tech.) (15%)
   1.3 Aesthetical appearance of the technical implementation (15%)

2. **Artistic aspects (SUM 55%)**
   2.1 Use of artistic and technological means: The working process used to finish the final presentation as observed due out the class, e.g. with the project description which has to be done in the third session. (15%)
   2.2 Originality: The Originality of the final presentation in use of media and interaction (10%)
   2.3 Individuality: How abstract and independent is the final work, referencing the chosen toolkit and initially given examples (15%)
   2.4. Aesthetics: Is the device / performance designed aesthetically (15%)

Failure to submit or fulfill any required component may result in failure of the class, regardless of grades achieved in other assignments.

**Assessment Expectations**
**Grade A:** The student makes excellent use of empirical and theoretical material and offers well-structured arguments in their work. The student writes comprehensive essays / answers to exam questions and their work shows strong evidence of critical thought and extensive reading.

**Grade B:** The candidate shows a good understanding of the problem and has demonstrated the ability to formulate and execute a coherent research strategy.

**Grade C:** The work is acceptable and shows a basic grasp of the research problem. However, the work fails to organize findings coherently and is in need of improvement.

**Grade D:** The work passes because some relevant points are made. However, there may be a problem of poor definition, lack of critical awareness, poor research.

**Grade F:** The work shows that the research problem is not understood; there is little or no critical awareness and the research is clearly negligible.

**Grade Conversion**

Your lecturer may use one of the following scales of numerical equivalents to letter grades:

\[
\begin{align*}
B+ &= 87-89 \\
C+ &= 77-79 \\
D+ &= 67-69 \\
F &= \text{below 65}
\end{align*}
\]

\[
\begin{align*}
A &= 94-100 \\
B &= 84-86 \\
C &= 74-76 \\
D &= 65-66
\end{align*}
\]

\[
\begin{align*}
A- &= 90-93 \\
B- &= 80-83 \\
C- &= 70-73
\end{align*}
\]

Alternatively:

\[
\begin{align*}
A &= 4.0 \\
A- &= 3.7 \\
B+ &= 3.3 \\
B &= 3.0 \\
B- &= 2.7 \\
C+ &= 2.3 \\
C &= 2.0 \\
C- &= 1.7 \\
D+ &= 1.3 \\
D &= 1.0 \\
F &= 0.0.
\end{align*}
\]

**Attendance Policy**

Participation in all classes is essential for your academic success, especially in courses that meet only once per week. Your attendance in both content and language courses is required and will be checked at each class meeting. As soon as it becomes clear that you cannot attend a class, you must inform your professor by e-mail immediately (i.e. before the start of your class). Absences are only excused if they are due to illness, religious observance or emergencies. Your professor or NYU Berlin's administration may ask you to present a doctor's note or an exceptional permission from NYU Berlin's Director or Wellness Counselor as proof. Emergencies or other exceptional circumstances must be presented to the Director. Doctor's notes need to be submitted to the Academics Office, who will inform your professors. Doctor's notes need to be from a local doctor and carry a signature and a stamp. If you want the reasons for your absence to be treated confidentially, please approach NYU Berlin's Director or Wellness Counselor.
Unexcused absences affect students' grades: In content courses each unexcused absence (equaling one week's worth of classes) leads to a deduction of 2% of the overall grade and may negatively affect your class participation grade. In German Language classes two or three (consecutive or non-consecutive) unexcused absences (equaling one week's worth of classes) lead to a 2% deduction of the overall grade. Three unexcused absences in one content course and five unexcused absences in your German language course may lead to a Fail in that course. Furthermore, your professor is entitled to deduct points for frequent late arrival or late arrival back from in-class breaks. Being more than 15 minutes late counts as an unexcused absence. Please note that for classes involving a field trip, transportation difficulties are never grounds for an excused absence. It is the student’s responsibility to arrive in time at the announced meeting point.

Exams, tests and quizzes, deadlines, and oral presentations that are missed due to illness always require a doctor's note as documentation. It is the student's responsibility to produce this doctor's note and submit it to the Academics Office; until this doctor's note is produced the missed assessment is graded with an F and no make-up assessment is scheduled. In content classes, an F in one assignment may lead to failure of the entire class.

**Attendance Rules on Religious Holidays**

Members of any religious group may, without penalty, excuse themselves from classes when required in compliance with their religious obligations. Students who anticipate being absent due to religious observance should notify their lecturer AND NYU Berlin's Academics Office in writing via e-mail one week in advance. If examinations or assignment deadlines are scheduled on the day the student will be absent, the Academics Office will schedule a make-up examination or extend the deadline for assignments. Please note that an absence is only excused for the holiday but not for any days of travel that may come before and/or after the holiday. See also [http://www.nyu.edu/about/policies-guidelines-compliance/policies-and-guidelines/university-calendar-policy-on-religious-holidays.html](http://www.nyu.edu/about/policies-guidelines-compliance/policies-and-guidelines/university-calendar-policy-on-religious-holidays.html)

**Late Submission of Work**

(1) Written work due in class must be submitted during the class time to the professor.
(2) Late work should be submitted in person to the lecturer or to the Academics Office, who will write on the essay or other work the date and time of submission, in the presence of the student. Another member of the administrative staff may also personally accept the work, and will write the date and time of submission on the work, as above.

(3) Work submitted late receives a penalty of 2 points on the 100 point scale for each day it is late (excluding weekends and public or religious holidays), unless an extension has been approved (with a doctor's note or by approval of NYU Berlin's administration), in which case the 2 points per day deductions start counting from the day the extended deadline has passed.

(4) Without an approved extension, written work submitted more than 5 days (excluding weekends and public or religious holidays) following the submission date receives an F.

(5) End of semester essays must be submitted on time.

(6) Students who are late for a written exam have no automatic right to take extra time or to write the exam on another day.

(7) Please remember that university computers do not keep your essays - you must save them elsewhere. Having lost parts of your essay on the university computer is no excuse for a late submission.

Provisions for Students with Disabilities
Academic accommodations are available for students with documented disabilities. Please contact the Moses Center for Students with Disabilities at 212-998-4980 or see their website (https://www.nyu.edu/students/communities-and-groups/students-with-disabilities.html) for further information.

Plagiarism Policy
The presentation of another person’s words, ideas, judgment, images or data as though they were your own, whether intentionally or unintentionally, constitutes an act of plagiarism. Proper referencing of your sources avoids plagiarism (see as one possible help the NYU library guide to referencing styles: http://nyu.libguides.com/citations).

NYU Berlin takes plagiarism very seriously; penalties follow and may exceed those set out by your home school. Your lecturer may ask you to sign a declaration of authorship form.

It is also an offense to submit work for assignments from two different courses that is substantially the same (be it oral presentations or written work). If there is an overlap of the subject of your assignment with one that you produced for another course (either in the current or any previous semester), you MUST inform your professor.

For a summary of NYU Global's academic policies please see: www.nyu.edu/global/academic-policies
Required Text(s)

PDF Excerpts from these Books will be provided via NYU Classes before the course.

NYU Berlin Library Catalogue: [http://guides.nyu.edu/global/berlin](http://guides.nyu.edu/global/berlin) or follow the link on NYU Berlin's website (Academics/Facilities & Services).
Every lesson consists of a 30 min lecture part followed by a 2:15h hand-on part where the students work on their projects.

<table>
<thead>
<tr>
<th>Session 1</th>
<th>31. Aug 3:30pm - 6:15pm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>NYU Berlin, St. Agnes, Seminar Room 1</td>
</tr>
<tr>
<td>Preparation</td>
<td><em>The Art of Reverse Engineering</em>, p. 9-12, Friesinger 2012, Transcript Verlag (PDF)</td>
</tr>
<tr>
<td>Expected project status:</td>
<td>-</td>
</tr>
<tr>
<td>Title</td>
<td><strong>Introduction &amp; Creative Expo</strong></td>
</tr>
</tbody>
</table>

Introduction of the teacher and the students. A full course overview will be given including expectations from the students and the teacher. Afterwards we follow the introduction with a hands-on exhibition featuring numerous creative technologies: VR-glasses, Modular synthesizers, Kinect, Leap Motion, 3D Printing. The techniques can be tried out by the students. The lecturer and two assistants will show the different techniques.

<table>
<thead>
<tr>
<th>Session 2</th>
<th>14. Sept 3:30pm - 6:15pm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>NYU Berlin, St. Agnes, Seminar Room 1</td>
</tr>
<tr>
<td>Preparation</td>
<td><a href="https://www.youtube.com/watch?v=UoBUXOodLXY">https://www.youtube.com/watch?v=UoBUXOodLXY</a> (15min TED talk about Arduino)</td>
</tr>
<tr>
<td>Expected project status:</td>
<td>Group finding, first ideas</td>
</tr>
<tr>
<td>Title</td>
<td><strong>Presentation of the Hardware Software Kits</strong></td>
</tr>
</tbody>
</table>

Lecture will be a presentation of the different electronic kits (Grove, LittleBits, Dada machines). The course consists of group finding, collecting ideas and project sketches.

<table>
<thead>
<tr>
<th>Session 3</th>
<th>28. Sept 3:30pm - 6:15pm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>NYU Berlin, St. Agnes, Seminar Room 1</td>
</tr>
<tr>
<td>Expected project status:</td>
<td>Initial idea: 150 words, one drawing, moodboard</td>
</tr>
<tr>
<td>Title</td>
<td><strong>Simple Electronics with Arduino</strong></td>
</tr>
</tbody>
</table>

The Teacher will give a short introduction to the Arduino platform, especially for the 'Grove' Plattform.
### Session 4  
**12.Oct  3:30pm - 6:15pm**

**Location**  
NYU Berlin, St. Agnes, Seminar Room 1

**Preparation**  
*Making Things Talk*, p.2-5, O'reilly (PDF)

**Expected project status:**  
First Prototype

**Title**  
*Overview of sensor techniques*

This course starts with a 25 min mid-term assessment.

This lecture deals with sensors of all kinds for interface design: overview, theory, usage and examples.

### Session 5  
**26.Okt  3:30pm - 6:15pm**

**Location**  
Fablab Berlin, Prenzlauer Allee 242, 10405 Berlin

**Preparation**  
*The Role of Physicality in the Design Process*, Paper, 2016, Gill and Dix (PDF)

**Expected project status:**  
Second Prototype

**Title**  
*Prototyping Techniques*

This lecture takes place at the Fablab Berlin. It gives an inside in prototyping techniques: 3D printing, laser cutting, robotics and manufacturing techniques to create personalized devices and prototype products.

### Session 6  
**9. Nov  3:30pm - 6:15pm**

**Location**  
NYU Berlin, St. Agnes, Seminar Room 1

**Preparation**  
https://www.youtube.com/watch?v=7oeEQhOmGpg  
(Sculpting music with Mi.Mu gloves, Imogen Heap, 18min)  
https://www.youtube.com/watch?v=JataQs4R5Bc  
(Talk from Musician & Hacker Onyx Ashanti, 20min)

**Expected project status:**  
Device nearly finished

**Title**  
*Future Interfaces for music creation*

Kinect, Leap Motion, VR and beyond. In this lecture, different emerging techniques for performance and interfacing are introduced. An introduction into the sensor techniques are given, existing projects are shown and an outlook is given.

### Session 7  
**23. Nov  1:45pm - 2:45pm**

**Location**  
Academic Center, Kulturbrauerei

**Preparation**  
-

**Expected project status:**  
Device finished
<table>
<thead>
<tr>
<th>Title</th>
<th>Final Presentation of projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students are working in groups of 2 during the six lectures to develop an idea for a futuristic device that can be used in performances or as an interface. The final presentation can consist of a) a 10 – 15min performance or b) a working hardware device</td>
<td></td>
</tr>
</tbody>
</table>

**Suggested Co-Curricular Activities**
Loop conference Nov 2017

**Your Lecturer**
Moritz Simon Geist is a musician, maker and robotics engineer. He works on the progression of music and robots and is founder of Sonicrobots. Geist’s projects range from robotic music performances to robotic sound installations. His robotic instruments and performances have been shown in numerous European festivals and exhibitions in the last years. He collaborates with performers such as Mouse on Mars and Tyondai Braxton and holds talks on the progression of robotics and society. He was awarded the Artist-In-Residence-Stipend for the Free State of Saxony and the Visual Music Award 2017. His background is both as a classical musician and a robotics engineer, with an expertise in prototyping technologies and 3D-printing.