

Spring - 2019  
**AET310: Foundations of Creative Coding – Unique #: TBC**

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Office Hours: by appointment

*Tuesday & Thursday 8:00 – 9:30 am*  
**Room TBC**

**REQUIRED assets for Class:**  
*A notebook & pen*  
*Personal Laptop running windows or MacOS*

*This class will use 'Learning Processing, 2<sup>nd</sup> ed, by Daniel Shiffman' – A PDF link to the full textbook will be shared during class, you may prefer to gain a physical copy.*

## OVERVIEW

In this class we look at building the foundations of creative thinking and practical coding. The class serves as an introduction to coding and creative process on a whole. Examining the use of computers as an artist medium in contemporary art.

Using the graphical language 'processing' we develop the key skills required to program and realise an artistic or creative vision via code.

Later weeks explore future of creative coding and alternative outlets for artistic creation that are utilised throughout the AET major's main disciplines.

## COURSE DESCRIPTION

This practical lab class introduces students to use code to realise and implement artistic vision.

Exploration of the uses of computers in the development and creation of contemporary art and design, students will leave with a practical understanding of the uses of creative coding in the real world.

Development and learning in the graphical language 'processing' will give students a foundation in using code for artistic creation.

Later weeks will develop a practical understanding of further creative coding applications and alternative development environments.

At the conclusion of this course, students will meet the requirements for a number of upper AET courses and classes.

## LEARNING OUTCOMES

By the end of the semester, students will be able to:

- Critically analyse and discuss the qualities of computer-generated art;
- Develop and understanding of the foundations of coding practise;
- Demonstrate practical development, creation and implementation of creative coding;
- Gain experience in various industry software;

## COURSE REQUIREMENTS

- Participation (10%): Students should be prepared to raise ideas, critique designs and add to class discussions, this is expected weekly
- Attendance (5%): Attendance is taken during every class
- Technical challenges (25% across 6 challenges): Compounded learning from class in the form of homework/lab challenges to implement and develop upon discussed techniques. These challenges are given out from week 2 onwards, expected to be return the following Thursday (9 days per challenge). They are graded Pass/Fail.

- Two-week Projects (15% \* 4 projects): Created during lab sessions and finished through self-development, students will develop finished products from across the AET major. One project for each of the main divisions (PLAI/Gaming/Sound/Visualisation)
- BONUS – (5%): Awarded for correctly documenting, hosting and displaying work created in class in an online portfolio during the final week of class

## **CLASS POLICIES**

### **UT ELECTRONIC MAIL NOTIFICATION POLICY**

Electronic mail (e-mail) is a mechanism for official University and instructor communication to students. Students are expected to check e-mail on a frequent and regular basis in order to stay current with University- and course-related communications, recognizing that certain communications may be time-critical. It is recommended that e-mail be checked daily, but at a minimum, twice per week.

It is the responsibility of every student to keep the University and instructor informed of changes in his or her official e-mail address (do so at [https://utdirect.utexas.edu/utdirect/bio/address\\_change.WBX](https://utdirect.utexas.edu/utdirect/bio/address_change.WBX)). Consequently, e-mail returned to the University with "User Unknown" is not an acceptable excuse for missed communication. Similarly, undeliverable messages returned because of a full inbox or use of a spam filter will be considered delivered without further action required of the University or instructor.

(see <http://www.utexas.edu/cio/policies/university-electronic-mail-student-notification-policy>)

### **ATTENDANCE**

Attendance and punctuality are professional attributes. This class is designed to provide students skills for a more practical and professional future career.

You are allowed three absences for illness or personal reasons; however, you will likely miss points for in-class assignments or activities as a result, and these generally cannot be made up.

However, if a serious medical or personal crisis (hospitalization, death in the family, etc.) impacts your attendance, please inform me as soon as possible. In addition, see the exception below for religious holy days.

Arriving more than ten minutes late at the beginning of class or after a break, leaving class without permission, and leaving class prior to dismissal for the day all count as being absent.

Unexplained absences beyond the three outlined above will result in a penalty to your final grade. Normally a single grade drop per unexplained absence. (E.g. A, becomes A-, C+ becomes C etc.)

Learning, research and development within the class all build on knowledge gained from previous lessons, you are responsible for making up for work missed during any absence. It is your responsibility to obtain any notes or assignments from one of your classmates.

### **RELIGIOUS HOLIDAYS**

Section 51.911 of the Texas Education Code states that a student shall be excused from attending classes or other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. A student whose absence is excused under this subsection may not be penalized for that absence and shall be allowed to take an examination or complete an assignment from which the student is excused within a reasonable time after the absence. University policy requires students to notify each of their instructors at least fourteen days prior to the date they will be absent from scheduled classes to observe a religious holy day.

(from [http://www.utexas.edu/provost/policies/religious\\_holidays/1555\\_001.pdf](http://www.utexas.edu/provost/policies/religious_holidays/1555_001.pdf))

### **SERVICES FOR STUDENTS WITH DISABILITIES (SSD)**

The University of Texas at Austin provides upon request appropriate academic accommodations for qualified students with disabilities. For more information, contact Services for Students with Disabilities (512-471-6259, [ssd@austin.utexas.edu](mailto:ssd@austin.utexas.edu), <http://ddce.utexas.edu/disability/>, or videophone 512-471-6644). Please provide documentation of your needs during the first week of class, if possible, so that I can make the necessary accommodations promptly.

### **CLASSROOM ETIQUETTE**

1. Be on time at the start of class time and after any breaks
2. This class is a place for artistic discussion and critique, not texting on your phone – please turn them on silent
3. Discussion is good, distraction is bad – I reserve the right to reduce marks for participation for repeat offenders

4. Consider bringing headphones/earphones for any periods of solo work, such as class work sessions – any other time, these are never seen

## COURSE COMMUNITATION

The syllabus and assignments will be posted on the course Canvas site. All communications outside class hours will take place via canvas.

This class is designed around discussion and group learning, it will help everyone if you post questions in the discussion area wherever possible. I will post, comment and otherwise add to the discussion wherever relevant, or with topics to help steer general discussion in class.

I will attempt to respond to all private communications within 24 hours on weekdays.

I normally check emails twice per day, once in the afternoon, once in the evening.

- Always ask questions where there is doubt. Do not make assumptions.

## ASSIGNMENTS

- All assignments will be given out and discussed during class time and available to view on Canvas.
- Some classes will have specific technical assignments with focus on students learning specific skills in a software or working with a hardware. Additional smaller assignments may be made throughout the semester as the need arises.
- You are responsible for making up for any class work missed – specifically technical challenges completed during class time as these, and the homework assignment contribute heavily to the final grade.
- It is your responsibility to ask and inquire if you are unclear about what is required or when.
- If an assignment will make use of lab accessible technology. You are responsible for making sure you leave appropriate time to access all the required technology for a given assignment.

## ASSIGNMENTS DEADLINES

- It is vital that you do not get behind in this class as all work builds upon previous work.
- As a general rule all projects, reading, research and homework assignments must be completed before the beginning of each class period. However, many class assignments have a due date and time in the evening before class. This allows time for review and feedback, as well as discussion based upon the submitted work during the next lesson. Any work not submitted on time will still receive feedback but will not benefit from peer review in class time.
- All work is due as specified in the assignment listed on canvas. Work not completed before the canvas deadline will be considered late.
- Any work turned in late, without prior consent and valid reason, will be accepted for a week past the original due date penalized with a full grade drop from the deserved reward (an A submission will reward a B etc).
- Technical challenges are given out week 2 onwards, with weekly deadlines
- Two-week Projects are given out week 8 onwards, with bi-weekly deadlines
- You will be shown your estimated class participate grade during mid-term week (normally week 7) based on current engagement. Use this as a chance to evaluate your engagement and participation in discussions and critiques and whether a change on your part is required.

## CLASS SCHEDULE

Due to holidays, university breaks and other external factors some dates from the below table may change slightly from semester to semester.

W/C Date	Week	Lecture (Tuesday)	Lab (Thursday)	Reading	Assignment Given (Tues)	Assignment Due (Thurs)
Jan 21	1	<ul style="list-style-type: none"> <li>• Course Introduction</li> <li>• Assignment overview</li> <li>• Learning principles</li> <li>• Lecture               <ul style="list-style-type: none"> <li>○ The IDE</li> <li>○ Pixels</li> <li>○ Shapes</li> <li>○ Single render</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Drawing patterns &amp; shapes (copy this pattern)</li> </ul>	Chpt 1-3	Challenge 1 – design an alien	

Jan 28	2	<ul style="list-style-type: none"> <li>Lecture <ul style="list-style-type: none"> <li>Variables</li> <li>Conditionals</li> <li>Loops</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Animation, patterns and shapes (Moving objects)</li> </ul>	Chpt 4-6	Challenge 2 – Variables only alien	Challenge 1
Feb 4	3	<ul style="list-style-type: none"> <li>Lecture <ul style="list-style-type: none"> <li>Functions</li> <li>Interaction</li> <li>Objects</li> <li>Data Types</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Interaction, control &amp; fun (Bouncing balls)</li> </ul>	Chpt 7-8	Challenge 3 – Make an Alien Object	Challenge 2
Feb 11	4	<ul style="list-style-type: none"> <li>Lecture <ul style="list-style-type: none"> <li>Arrays</li> <li>Algorithms</li> <li>Debugging</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Multiple objects, button press (ball objects, button pressing)</li> </ul>	Chpt 9	Challenge 4 – Create an interactive alien game	Challenge 3
Feb 18	5	<ul style="list-style-type: none"> <li>Lecture <ul style="list-style-type: none"> <li>Libraries</li> <li>Sound</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Using libraries &amp; integrations (adding sound at right time)</li> </ul>	Chpt 10-12	Challenge 5 – Add sound to minigame	Challenge 4
Feb 25	6	<ul style="list-style-type: none"> <li>Lecture <ul style="list-style-type: none"> <li>Images</li> <li>Video</li> <li>Sprites</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Images and videos to our sketches</li> </ul>	Chpt 13-14		Challenge 5
Mar 4	7	<ul style="list-style-type: none"> <li>Lecture <ul style="list-style-type: none"> <li>Alternative Maths <ul style="list-style-type: none"> <li>Modulus</li> <li>Polar</li> </ul> </li> <li>Custom Shapes</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Polar / Cartesian box objects &amp; vertices</li> </ul>	Chpt 15-16	Challenge 6 – Interactive Review	
Mar 11	8	<ul style="list-style-type: none"> <li>Lecture <ul style="list-style-type: none"> <li>External Data</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Adding a high score table to a game</li> </ul>	Chpt 17-19	Project 1 – Alien Game	Challenge 6 <b>Participation grade shown</b>
Mar 18		<b>Spring break</b>				
Mar 25	9	<ul style="list-style-type: none"> <li>Video Tutorials for Supercollider</li> </ul>	<ul style="list-style-type: none"> <li>Video Tutorials for Supercollider</li> </ul>	Chpt 20-21	Project 2	Project 1 – Alien Game
Apr 1	10	<ul style="list-style-type: none"> <li>Video Tutorials for Supercollider</li> </ul>	<ul style="list-style-type: none"> <li>Video Tutorials for Supercollider</li> </ul>			Project 2
Apr 8	11	<ul style="list-style-type: none"> <li>Video Tutorials for Unity</li> </ul>	<ul style="list-style-type: none"> <li>Video Tutorials for Unity</li> </ul>		Project 3	
Apr 15	12	<ul style="list-style-type: none"> <li>Video Tutorials for Unity</li> </ul>	<ul style="list-style-type: none"> <li>Video Tutorials for Unity</li> </ul>			Project 3
Apr 22	13	<ul style="list-style-type: none"> <li>Video Tutorials for Touchdesigner</li> </ul>	<ul style="list-style-type: none"> <li>Video Tutorials for Touchdesigner</li> </ul>		Project 4	
Apr 29	14	<ul style="list-style-type: none"> <li>Video Tutorials for Touchdesigner</li> </ul>	<ul style="list-style-type: none"> <li>Video Tutorials for Touchdesigner</li> </ul>			Project 4
May 6	15	Class work Presentations	Class work Presentations			BONUS CHALLENGE
May 13	16	<b>No class</b>				

## EVALUATION & GRADING

### GENERAL

Neatness, scholarship and presentation will all count towards your final grade. When designing being able to visually communicate ideas is part of the process, this does not mean that artistic merit is awarded.

### TECHNICAL CHALLENGES

Technical challenges for this class are graded on a **pass/fail** criteria. Every technical challenge will present a number of bullet point objectives to achieve for submission.

Unless all points marked required are present the assignment will be graded fail.

Some challenges will include 'optional' additional points that are not included in the grading criteria but offer advanced skill or creative challenge.

Some challenges may indicate they award an additional point for creativity.

#### PROJECT WORK

Each assignment will be given a specific grading rubric covering exactly how students will earn points. A rubric section is normally **assigned a grade from 0-5**:

0 – **Null**, not covered in submission

2 – **Okay**, attempts to answer brief but fall short of minimum requirements

3 – **Good** or **great**, answers the brief

4 – **Excellent**, goes above and beyond the brief

5 – **Exceptional**, a perfect professional piece of work

Some rubric points may have double (or higher) weighting that will result in your award being multiplied by weighting.

#### Example:

Grading Section	Award	Weighting	Total
1	3	2	6/10 (60%)
2	4	1	4/5 (80%)
		Total	10/15 (66.67%)

#### YOU WILL BE GRADED ON

- Reading, discussion, Participation (10%);
- Attendance (5%)
- Technical Challenges (25%)
  - 1-5 offer 4%
  - 6 Review Quiz offer 5%
- Two-week Projects (60%)
  - Project 1: Processing final – Complete alien game (15%)
  - Project 2: Supercollider for Music & Sound (15%)
  - Project 3: Unity for Games (15%)
  - Project 4: Touchdesigner and physical computing for PLAI (15%)
- Extra Credit (5%)
  - Awarded for documenting, uploading and showcasing portfolio of work in last week

This course does not have a final exam, but student exhibition will make part of the assigned grade.

#### GRADING SCHEME

This class uses a mixture of points and percentages. Assignments will be given in points, but the final grade will be calculated via the percentage of awarded points vs total available points across all assignments.

To ensure fairness, all numbers are absolute, and will not be rounded up or down at any stage. Thus a B- will be inclusive of all scores of 80.000 through 83.999... The University does not recognize the grade of A+. Thus, the conversion from percentage value to letter grade is as follows:

- A = 94+
- A- = 90 – 93.999...
- B+ = 87 – 89.999...
- B = 84 – 86.999...
- B- = 80 – 83.999...
- C+ = 77 – 79.999...
- C = 74 – 76.999...
- C- = 70 – 73.999...
- D+ = 67 – 69.999...
- D = 64 – 66.999...
- D- = 60 – 63.999...
- F = 0 – 59.999...

#### PRIVACY

This class is designed to be an open space for discussion, critique and learning. What is said about each other's work during this class should remain in the classroom. It will not be published in a blog or any other personal website, tweeted or posted on social networks.

## MOBILE DEVICES

Mobile devices of any kind must be silenced and out of sight.

There may be times when using a mobile is appropriate, such as aiding in discussion or during dedicated solo work – these times will be very obviously announced. Usage of a mobile device outside of these terms – with or without warning, will result in severe penalty to your class participation grade.

## RESOURCES AND EQUIPMENT

This class will make use of processing, a free to use & develop programming language available at: [processing.org](http://processing.org)

Other useful links:

- [Processing.org](http://Processing.org) - main site for Processing
- [Processing.org](http://Processing.org) - tutorials
  - [hello.processing.org](http://hello.processing.org) - great starting point
- [Processing.org](http://Processing.org) - reference
- [Processing.org](http://Processing.org) - libraries
- [Processing.org](http://Processing.org) - IDE reference
- [Learningprocessing.com](http://Learningprocessing.com) - website for the textbook
- [Sketchpad.cc](http://Sketchpad.cc) - an online processing editor
- [Awesome Creative Coding list by TerkelG on GitHub](#)

Lab class for this class will require the 'Learning Processing, 2<sup>nd</sup> edition' text book by Daniel Shiffman.

This is a very active and involved class. Learning will be adapted to suit the class – as such notes should be taken in class to record topics discussed. **As such as note pad and pen will be required for every class session.**