### **Course Syllabus**

# CGS 2032 MATH, ART & COMPUTING Section XXXX, ----

- <u>Catalog Description</u> (3 credits): Introduction to interdisciplinary computer science topics. logic, discrete structures, algorithms and automa. Exploration of topics relating mathematics and computing to art, music and nature.
- 2. <u>Pre-requisites and Co-requisites</u> Pre-requisites: MAC 1147 Precalculus: Algebra and Trigonometry, or equivalent
- 3. Course Objectives:

Through this course, students will explore the connections among mathematics, art, and computing (or computer science), understand the abstract structures and find math interpretation behind images and music. At the end of the semester, students are expected to be able to translate ideas (i.e. mathematical models) into programming codes, and create generative art work using computers.

- 4. <u>Instructor</u>:
- 5. Teaching Assistant
- 6. <u>Meeting Times and class Schedule</u>: TBD
- 7. <u>Meeting Location</u>: TBD
- 8. <u>Material and Supply Fees</u>: None
- <u>Textbooks and Software required</u> Required textbook: Processing: Creative Coding and Computational Art ISBN: 978-1-59059-617-3

Software: the Processing Language and Environment – free software that can be downloaded from <u>www.processing.org</u>

### 10. Recommended Reading

The reading list is not designed to be comprehensive.

- Blown to bits: <u>http://www.bitsbook.com/</u>
- Schneider, Michael S. (1994). A Beginner's Guide to Constructing the Universe: The Mathematical Archetypes of Nature, Art, and Science. New York: HarperCollins
- http://en.wikipedia.org/wiki/Color\_space
- A Falconer, Kenneth (2013). Fractals, A Very Short Introduction. Oxford University Press
- The Beginner's Guide to Cryptography :
  http://www.murky.org/category/cryptography/

#### 11. Course Outline -

Following are the tentative course outline. There might be a slight shift in topics depending on the backgrounds or interests of the students

- Pointillism and introduction to digital image
- Color space
- coordinate systems
- Vanishing point and perspective camera model
- 2D shape representation and drawing
- Golden ratio, Fibonacci number
- Iteration
- Periodic tessellation and Wallpaper
- Asymmetric pattern, Kaleidoscope and image manipulation
- Fractals and recursion
- Encryption and array
- \* Advanced Material, which may be adjusted according to time and interests of students

### 12. Homework Policies -

You may discuss assignments with other students. But you must write the program by yourself. If one program is proven to be copied from another student, 0 point will be given to both students. For academic misconduct, please refer to section 16 Honesty policy.

Late assignments will be accepted with a penalty of deduction of 20% of the maximum point value every 12 hours, for up to 2 days.

#### 13. Grading Scale -

Final grade is calculated according to the following schedule

Home work and projects	50%
Quizzes	35%
Final	25%

# 14. Grading Scale -

A(100-95), A-(94-90), B+(89-87), B(86-83), B-(82-80), C+(79-77), C(76-73), C-(72-70), D+(69-67), D(66-63), D-(62-60), F(59-0)

A C- will not be a qualifying grade for critical tracking courses. In order to graduate, students must have an overall GPA and an upper-division GPA of 2.0 or better (C or better). Note: a C- average is equivalent to a GPA of 1.67, and therefore, it does not satisfy this graduation requirement. For more information on grades and grading policies, please visit:

https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

# 15. Class attendance and Make-up policy -

Requirements for class attendance and make-up exams, assignments, and other work are consistent with university policies that can be found at: <a href="https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx">https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx</a>

#### 16. Honesty Policy -

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to

the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Note that failure to comply with this commitment will result in disciplinary action compliant with the UF Student Honor Code Procedures. See http://www.dso.ufl.edu/sccr/procedures/honorcode.php

### 17. Accommodation for Students with Disabilities -

Students Requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

#### 18. UF Counseling Services -

Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:

- UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, <u>http://www.counseling.ufl.edu/cwc/Default.aspx</u>, counseling services and mental health services.
- Career Resource Center, Reitz Union, 392-1601, career and job search services.
- University Police Department 392-1111
- 19. <u>Software Use</u> –

All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

20. Feedback -

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <a href="https://evaluations.ufl.edu">https://evaluations.ufl.edu</a>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <a href="https://evaluations.ufl.edu/results/">https://evaluations.ufl.edu/results/</a>.