CRCP 2310 Nature and Code

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Course Description:
The class combines lectures, field trips, critiques, hands-on development, study in nature and data collection. Students work on a series of projects, inspired by natural data collected in the field. Utilizing an algorithmic approach, explore simulation, computer art and complexity, as they learn how to synthesize natural forms, patterns and processes using computer code and simple math.

Software:
Processing.org

Materials:
Sketchbook/journal, camera (phone is fine)

Course Requirements:
This course includes readings, programming assignments, presentations and critiques.

Method of Presentation:
Brief lectures introduce algorithms and graphics' techniques for simulating natural forms and processes. The majority of class time is utilized for coding and code/creative work review.

Method of Evaluation:
Project Critiques

Learning Objectives:

After successful completion of this course, you should be able to:
1.0 – DEMONSTRATE COMPETENCY IN PROGRAM CONCEPTUALIZATION AND DESIGN

- 1.1 Follow a detailed process for analyzing a program's requirements
- 1.2 Use UML or other graphical process to design a solution to a problem.
- 1.3 Design, code and document a programming project.

2.0 – DEMONSTRATE COMPETENCY IN ALGORITHMIC DEVELOPMENT

- 2.1 Develop a complex and efficient algorithm.
- 2.3 Solve a problem iteratively and recursively.

- 2.4 Use single and multi-dimensional arrays in a programming project.
- 2.5 Implement a variety of File I/O techniques
- 2.6 Use replacement grammar (L-Systems) to solve a problem

3.0 – DEMONSTRATE COMPETENCY IN FUNDAMENTAL PROGRAMMING THEORY

- 3.1 Understand primitive and reference variables.
- 3.2 Create parameterized functions.
- 3.3 Locate and explain syntax errors in a program.
- 3.4 Use techniques for debugging programs.
- 3.5 Understand how to compile and execute a program.
- 3.6 Understand how (and when) to use pointers.

4.0 – DEMONSTRATE COMPETENCY IN OBJECT-ORIENTED PROGRAMMING

- 4.1 Create programmer-defined objects
- 4.2 Use existing class libraries to develop collections of objects
- 4.3 Use composition in a programming project.
- 4.4 Use inheritance in a programming project.
- 4.5 Explain the ideas behind polymorphism.
- 4.6 Explain the ideas behind object reusability and modularity.

Attendance Policy

Students are expected to attend all class sessions. If a student is absent from class on the due date of any assignment, they are expected to make alternative arrangements to assure that the assignment is turned in on time.

Academic Honesty and Misconduct - The Honor Code

All Code you create in this course MUST be your own, or clearly stated otherwise– NO EXCEPTIONS.

All work undertaken and submitted in the course is governed by the University's Honor Code. The relevant section of the Code, taken from the Preamble of the Honor Council's Constitution:

Intellectual integrity and academic honesty are fundamental to the processes of learning and of evaluating academic performance, and maintaining them is the responsibility of all members of an educational institution. High personal standards of honesty and integrity are a goal of education in all the disciplines of the University. Students must share the responsibility for creating and maintaining an atmosphere of honesty and integrity. Students should be aware that personal experience in completing assigned work is essential to learning. Permitting others to prepare their work, using published or unpublished summaries as a substitute for studying required materials, or giving or receiving unauthorized assistance in the preparation of work to be submitted are directly contrary to the honest process of learning. Students who are aware that others in a course are cheating or otherwise acting dishonestly have the responsibility to inform the professor and/or bring an accusation to the Honor Council.

A violation of the Honor Code may result in an "F" for the course, and the student may be taken before the Honor Council. If you are unclear about this policy, either in general or in its specific application, please see the instructor. The Honor Code is in the SMU

Student handbook and may be viewed on-line at :
http://smu.edu/studentlife/PCL_05_HC.asp

* **Disability Accommodations**: Students needing academic accommodations for a disability must first contact Disability Accommodations & Success Strategies (DASS) at 214-768-1470 orwww.smu.edu/alec/dass.asp to verify the disability and to establish eligibility for accommodations. They should then schedule an appointment with the professor to make appropriate arrangements. (See University Policy No. 2.4; an attachment describes the DASS procedures and relocated office.)

* **Religious Observance**: Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester, and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence. (See University Policy No. 1.9.)

* **Excused Absences for University Extracurricular Activities**: Students participating in an officially sanctioned, scheduled University extracurricular activity should be given the opportunity to make up class assignments or other graded assignments missed as a result of their participation. It is the responsibility of the student to make arrangements with the instructor prior to any missed scheduled examination or other missed assignment for making up the work. (University Undergraduate Catalogue)