**COSC150: Scientific Investigations Using Computation**
***Final project Guidelines***
**Spring 2023**

**Expectations:**

1. As described in the Course Syllabus, there is a final project required of all students. This project will count as 20% of your final grade and will take approximately 15-20 hours *per person* spread over three weeks for you to produce a quality effort.

2. The focus of your project is ***a topic of your own choosing***, for which you will conduct a ***scientific investigation using computation***, comparing and/or contrasting at least ***two different modeling approaches*** (numerical, system, agent, etc.)

3. The "deliverables" are

    a. During the scheduled "exam" time, **10-Noon on 15 May 2023**, you will give an in-person clear, concise oral presentation, 10-15 minutes, on your project during which you will run your models and discuss with your classmates the main lessons learned from your scientific investigation. I will be available at 9 am for last hour help.

    b. A 7-10 page paper/report that demonstrates your understanding of the basic science topic and how computation enhances a scientific investigation of that topic. ***This paper and accompanying models must be turned in no later than TUESDAY 5 PM 16 May 2023.***

4. You may work alone or in pairs, as long as the tasks are clearly defined in advance for each person, and each person contributes substantially to the project (this project will be pledged). More will be expected, naturally, of group projects.

5. The paper must follow this basic structure:
    a. Introduction of the topic and clear statement of your driving questions;
    b. Description of the computational models used in your exploration to answer your driving questions;
    c. Presentation of typical runs of the models varying different key parameters;
    d. Discussion of lessons learned in trying to answer your driving questions;
    e. Discussion of the limitations and possible extensions of your models;
    f. Conclusions you have drawn about what you have learned in your exploration.

6. ***Class and Lab time on 25 April in person and 27 April in person for model guidance, topic shaping, and team building.***

7. The following project progress checkpoints must be met:
    a. **Thursday 27 April 2023**: A ***written project proposal*** consisting of one or two paragraphs submitted ***before 9:30 am class time,*** to include:
        i. Proposed topic of your investigation;
        ii. Proposed models to be used/modified/built and identify which modeling tools you will be using (*e.g.*, Excel, Vensim, NetLogo, AgentCubes, Tools from Interactivate, coding, other?)

iii. Proposed team working on this project including specific roles to be fulfilled by each team member
iv. Projected needs to meet with instructor for guidance and help

***You will present your project proposal ideas to the class in person during class time.***

b. **Tuesday 2 May 2023 class time**: ***Written progress report***, ***before 9:30 am class time,*** to include
   i. Any modifications to your project proposal
   ii. Description of progress made in background research and
   iii. Description of the model(s) you have identified/used/modified/built
   iv. Projected need to meet with instructor for guidance and help

   ***Be prepared to present a short, 3-5 minute progress report over Zoom during class time***.

c. **Thursday 4 May 2022**: ***Written progress report***, ***before 9:30 am class time,*** to include:
   i. Any modifications to your project proposal
   ii. Draft of your Introduction and Background text
   iii. Description of progress made in background research and model(s) identified/used/modified/built
   iv. Projected need to meet with instructor for guidance and help

   ***Be prepared to present a short, 3-5 minute progress report in person during class time.***

**8.** I will schedule as much time and as many meetings as needed in person or on Zoom with the project teams (or you alone, if you are working alone) during all open time all week and even on weekends, including the normal lab time on **Tuesdays (25 April, 2 May in person). I will be available for Zoom Help Mon 8 May – Thu 11 May.** I will return to campus by mid-afternoon **12 May for in-person help over the weekend.** You and your team ***must schedule in-person or specific Zoom sessions*** for help through e-mail. All members of your team should be available to meet during these help sessions. This is ***your*** project, but I am willing to help as much as needed.

**9.** Questions, comments, concerns?

**Some suggestions:**

**a) Excel starting models: http://www.shodor.org/talks/ncsi/excel**

**b) Vensim starting models: http://www.shodor.org/talks/ncsi/vensim**

**c) Netlogo: web or download a copy** https://netlogoweb.org/ (extensive models library)

**d) AgentCubesOnline: search for models at http://agentsheets.com/**