**SED599 Topics in science education: Computer simulation in science**

**Oregon State University, E-campus Course**

**Summer 2013 (From 6/24 till 8/16)**

**3 credit graduate course**

**See [http://summer.oregonstate.edu/](http://summer.oregonstate.edu/" \t "_blank) to register.**

Science Education now recognizes that computers are essential in all the sciences and thus in science and mathematics teaching. As the science curriculum reform effort, *“A Framework for K-12 Science Education”* indicates, there are eight scientific practices that all students in K-12 science classrooms should learn. Many parts of these practices emphasize the use of computers in science, for example:

**Practice 2. Developing and using models**

“computer simulations enable scientists to predict the behavior of otherwise intractable systems”

**Practice 4. Analyzing and interpreting data**

“Modern computer-based visualization tools…to engage interactively with data”

**Practice 5. Using mathematics and computational thinking**

In this course, we are going to examine seven examples that show how various computation tools are used in the important areas of science and mathematics:

1. Computer Precision
2. Exponential Spontaneous Decay & Growth
3. Bug Population Dynamics
4. Random Numbers
5. Random Walk
6. Stone Throwing
7. Predator and Prey

Exercises will be explored for each of the above examples using computational software such as Excel and the highly visual programming language VPython. **At the end of each example, we will think about how to apply what is learned for our students.**

Anyone who is not admitted to OSU can register for courses as a “non-degree” student.

Non-Degree Admission information: [http://oregonstate.edu/admissions/non-degree](http://oregonstate.edu/admissions/non-degree" \t "_blank)

***Step 1.*** When you‘ve been accepted to the Univeristy, you will receive an email from the Office of Admissions informing you of your OSU ID #.

***Step # 2 – ONID Account:*** This account is required for you to access Blackboard and register for classes. Your ONID email is your official OSU email, billing notification and all other OSU communications will be sent there. Be sure to check it regularly.

* Go to [http://www.onid.orst.edu/](http://www.onid.orst.edu/" \t "_blank)
* CLICK "sign up for ONID"
* ENTER OSU ID#, Birth date, First name, and Last name
* Next screen says: "Welcome Your Name" READ and ACCEPT policy statement and CLICK "I agree."
* Set new password. WRITE DOWN YOUR NEW PASSWORD! Scroll down and CLICK "proceed."
* Next screen says "Your ONID account has been created." Your new user name will be displayed - WRITE IT DOWN!
* CLICK "Login to ONID"   
  ENTER new user name and password and CLICK "Login." Next screen says "Welcome Your Name."

***Step #3 – Registering for course:***

* To register <http://oregonstate.edu/students/onlineservices/>
  + Click on “Online Services Quick Login”
  + Enter your ONID username and password
  + Select term
  + Click on Registration (to find out when you’re eligible to register)
  + Register/Add/Drop Classes
  + Enter the CRN
* ***Once you register you will be held to the same add/drop deadlines.*** Please check the Academic Calendar for this information: <http://catalog.oregonstate.edu/ChapterDetail.aspx?key=148>
* If you need to drop the course, you would follow the same directions above

***Step # 4 – Billing Information:*** All billing for currently enrolled students is processed electronically through eBill. eBill statements are processed on the **5th** of each month for students who have current activity resulting in an account balance or credit. Students are sent an email to their ONID email account when their statement is ready to view and can then view their eBill statement online at [mybill.oregonstate.edu](http://mybill.oregonstate.edu/" \t "blank).

Accounts are "due upon receipt" of the email notification, and any unpaid balance remaining after the 1st of each month is subject to an interest charge of 1% per month (12% APR). You are responsible for paying tuition and fees by the deadline even if you do not view the billing statement. Refer to the [reduction schedule](http://ecampus.oregonstate.edu/services/tuition/fee_reduction_schedule.htm) to determine financial repercussions of withdrawing or dropping courses.

***Step #5 – Grades:*** Grades are available on the Web the Wednesday following Finals Week.

* To view your grade
  + Click on “Online Services Quick Login”
  + Enter your ONID username and password
  + Click on Student Records
  + Click on Final Grades and select term
* To obtain an Unofficial Transcript
  + Click on Student Records
  + Click on View Unofficial Transcript
* For an Official Transcript
  + Click on Student Records
  + Click on Request Official Transcript