

**E325, Fall 2010**  
**Computing for Environmental Scientists**  
**(2 credits)**

**Description** This course will focus on the uses of Excel and its applications to the analysis of environmental science data. The only prerequisites are computer literacy (including a basic knowledge of Excel). The topics will include plotting functions, data analysis, linear and non-linear regression and curve fitting, numerical solution of equations, plotting, writing Visual Basic functions, and fun with random numbers. This course is particularly well suited for students in the BSES program. We will meet once a week from 8:00 AM (sorry) to 9:30 in the computer based classroom, PV151.

**Professor** The instructor is Distinguished Professor Ronald A. Hites, MSB-II 320; he will have office hours by appointment or by dropping in.

**Main Activity** There will be an assignment due in class each week. These assignments will be of two kinds: (a) Three of these assignments will be collected as take-home exams and graded; see below. (b) All other assignments will be collected, but in this case, they will be graded as “pass/fail”. The cumulative assignment score will be included as a fourth exam score. For the pass/fail assignments, you need to hand in only a printed copy of your spreadsheet. Many of the exam questions will resemble these assignments, so it is to your advantage to do the assignments and do them well. You should save everything we do in class and your homework and your exams on a memory stick. Some of these assignments may be run and debugged in class. Please do the assignment each and every week. If you are not prepared each week, you will not learn much.

**Textbook** There is no textbook for this course, but *A Guide to Microsoft Excel 2007 for Scientists and Engineers*, by Bernard V. Liengme (Academic Press, 2009) is available at Amazon.com as a supplemental source of information. If you are inexperienced in Excel, you should buy and study the first four chapters of this book right away. If you think you are in trouble after the first couple of weeks, you should buy this book. If everything comes easily, you can probably do without it. Remember the software’s built-in help menus (accessed from the F1 key) are very powerful. UITS also offers excellent, free, one-shot, brief introductory classes on the basics of Excel (STEPS classes); for details, see their website.

**Attendance** Attending class is not optional. Everyone gets one and only one absence. Part of your grade will be based on not missing class. If you come to every class and are courteous, you will find it hard (but not impossible) to get a grade below C–.

**Grading** There will be a total of three take-home exams. All exams will be graded between 0 and 100. As mentioned above, weekly homework (which is a subtle way of checking for class attendance) will be included as a fourth exam. All four grades will be weighted equally when computing the final grade for the course.

**Tentative  
Schedule of  
Classes**

Aug. 31	Numbers, names, operations, and functions
Sept. 7	Plotting data and functions
Sept. 14	No class
Sept. 21	Regression tools such as TrendLine
Sept. 28	Curve fitting with SOLVER
Oct. 5	More with SOLVER and decision functions [ <b>Take-home exam due</b> ]
Oct. 12	Solving equations
Oct. 19	Numerical integration and differentiation
Oct. 26	Extrapolation and data analysis
Nov. 2	User defined functions
Nov. 9	FOR/NEXT and DO loops [ <b>Take-home exam due</b> ]
Nov. 16	Monte Carlo methods
Nov. 23	Thanksgiving break (no class)
Nov. 30	Fun with random numbers
Dec. 7	SigmaPlot and special presentations
Dec. 14	[ <b>Take-home exam due, during final exam week</b> ]

This schedule may change depending on the skills and backgrounds of the enrolled students.

**Cheating**

Cheating and plagiarism are forms of academic dishonesty that cannot be tolerated in a university. University policies for dealing with violations are included in the *Code of Student Ethics* and in each semester's schedule of classes. In particular, two or more students should not work together on the take-home exams. It is particularly easy to detect spreadsheets on which two or more students have collaborated -- do not even try.