

INTRODUCTION TO SCIENTIFIC COMPUTING

ISC 3313
Approved for
Computer
Competency

with **C++**

ISC 3313-01

This course introduces the student to some basic problems in scientific computing such as solving nonlinear equations, numerical integration, interpolation, and numerical solution of ordinary differential equations. Typically, these problems are too complex to solve analytically, i.e., with pencil and paper, so we use computers to approximate the solution. In this course the student is introduced to the scientific programming language C++ which is probably the easiest object-oriented programming language to learn.

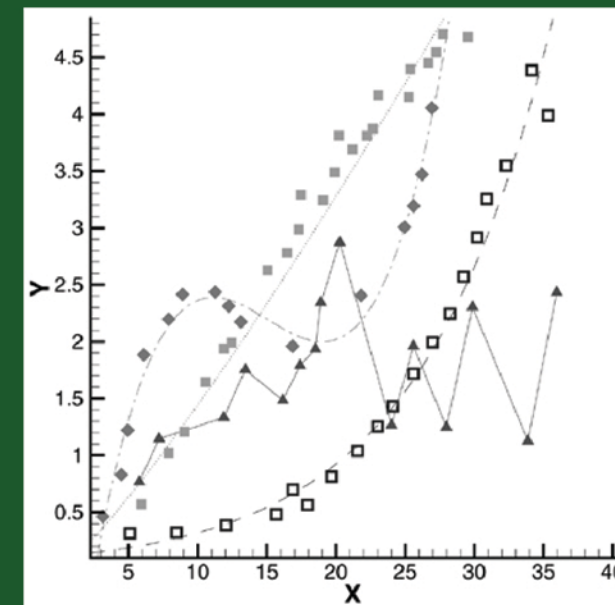
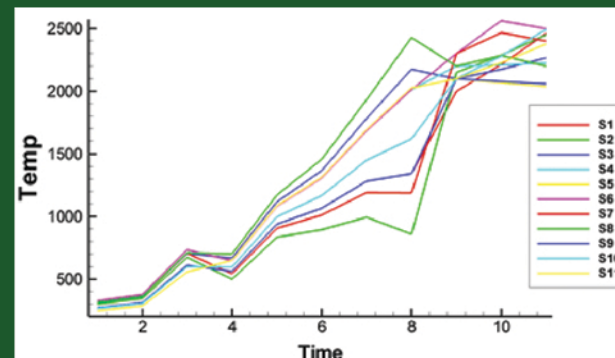
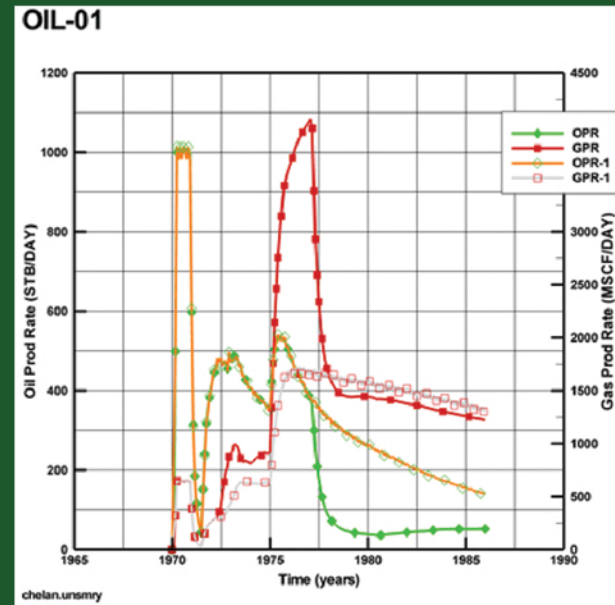
The class will be taught in a computer laboratory setting and is a very “hands-on” class. In addition to learning C++, students will learn a graphics program to visualize their results. The skills learned in this course can be used in most of the student’s other scientific courses.

http://people.sc.fsu.edu/~jburkardt/presentations/isc_2011_syllabus.pdf

Instructor: John Burkardt

TR 11:00-12:15 152 DSL

Prerequisite: Calculus I



```
double *data_to_dif_new
( int ntab, double xtab[], double ytab[] )
{
    double *diftab;
    int i;
    int j;
    //
    // Copy the Y data into DIFTAB.
    //
    diftab = new double[ntab];
    for ( i = 0; i < ntab; i++ )
    {
        diftab[i] = ytab[i];
    }
    //
    // Compute the divided differences.
    //
    for ( i = 1; i <= ntab - 1; i++ )
    {
        for ( j = ntab - 1; i <= j; j-- )
        {
            diftab[j] = ( diftab[j] - diftab[j-1] )
                / ( xtab[j] - xtab[j-i] );
        }
    }
    return diftab;
}
```

**SUMMER
2011
Session A**