Part One:

First Steps with Maple

We will spend nine lectures introducing computer algebra with Maple. Maple has a very nice interface. When used properly, worksheets provide an important aid to mathematical modeling. Computer algebra emphasizes the exactness of calculations and allows us to compute beyond the hardware integers or machine floating-point numbers. With the number system in Maple, we can explore some topics of coding and cryptography.

The titles of the first nine lectures are

1. Introduction to Computer Algebra
2. Getting Started and Getting Help
3. Exact and Floating-Point Numbers
4. Algebraic and Complex Numbers
5. Assignment and Unassignment
6. Evaluation and Names of Variables
7. Types, Attributes, and Properties
8. Input/Output Formats and Files
9. Code Generation and Connectivity

At a more technical level, we first learn how to design and develop Maple worksheets. The emphasis in this course is on how to use these worksheets to model the solution of problems. This is a high level of scientific programming. At end of this first part we show how to generate low level C or Fortran code.