1. **Number and title of course:** CS 3L – Introduction to Symbolic Programming

2. **Course objectives:** Students will learn to program, using a dialect of the Scheme programming language. In addition, they are to gain some appreciation of the algorithms underlying tools like databases, spreadsheets, and expert systems. In the process of learning how to program, they will be applying knowledge of mathematics, science and engineering. Their final project is often offered as a two-person team project, and as it requires a fair bit of software engineering, they will also be making design decisions (algorithm, data structure, time-vs-space, etc) and considering various implementation trade-offs.

3. **Topics Covered:**
   - **Exploration**
     - Introduction to the course and to programming.
   - **Functions**
     - Evaluation
     - Words and lists
     - Functional programming
   - **Variables**
     - Data types
     - Inputs to functions
     - Scope of variables
     - Assignment
   - **Predicates**
     - Conditional evaluation
   - **Recursion (Several Models)**
     - Linear and tree-recursive operations
     - Planning and debugging
   - **Functional operators**
   - Other data structures, e.g. trees, files
   - Programs as data

4. **Relationship of course to program objectives:** This course provides an understanding of the conceptual foundations of computer science and computer engineering subjects. Students learn to apply modern skills and techniques to create a basic computer program.

5. **Prepared by:** Dan Garcia (3/4/06)