

Rubric (Spring 2011)

Senior Project

**Assessment of Student Outcomes of the BS in Computer Science
of the
School of Computing and Information Sciences
Florida International University**

The School of Computing and Information Sciences evaluates the Senior Projects of its graduating seniors for the purpose of assessing the level of attainment of the Student Outcomes of the BS in Computer Science program.

Your responses to this survey will be used solely for the purpose of assessing the Student Outcomes of the BS in Computer Science program of the School of Computing and Information Sciences at FIU. This survey is expressly NOT for assessment of student performance in the SCIS Senior Project course for assignment of letter grade, nor for assessment of the instructor(s).

Rating Instructions

For each program outcome, you are provided with a check-list of 7 or more criteria that evidence attainment of that outcome. Please check all criteria that are presented in this project. You may include additional criteria that are not explicitly listed; if so, please record the additional criteria in the spaces provided. Unless noted otherwise, the number of criteria checked, up to a maximum of 5, should be recorded as your rating of attainment of that outcome evidenced in the project.

Project Title __Data Visualization for Large-Scale Network Simulators __

Semester & Year __Spring 2011_____

Faculty / Industry Sponsor: __Jason Liu_____

Evaluators: __Geoffrey Smith_____

Student Outcome (a): Demonstrate proficiency in the foundation areas of Computer Science including mathematics, discrete structures, logic and the theory of algorithms

_____ Project incorporates elements of mathematical reasoning or proof
(e.g. Lemma, Theorem, Propositional Logic, First Order Logic, Mathematical Induction)

_____ Project utilizes elements of discrete mathematics
(e.g. Set Theory, Boolean Algebras, Combinatorics, Graph Theory)

y Project utilizes some statistical procedure(s) to represent or summarize test data
(e.g. Mean, Standard Deviation, Stem Plot/Histogram, Box Plot/Percentile-Graph)

_____ Project utilizes some statistical measure(s) of system behavior or performance
(e.g. Probability Distributions, Confidence Intervals, Hypothesis Testing)

y Project design utilizes finite state diagrams to model system behavior

y Project utilizes some aspect(s) of formal computer science
(e.g. Automata, Turing Machines, Recursive Function Theory, Recursive Unsolvability)

_____ Project utilizes some technique(s) of numerical analysis
(e.g. Error Estimation, Interpolation, Numerical Calculus, Linear Systems, Matrix Algebra)

_____ OTHER: _____

_____ OTHER: _____

Student Outcome (b): Demonstrate proficiency in various areas of Computer Science including data structures and algorithms, concepts of programming languages and computer systems.

Data Structures & Algorithms

- _y_ Project utilizes an advanced data structure, (**e.g.** search tree, hash table, priority queue)
- Project utilizes some graph algorithm, (**e.g.** shortest path, minimum spanning tree)
- _y_ Project documents runtime analysis of selected algorithms

Concepts of Programming Languages

- Project utilizes knowledge of programming language syntax (**e.g.** Context-Free Grammars, Parse Trees, Ambiguity, Recursive Descent)
- Project utilizes knowledge of programming language semantics (**e.g.** Natural Semantics, Interpreters, Expressions, L- and R- Value, Environments)
- Project demonstrates familiarity with programming language design issues (**e.g.** Scoping Rules, Dynamic Type Checking, Static Type Checking)

Computer Systems (Database)

- Project utilizes or designs an appropriate database management system
- Project utilizes conceptual and/or relational schema
- Project utilizes a database query language such as SQL

Computer Systems (Operating Systems)

- Project implementation utilizes knowledge of memory management
- _y_ Project implementation utilizes knowledge of process synchronization
- _y_ Project documents analysis of tradeoffs in selection of system characteristics

OTHER: _____

OTHER: _____

Student Outcome (c): Demonstrate proficiency in problem solving and application of software engineering techniques.

 Project demonstrates knowledge of the Software Development Life Cycle

 Project deliverables include Project Specification

 Project deliverables include Feasibility Study and/or Project Plan

 Project deliverables include Requirements Documentation

 Project deliverables include Design Documentation

 Project documents testing and/or evaluation of the implementation

 Project incorporates system walkthroughs

 OTHER: _____

 OTHER: _____

Student Outcome (d): Demonstrate mastery of at least one modern programming language and proficiency in at least one other.

y Project is implemented using an appropriate high level language

y Project implementation is reasonably efficient rather than “brute force”

y Project implementation is modular and/or re-usable

y Project implementation uses a modern API or Tool-Kit

Project implementation utilizes recursion

Project implementation utilizes some advanced features, e.g. polymorphism

A project sub-system or module utilizes an appropriate programming language other than the primary implementation language, e.g. SQL, ML, assembly language

OTHER: _____

OTHER: _____

Student Outcome (e): Demonstrate understanding of the social and ethical concerns of the practicing computer scientist

 y Project documents sources and references

 Project identifies and addresses any relevant social issues

 Project identifies and addresses any relevant ethical issues

 y Project identifies and addresses relevant legal issues

 Project identifies and addresses any relevant privacy issues

 Project documents anticipated impact on users/clients

 Project documents and addresses any anticipated technology impact issues

 OTHER: _____

 OTHER: _____

Student Outcome (f): Demonstrate the ability to work cooperatively in teams

 y Project completion evidences equitable participation by team members

 y Project presentation(s) included all team members

 y Project team activity is documented

 y Project team set out and followed a schedule for timely completion

 y Project team negotiated consensus when needed

 y Team members roles were clearly defined and executed

 y Team members shared responsibility for success and failure

 OTHER: _____

 OTHER: _____

Program Outcome (g): Demonstrate effective communication skills

- _y_ Presentations described the essential features of the project
- _y_ Presentations utilized good quality slides and presentation aids
- _y_ Presenters utilized their time effectively
- _y_ Presenters spoke directly to the audience
- _y_ Technical features were communicated clearly
- _y_ Project artifacts clearly document all project features
- _____ Project reports are well organized and written

_____ OTHER: _____

_____ OTHER: _____

Program Outcome (j): Have experience with contemporary environments and tools necessary for the practice of computing

 Project utilized contemporary design tools

 Project implementation utilized a modern IDE(s)

 Project utilized appropriate validation/testing tools

 Project was demonstrated using appropriate presentation tools

 Project utilized appropriate project management tools (e.g., MS Project)

 Project utilizes appropriate version control/document sharing tools

 Project documents consideration of trade-offs in selection of tools

 OTHER: _____

 OTHER: _____

ABET Student Outcome

The program must enable students to attain, by the time of graduation:

(j) An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices. [CS]

Please comment on how this project “demonstrates comprehension of the tradeoffs involved in design choices”:

Putting together a system of this size and complexity certainly demonstrates understanding of design tradeoffs.