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 _____ Comparative Genomics Database _____

Semester & Year _____ Spring 2011 _____

Faculty / Industry Sponsor: _____ Dr. Giri Narasimhan_____

Evaluators: _____Dr. Peter Clarke_____

_____

_____

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)

____ 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)

____ Project design utilizes finite state diagrams to model system behavior

____ 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

__X_ 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)

____ 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

__X__ 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

____ Project implementation utilizes knowledge of process synchronization

____ 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.*

__X__ Project demonstrates knowledge of the Software Development Life Cycle

__X__ Project deliverables include Project Specification

__X__ Project deliverables include Feasibility Study and/or Project Plan

__X__ Project deliverables include Requirements Documentation

__X__ Project deliverables include Design Documentation

__X__ Project documents testing and/or evaluation of the implementation

__X__ 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.*

__X__ Project is implemented using an appropriate high level language

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

__X__ Project implementation is modular and/or re-usable

__X__ 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*

__X__ Project documents sources and references

____ Project identifies and addresses any relevant social issues

____ Project identifies and addresses any relevant ethical issues

__X__ Project identifies and addresses relevant legal issues

____ Project identifies and addresses any relevant privacy issues

__X__ Project documents anticipated impact on users/clients

__X__ Project documents and addresses any anticipated technology impact issues

____ OTHER: _____

____ OTHER: _____

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

__X__ Project completion evidences equitable participation by team members

__X__ Project presentation(s) included all team members

__X__ Project team activity is documented

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

__X__ Project team negotiated consensus when needed

__X__ Team members roles were clearly defined and executed

__X__ Team members shared responsibility for success and failure

____ OTHER: _____

____ OTHER: _____

Program Outcome *(g)*: *Demonstrate effective communication skills*

__X__ Presentations described the essential features of the project

__X__ Presentations utilized good quality slides and presentation aids

__X__ Presenters utilized their time effectively

__X__ Presenters spoke directly to the audience

__X__ Technical features were communicated clearly

__X__ Project artifacts clearly document all project features

__X__ 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*

__X__ Project utilized contemporary design tools

__X__ Project implementation utilized a modern IDE(s)

__X__ Project utilized appropriate validation/testing tools

__X__ Project was demonstrated using appropriate presentation tools

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

__X__ Project utilizes appropriate version control/document sharing tools

__X__ 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"*: