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 ___PseudoNEXUS – Comparative Genomic Database_____

Semester & Year ____Spring 2011_____

Faculty / Industry Sponsor: ____Giri Narasimhan_____

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)

_y___   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)

_y___   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)

_y___   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

_y__ 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)

_y__ Project utilizes or designs an appropriate database management system

_y__ Project utilizes conceptual and/or relational schema

_y__ Project utilizes a database query language such as SQL

Computer Systems (Operating Systems)

_y__ Project implementation utilizes knowledge of memory management

_____ 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.*

_y__   Project demonstrates knowledge of the Software Development Life Cycle

_y__   Project deliverables include Project Specification

_y__   Project deliverables include Feasibility Study and/or Project Plan

_y__   Project deliverables include Requirements Documentation

_y__   Project deliverables include Design Documentation

_y__   Project documents testing and/or evaluation of the implementation

_y__   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

_y__	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

_y__   Project identifies and addresses any relevant social issues

_y__   Project identifies and addresses any relevant ethical issues

_y__   Project identifies and addresses relevant legal issues

____   Project identifies and addresses any relevant privacy issues

_y__   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

_y__   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

_y__   Project implementation utilized a modern IDE(s)

_y__   Project utilized appropriate validation/testing tools

_y__   Project was demonstrated using appropriate presentation tools

_y__   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]

<u>Please comment on how this project "</u>*demonstrates comprehension of the tradeoffs involved in design choices"*:

I think that putting together a system of the magnitude and complexity undertaken by this team clearly demonstrates comprehension of design tradeoffs.