NEW COURSE PROPOSAL

PROGRAM AREA _____

1. Catalog Description of the Course.
BINF 501 BIOLOGICAL INFORMATICS (3)
Three hours of lecture per week.
Prerequisite BIOL 431 or permission of instructor.

This course describes relational data models and database management systems with an emphasis on answering biologically important questions; teaches the theories and techniques of constructing relational databases to store various biological data, including sequences, structures, genetic linkages and maps, and signal pathways. Topics include: relational database query language SQL and the ORACLE database management system, summary of currently existing biological databases, web based programming tools, data integration and security, future directions for biological database development.

2. Mode of Instruction.

	Units	Hours per Unit	Benchmark Enrollment
Lecture	_____3___	____1____	___15_____
Seminar	_____	_____	_____
Laboratory	_____	_____	_____
Activity	_____	_____	_____

3. Justification and Learning Objectives for the Course. (Indicate whether required or elective, and whether it meets University Writing, and/or Language requirements) *[Use as much space as necessary]*

This course is a required element of the core curriculum for the proposed Professional Science Masters degree in Bioinformatics

Upon completion of this course, students will be able to:
- identify the components of a relational database system
- integrate a database with a programming language
- analyze and implement SQL queries
- demonstrate knowledge of current NCBI suite of biological databases
- write Perl scripts that perform basic manipulations of nucleic acid and protein sequence data

4. Is this a General Education Course   NO
   If Yes, indicate GE category:

A (English Language, Communication, Critical Thinking)	
B (Mathematics & Sciences)	
C (Fine Arts, Literature, Languages & Cultures)	
D (Social Perspectives)	
E (Human Psychological and Physiological Perspectives)	

5. Course Content in Outline Form. *[Be as brief as possible, but use as much space as necessary]*
Relational Databasing Models
  Database Management Systems
  SQL
  Perl
  HTML/CGI
  Biological Database Types
  Biological Database Integration
  Distributed Annotation System
  Biological Database Analysis Methods

6. References. *[Provide 3 - 5 references on which this course is based and/or support it.]*
Ramakrishnan, R. and J. Gehrke. 2002. Database Management Systems, 3rd ed., McGraw-Hill, ISBN 0071151109.
Mount, D. Bioinformatics: Sequence and Genome Analysis. 2001. Cold Spring Harbor Laboratory Press, ISBN 0-87969-608-7
Gibas, C., and P. Jambeck. 2001. Developing Bioinformatics Computer Skills. O'Reilly & Associates, ISBN: 1565926641
Tisdall, J. Beginning Perl for Bioinformatics. 2001. O'Reilly and Associates, ISBN 0-596-00080-4
Reese, G. 2000. Database Programming with JDBC and Java, 2nd ed., O'Reilly & Associates, ISBN 1565926161

7. List Faculty Qualified to Teach This Course.

Computer science faculty and/or computer science professionals, biology faculty

8. Frequency.
   a.   Projected semesters to be offered: Fall _X____   Spring _____   Summer _____

9. New Resources Required.
   a.   Computer (data processing), audio visual, broadcasting needs, other equipment
   b.   Library needs
   c.   Facility/space needs

None.

10. Consultation.
   Attach consultation sheet from all program areas, Library, and others (if necessary)

11. If this new course will alter any degree, credential, certificate, or minor in your program, attach a program modification.

Amy Denton
William Wolfe   31 October 2003

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Proposer of Course   Date