AUG 1 2 2008

Course Change Request

Indiana University Indianapolis Campus

Check Appropriate Boxes: Undergraduate credit ☐ Graduate credit [XX] Professional credit ☐ 88

1. School/Division Informatics
2. Academic Subject Code INFO-I 3. Current Course Number 512 4. Current Credit Hours 3
5. Current Title Scientific Data Management and Analysis
6. Effective Semester/Year for changes listed below: Fall 2008 7. Instructor: Merchant

Type of Change Requested (Check appropriate boxes and indicate changes)

☐ 8. Change course number to: _____ (must be cleared with University Enrollment Services)

[XX] 9. Current course title: Scientific Data Management and Analysis
Change to: Scientific and Clinical Data Management
Recommended abbreviation (optional) _____
(Limited to 32 Characters including spaces)

☐ 10. Current credit hours fixed at: _____ or variable from: _____ to _____
Change to credit hours fixed at: _____ or variable from: _____ to _____

☐ 11. Current lecture contact hours fixed at: _____ or variable from: _____ to _____
Change to lecture contact hours fixed at: _____ or variable from: _____ to _____

☐ 12. Current non-lecture contact hours fixed at: _____ or variable from: _____ to _____
Change to non-lecture contact hours fixed at: _____ or variable from: _____ to _____

☐ 13. Is this course currently graded with S-F (only) grades? Yes _____ No _____
Change to S-F (only) grading? Yes _____ No _____

☐ 14. Does this course presently have variable title approval? Yes _____ No _____
Is variable title approval being requested? Yes _____ No _____

☐ 15. Is this course being discontinued? For all campuses _____ or for this campus only _____

[XX] 16. Current course description General principles of knowledge discovery and databases (KDD); data and metadata; applications of scientific data management systems (SDMS) in laboratories; data warehousing; electronic laboratory notebooks (ELN); data mining and visualization.

Change course description to (not to exceed 50 words) Management and mining of data generated in scientific laboratories and clinical trials for data mining and knowledge discovery requires robust solutions that include knowledge discovery techniques and databases, extraction of data/metadata stored in data warehouses that use Storage Area Networks and dealing with security issues of handling this data.

17. Justification for change adjustment to the health informatics curriculum.
(Use additional paper if necessary)

18. Are the necessary reading materials currently available in the appropriate library? yes

19. A copy of every new course proposal must be submitted to departments, schools, or divisions in which there may be overlap of this course with existing courses or areas of strong concern, with instructions that they send comments directly to the originating Curriculum Committee. Please append a list of departments, schools, or divisions thus consulted.

Submitted by: _____ Date 5/15/08
Department Chairman/Division Director

_____ Date _____
Dean of Graduate School (when required)

APPROVED JUN 09 2008
IUPUI Curriculum Sub Committee Date

Approved by: _____ Date 5/15/08
Dean

_____ Date 7 Aug 08
Chancellor/Vice-President

_____ Date _____
University Enrollment Services

After School/Division approval, forward the last copy (without attachments) to University Enrollment Services for initial processing, and the remaining four copies and attachments to the Campus Chancellor or Vice-President.

School of Informatics

Scientific and Clinical Data Management

INFO 512

Course Information

- Credit Hours: 3.0
- Placement in Curriculum: Elective course for MS and PhD students in Health Informatics/Bioinformatics
- Prerequisites: Graduate standing or permission of instructor
- Co-requisites: None

Faculty: Dr. Mahesh Merchant (mmerchan@iupui.edu)

Description: Management and mining of data generated in scientific laboratories and clinical trials for data mining and knowledge discovery requires robust solutions that include knowledge discovery techniques and databases, extraction of data/metadata stored in data warehouses that use Storage Area Networks and dealing with security issues of handling this data.

Rationale: This course is designed for those students whose primary objective is to implement and manage the vast amount of data generated in a clinical and life sciences setting. The knowledge acquired in this class will also enable students to develop skills necessary to become a scientific data systems manager or a clinical data manager. Several commercial software packages that include instrument simulators for data generation, scientific data management systems and electronic laboratory notebooks will be used for students to get hands-on experience with systems used by small and large organizations. Site visits to local laboratories and guest lectures will be incorporated in this schedule.

Educational Outline:

1) The role of Electronic Laboratory Notebook and Scientific Data Management Systems Scientific Laboratories
2) Prepare the students to play a pivotal role in the Configuration, Customization, Implementation and Validation of these systems
3) Understand different technologies and architectures supported by these systems
4) Regulatory requirements for these systems
5) Integration of these systems in a clinical setting and scientific laboratories across the enterprise
6) Hands-on experience with laboratory assignments using commercial Electronic Laboratory Notebooks and Scientific Data Management Systems products

The knowledge acquired in this class will also enable students to develop skills necessary to become a scientific data systems manager or a clinical data manager.

Course Content and Preliminary Lecture Schedule

Week	Topics
Week 1	Teaching Philosophy Introduction to Class Material Available Resources Lab Tour
Week 2	Data versus Metadata Introduction to Knowledge Discovery and Databases (KDD)
Week 3	Scientific Data Management Systems Nugenesis CyberLab Spotfire Demo TotalChrom Chromatography Software (Perkin Elmer) Electronic Laboratory Notebooks (LabTrack and eLab Notebook)
Week 4	Technology Strategies for Integrating Scientific Data Collections
Week 5	Data Warehousing Federated Databases Large Datasets including Genomic, Microarray Databases
Week 6	Storage Technologies (SAN, etc.)
Week 7	Data Security
Week 8	Data Visualization
Week 9	Mid-Term Exam
Week 10	Break
Week 11	Case Report Form (CRF) design/consultancy Data Management Plan and CRF guidelines Database Development Data Entry Electronic Data Capture Data Management Validation (DMV) and quality assurance
Week 12	Clinical Trial Management System Computer Systems Validation in Clinical Research Good Clinical Data Management Practices (GCDMP)
Week 13	Clinical Data Exchange issues

Week 14	High Throughput Screening
Week 15	Presentation of Projects
Week 16	Presentation of Projects
Week 17	Finals

Required and Recommended Text

Richard K. K. Rondel, Sheila A. Varley, Colin F. Webb, Sheila A. Varley, Colin F. Webb: Clinical Data Management, Wiley, John & Sons, Incorporated, 2000, ISBN-13: 9780471983293.

Evaluation and Grading

Labs 20% Tests 50% Project 30%

Grading scale:

Point Range	Grade	Point Range	Grade
97 – 100%	A+	80 – 82%	B-
93 – 96%	A	77 – 79%	C+
90 – 92%	A-	70 – 76%	C
87 – 89%	B+	60 – 69%	D
83 – 86%	B	59 and below	F

Bibliography

1. de Raedt, L (ed.) and Siebes, L (ed.), Principles of Data Mining and Knowledge Discovery, Springer-Verlag, NY, NY 2001, ISBN-3-540-42534-9.
2. Nakagawa, A.: Data Warehousing and Knowledge Discovery, Springer-Verlag, NY, NY 2001, ISBN-3-540-42553-5.

Cheating and Plagiarism

If students turn in work that was written by someone else, work which was bought, borrowed, stolen, or downloaded from the Internet, and pass it off as their own work, they are cheating. Penalties for this form of plagiarism may range from a lowered grade, to an F for the course, or, in extreme cases, expulsion from IUPUI. Students caught cheating will be penalized and may not receive credit for the exam or assignment.

Americans with Disability Act:

If you need any special accommodation due to a disability, please contact Adaptive Educational Services at (317) 274-3241. The office is located in CA 001E.

POLICIES for ATTENDANCE & ASSIGNMENTPROJECT DEADLINES

1. **Missing class course chat time WILL affect your grade.** Students are allowed two (excused or unexcused) absences before their grade will be effected. In other words, whether you are sick or have personal problems or issues for missing class, it will amount to the same. Missing class means you do not show for the whole or majority of the session. The grade reduction policy works in this way.

    a. On the third missed class time your final grade will drop *5* points (regardless of the reason).

    b. On the fourth missed class your final grade will drop 10 points (regardless of the reason), and 5 additional points there after for each additional class missed.

2. **Responsible for due dates and related materials:** All weekly due assignments are the students' responsibility. If class is missed, the student is still responsible for the assignment, as well as to find out what was covered in class, e.g., any new assignments or variations to an existing assignment. ALL assignment deadlines are outlined in the syllabus or syllabus supplemental documents provided on Oncourse. The instructor will only give one reminder of these dates. In the end, each student is responsible for the deadline. Also, weekly assignment deadlines should be adhered to, to insure fairness to all students. For the purpose of maintaining an equal and fair evaluation of each student's work, no student will receive special treatment. As a result, the following rules will apply to this course:

    a. All assignments must be ready to hand in or email at the designated time and place as stated on the assignment sheet, as communicated via email, or on the syllabus.

    b. All assignments handed in late will be reduced 10 points for every day late (24 hrs. from the due date and time). For example, if the assignment is due at 6PM on the due date and it is post-marked 6:01PM, it will be reduced automatically by 10 points. If the class meets in the class room, students must be ready to hand the assignment in at the start of class time.

    c. Incompletes will NOT be issued except under very extreme personal conditions that have been reviewed by the instructor and in some cases in consultation with the Dean's Office.

UNIVERSITY POLICIES

1. **University Attendance Policy:** Attendance is required. The University regulations state: "Students are expected to be present for every meeting of the classes in which they are enrolled." IUPUI faculty is required to submit to the office of the Register a record of student attendance through the semester, on which they will take action if the record conveys a trend of absenteeism. As a result, ATTENDANCE WILL BE TAKEN IN ALL CLASSES. An Attendance sheet will be passed out in class for each student to sign their name. If you do not sign your name while in class you will be marked absent. The instructor is not expected to remember who attended when, so signing the sheet while in class is important. Signing the attendance sheet for another student is absolutely prohibited. Any student found doing so will be in violation of university policies on ethics and/or conduct.

2. **Bringing your children to class:** University Policy states that: "Children are not permitted to attend class with parents, guardians, or childcare providers. This conduct has the effect of unreasonably interfering with an individual's work or academic performance creating an offensive learning environment." "A student must not violate course rules as contained in a course syllabus, which are rationally related to the content of the course or to the enhancement of the learning process in the course." *[Code of Student Rights, Responsibilities, and Conduct, page 291*

3. Academic Dishonesty I Integrity I Plagiarism: Using another student's work on a project or assignment, cheating on a test, test or any other form of dishonesty or plagiarism will result in a grade of zero on that assignment and possibly an "F" in the course, and will be referred to the Dean of Students. All students should aspire to high standards of academic honesty. This class encourages cooperation and the exchange of ideas. For further reference, students may see:

a.http://www.iupui.edu/~regrad/grad/academic_misconduct_curriculum_subcomitee.rtf.

4. **Values and ethics:** Profanity or derogatory comments about or towards the instructor or any member of the class will NOT be tolerated. Violating this rule will result in a warning and if the offense continues, administrative action will be taken.

5. **Code of Student Rights, Responsibilities and Conduct:** All students are responsible for reading, understanding, and applying the Code of Student Rights, Responsibilities and Conduct of IUPUI. (Students can access www.iupui.edu/code for further information regarding the above points)

6. **Disabilities Policy:** In compliance with the Americans with Disabilities Act (ADA), all qualified students enrolled in this course are entitled to "reasonable accommodations." Please notify the instructor during the first week of class of any accommodations needed for the course. Students with learning disabilities must provide written verification for this policy to be recognized. *If you need any special accommodation due to a disability, Please contact Adaptive Education Services at 274-3241. The office is located in CA 001E.