

LSC Use Only No:	LSC Action-Date:	UWUCC USE Only No.	UWUCC Action-Date:	Senate Action Date:
		02-80j	App 4/15/03	App -4/29/03

**Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee**

Contact Person Kustim Wibowo	Email Address kwibowo@iup.edu
Proposing Department/Unit MIS and Decision Sciences	Phone 357-2931

Check all appropriate lines and complete information as requested. Use a separate cover sheet for each course proposal and for each program proposal.

**1. Course Proposals (check all that apply)**

- New Course                       Course Prefix Change                       Course Deletion  
 Course Revision                       Course Number and/or Title Change                       Catalog Description Change

IFMG 450 Database Theory and Practice

Current Course prefix, number and full title

Proposed course prefix, number and full title, if changing

**2. Additional Course Designations: check if appropriate**

- This course is also proposed as a Liberal Studies Course.                       Other: (e.g., Women's Studies, Pan-African)  
 This course is also proposed as an Honors College Course.

**3. Program Proposals**

- New Degree Program                       Program Title Change                       Program Revision  
 New Minor Program                       New Track                       Other

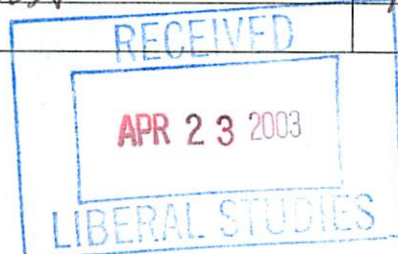
Current program name

Proposed program name, if changing

**4. Approvals**

		Date
Department Curriculum Committee Chair(s)	<i>ICM Bmy</i>	4/8/03
	<i>Elizabeth M. Price</i>	4/8/03
Department Chair(s)	<i>Louise B. Benky</i>	4/8/03
College Curriculum Committee Chair	<i>Cher Ann</i>	9 Apr 03
College Dean	<i>A. Connor</i>	4/9/03
Director of Liberal Studies *		
Director of Honors College *		
Provost *		
<b>Additional signatures as appropriate:</b> (include title)		
UWUCC Co-Chairs	<i>Gail S. Schuist</i>	4/15/03

\* where applicable



## Syllabus of Record

### I. Catalog Description.

IFMG 450 Database Theory and Practice

3 class hours

0 lab hours

Prerequisite: IFMG 230 or COSC 220

3 credit hours

(3c-0l-3cr)

Reviews the database design, data model methodologies, physical data structure, and database development and implementation. The remote data service, transaction server, and database administration will be introduced. The practical approach in accessing the database using Internet technology will be emphasized.

### II. Course Objectives.

Students will be able to:

1. Obtain knowledge of database principles and concepts.
2. Understand the logical and physical aspects of database.
3. Design and implement database applications.
4. Understand the various technologies and structures related to commonly used database software packages: hierarchical, network, and relational models.
5. Evaluate database commands associated with major versions of database software.
6. Become familiar with the underlying data structures associated with typical database software.
7. Obtain knowledge in database management systems with Internet technology as one of the data communication channels.
8. Implement the internet-database management systems technology for data entry, physical data store, data process, and data retrieval.

### III. Detailed Course Outline.

1. Database Concepts (4 hours)  
Client-Server Architecture and Distributed Systems. The Entity-Relationship Data Model. Other Data Models.
2. Relational Model, Languages, and Systems (4 hours)  
The Relational Algebra, Model, and Constraint. Relational Mapping, and Other Relational Languages. SQL-The Relational Database Language Standard. Example of Relational Database Management Systems.
3. Database Implementation with the Relational Model (6 hours)  
Foundation of Relational Implementation with SQL (Structured Query Language). Database application design.
4. Midterm I and Evaluation Testing (2 hours)

5. **Multi-user Database Processing** (4 hours)  
Managing multi-user databases. Managing databases with DBMS (Database Management Systems).
6. **Enterprise Database Processing** (4 hours)  
Networks, multi-tier architectures, XML, ODBC, OLE-DB, and ASP (Active Server Pages), JDBC, JSP (Java Server Pages), and MySQL. Sharing enterprise data.
7. **Object-Oriented Database Processing** (4 hours)  
Object-oriented database processing. Object persistent using traditional file storage. Object persistent using relational DBMS. Using Object Database Management Systems (ODMS).
8. **Midterm II and Evaluation Testing** (2 hours)
9. **Database and Web Integration** (6 hours)  
Object Model and Scripting. Basic, Application and Session. SQL and Web Data-driven Database Application Content Management in the Web Database Application.
10. **Developing Database with Internet Applications** (6 hours)  
Web Integration Using the Web Assistant. Web and Database Integration Using Active Server Pages (ASP) and other emerging Applications.
11. **Final Examination** (2 hours)

#### **IV. Evaluation Methods.**

1. 20% Homework assignments, class-works, and quizzes. These will be based on material discussed in class.
2. 40% Programming projects. About three to four projects of varying complexity based on material discussed during the semester.
3. 40% Examinations. The examinations consist of what-if questions, short-essays, analysis, and explanations. Three exams (10%, 10%, and 20%) will be administered during the semester.

Grading Scale: A:  $\geq 90\%$  B: 80-89% C: 70-79% D: 60-69% F:  $< 60\%$

#### **V. Course Attendance Policy.**

In accordance with University policy, individual faculty will denote an attendance policy on specific course syllabi

#### **VI. Required Textbook(s), Supplemental Books and Readings.**

Required:

Kroenke, Database Processing: Fundamentals, Design & Implementation, 8<sup>th</sup> Edition, Prentice Hall, 2002.

Supplemental:

Welling & Thompson, PHP and MySQL Web Development, SAMS, 2001.

Reading:

Atkinson, Core PHP Programming, 2nd Edition, Prentice Hall, 2001.

## VI. Special Resource Requirements.

No special resource requirements.

## VIII. Bibliography.

1. Alezander & Hollis, Developing Web Applications with Visual Basic .NET and ASP.NET, John Wiley & Sons, 2002.
2. Bai, Java Server Pages, Course Technology, 2003.
3. Bonazzi & Stokol, Oracle8i & Java From Client/Server to E-commerce, Prentice Hall, 2001.
4. Bontempo & Saracco, Database Management: Principles and Products, Prentice Hall, 1995.
5. Conger & Mason, Planning and Designing Effective Web Sites, Course Technology, 2000.
6. Connolly & Berg, Database Systems: A Practical Approach to Design, Implementation, and Management, 3rd Edition, Addison Wesley, 2002.
7. Deitel, Deitel & Neito, Internet & World Wide Web How to Program, 2nd Edition, Prentice Hall, 2002.
8. Elmasri & Navathe, Fundamentals of Database Systems, Addison Wesley, 2000.
9. Kaparathi & Kaparathi, Macromedia ColdFusion, Course Technology, 2002.
10. Kroenke, Database Concepts, Prentice Hall, 2003.
11. Lewism, Bernstein, & Kifer, Database and Transaction Processing: An Application-Oriented Approach, Addison Wesley, 2002.
12. Martin & Shelly, Visual Basic .NET at Work, John Wiley & Sons, 2002.
13. McFadden, Hoffer, & Prescott, Modern Database Management, 6th Edition, Addison Wesley, 2002.
14. Morneau & Batistick, Active Server Pages, Course Technology, 2001.
15. Morrison & Morrison, Enhanced Guide to Oracle8i, Course Technology, 2001.
16. Reselman, Active Server Pages 3.0 By Example, Que, 2000.
17. Riccardi, Principles of Database Systems with Internet and Java Applications, Addison Wesley 2001.
18. Smith, ASP.NET By Example, Que, 2002.
19. Tanenbaum & Can Steen, Distributed Systems: Principles and Paradigms, Prentice Hall, 2002.

## **COURSE ANALYSIS QUESTIONNAIRE**

### **Section A: Details of the Course**

- A1** How does this course fit into the programs of the department? For what students is the course designed? (majors, students in other majors, liberal studies). Explain why this content cannot be incorporated into an existing course.

This course is required for students majoring in MIS. Other students in the Eberly College of Business and IT may take this course as an elective.

- A2** Does this course require changes in the content of existing courses or requirements for a program? If catalog descriptions of other courses or department programs must be changed as a result of the adoption of this course, please submit as separate proposals all other changes in courses and/or program requirements.

This course will not require changes in the content of existing courses.

- A3** Has this course ever been offered at IUP on a trial basis (e.g. as a special topic)? If so, explain the details of the offering (semester/year and number of students).

This course has never been offered as a special topic.

- A4** Is this course to be a dual-level course? If so, please note that the graduate approval occurs after the undergraduate.

This course is not intended to be dual level.

- A5** If this course may be taken for variable credit, what criteria will be used to relate the credits to the learning experience of each student? Who will make this determination and by what procedures?

This course is not intended to be taken for variable credit.

- A6** Do other higher education institutions currently offer this course? If so, please list examples (institution, course title).

A number of institutions offer similar database courses for MIS students. For example:

**Michigan State University: ACC 321: Enterprise Database Systems**  
Management of information in business organizations. Conceptual modeling of transaction processing systems, workflow systems, and enterprise-wide networks of value-added activities. Integration of decision support and policy level systems with economic event processing systems. Information system implementation.

**University of Arizona: MIS 331: Database Management Systems**  
Introduction to database management systems; relational models; security concurrency, integrity and recovery issues; query interfaces.

**University of Arizona: MIS 535: Data Management: Technology and Applications (3 units)**  
Description: Introduction to fundamentals of database systems, design techniques and their use in organizations. Course covers relational database technology and focuses on design of database

applications. Case studies will be used to illustrate the use of database systems for strategic and operational decision making. Emerging technologies and their applications will be covered. Students will get hands-on experience with state-of-the-art commercial relational and object-oriented database technology and learn to use SQL.

**University of Connecticut: MIS205. Introduction to Database Management**

Introduction to the development and implementation of database applications. Topics covered include costs and benefits of database approach, database design lifecycle, conceptual database design, the relational data model, data administration, database security, database backup and recovery, and database management system selection and implementation. Students participate in the hands-on design and implementation of a small database using the relational architecture.

**University of Illinois at Chicago: MIS410 Business Database Design**

Prerequisites: IDS 100 and 201 or the equivalent courses. Computer software techniques used in business with emphasis on information management and database management systems. Data management and analysis. Major types of database management systems, query languages.

**Arizona State University: CIS 506 Business Database Systems**

Prerequisites: CIS 505 or equivalent; MAT 210). Hierarchical, network, relational, and other recent data models for database systems. Processing issues such as concurrency control, query optimization, and distributed processing.

**University of Mississippi: MIS409. Application of Database Management.**

Prerequisite: MIS 408. Techniques and concepts obtained in MIS 408 are used in the design, development, implementation and maintenance of files and databases.

- A7 Is the content, or are the skills, of the proposed course recommended or required by a professional society, accrediting authority, law or other external agency? If so, please provide documentation.

The Association for Computing Machinery (ACM), the Association for Information Systems (AIS) and the Association for Information Technology Professionals (AITP) all recommend this course.

**Section B: Interdisciplinary Implications**

- B1 Will this course be taught by instructors from more than one department? If so, explain the teaching plan, its rationale, and how the team will adhere to the syllabus of record.

This course will not be team taught.

- B2 What is the relationship between the content of this course and the content of courses offered by other departments? Summarize your discussions (with other departments) concerning the proposed changes and indicate how any conflicts have been resolved. Please attach relevant memoranda from these departments that clarify their attitudes toward the proposed change(s).

This course does not overlap with any other courses at this university. Although other departments may offer courses with similar topics, this course is specifically designed for the needs, interests, and context required for our MIS majors. This course already exists. The update of the syllabus of record is mostly an updating of the tools and methods used to implement the content of the course. The basic nature and purpose of this course has not been changed.

B3 Will this course be cross-listed with other departments? If so, please summarize the department representatives' discussions concerning the course and indicate how consistency will be maintained across departments.

This course is proposed by the MIS-DS Department and will not be cross listed.

B4 Will seats in this course be made available to students in the School of Continuing Education?

Seats will be made available to Continuing Education students meeting the prerequisite.

### **Section C: Implementation**

C1 Are faculty resources adequate? If you are not requesting or have not been authorized to hire additional faculty, demonstrate how this course will fit into the schedule(s) of current faculty. What will be taught less frequently or in fewer sections to make this possible? Please specify how preparation and equated workload will be assigned for this course.

Faculty resources are adequate.

C2 What other resources will be needed to teach this course and how adequate are the current resources? If not adequate, what plans exist for achieving adequacy? Reply in terms of the following:

\*Space The Eberly classrooms are adequate for this course.

\*Equipment The Eberly computer labs are adequate for this course.

\*Laboratory Supplies and other Consumable Goods The MIS-DS Department has enough software and computer supplies to support this course. However, the computer hardware and software will require periodic updates to meet the technological advancements and requirements.

\*Library Materials The Stapleton Library has enough reading material for this course.

\*Travel Funds No travel funds are needed.

C3 Are any of the resources for this course funded by a grant? If so, what provisions have been made to continue support for this course once the grant has expired? (Attach letters of support from Dean, Provost, etc.)

No resource for this course will be funded by a grant.

C4 How frequently do you expect this course to be offered? Is this course particularly designed for or restricted to certain seasonal semesters?

Once a semester.

C5 How many sections of this course do you anticipate offering in any single semester?

At least one section.

C6 How many students do you plan to accommodate in a section of this course? What is the justification for this planned number of students?

Approximately 30 students will be accommodated in a section of the course.

C7 Does any professional society recommend enrollment limits or parameters for a course of this nature? If they do, please quote from the appropriate documents.

No professional society recommends enrollment limits or parameters for this course.

C8 If this course is a distance education course, see the Implementation of Distance Education Agreement and the Undergraduate Distance Education Review Form in Appendix D and respond to the questions listed.

Presently, this course is not a distance education course.

#### **Section D: Miscellaneous**

Include any additional information valuable to those reviewing this new course proposal.

**1. Summary of the proposed revisions.**

Syllabus of Record Change

**2. Justification/rationale for the revision.**

The proposed revision is meant to bring the syllabus of record in line with what is currently being taught in the course. Because students are already learning materials based on the new syllabus of record, there will be no discontinuity between students who took the course under its old title and students taking the course in the future.

**3. Old Syllabus of Record Format: IM450 Database Theory and Practice**

This course is so old that we could not locate an old syllabus of record. See current syllabus below:

INDIANA UNIVERSITY of PENNSYLVANIA  
EBERLY COLLEGE OF BUSINESS and INFORMATION TECHNOLOGY  
MIS and DECISION SCIENCES DEPARTMENT

<b>IFMG 450 Database Theory and Application</b>	<b>Fall – 2002</b>
<b>Section 001 (M-W: 3:30 – 5:00 pm.)</b>	<b>Classroom: ECB 209</b>

<b>Instructor: Dr. Kustim Wibowo</b>	<b>Office Hours: MW: 7:30-9:15 am; F: 7:30-9:00 am; or by appointment</b>
<b>Office: ECB 207E</b>	<b>E-mail: kwibowo@iup.edu</b>
<b>Phone: 357-2931</b>	<b>Web Page: <a href="http://www.iup.edu/~kwibowo/">http://www.iup.edu/~kwibowo/</a></b>

**Textbook:** Database Systems The Complete Book, Hector Garcia-Molina, Jeffrey D. Ullman, and Jennifer Widow, Prentice Hall, 2002.

**Ullman web site:** <http://www-db.stanford.edu/~ullman/dscb.html>

**Supplement:** articles and instructor generated materials (handout) and online materials.



**Catalog Description:** After learning data structures, the student will then apply them to CODASYL compatible database management systems, TOTAL, and IBM's database management system. Student must develop and use a database as part of requirement. [Course revision in process]

**Prerequisites:** IFMG 370, upper division students only

Beginning with the Summer 2000 term, there will be absolute enforcement of every prerequisite requirement for the coursework offered by the Eberly College of Business & Information Technology. This means that students cannot postpone prerequisites and take them after the course in question.

The dean's office is responsible for monitoring course prerequisites. Students who manage to register for coursework in spite of the fact that they do not have the appropriate prerequisite will be subject to unilateral withdrawal after the course has commenced. At that time, no appeal will be accepted and adding a class after the official registration period will not be approved.

**Course Objectives:**

1. To obtain a knowledge of database principles and concepts.
2. To understand the logical and physical aspects of database.
3. To be able to design and implement database applications.
4. To understand the various technologies and structures related to commonly used database software packages: hierarchical, network, and relational models.
5. To be able to evaluate database commands associated with major versions of database software.
6. To become familiar with the underlying data structures associated with typical database software.

**Teaching Method:** Lectures covering the course materials, classroom and lab demonstrations of database software, a series of class and home work exercises, project assignments to provide student expertise and skill in solving database problems.

**Class Participation:** Class attendance is essential. Every student is expected to be involved in class discussions and group projects.

**Course Evaluation:**

Description	%
2 Exams (15 and 25)	40
Homeworks	10
2 Database projects (20 and 25)	45
Class attendance	5
Total	100

**Grading Scale:** A 90 – 100; B 80 – 89; C 70 – 79; D 60 – 69; F 59 - below. No extra credit will be given.

**Tentative Course Schedule (revisions will be announced):**

Week of	Chapter(s)	Application	Homework	Project	Exam
1	1	MS-Access	Access 1, 2		
2	2	Visual Basic.NET	VB 1, 2, 3, 4	Project1 description	
3	2,3	ASP.NET	Normalization		
4	3		ERD1, 2		
5	3		Query 1, 2, 3		
6	5		Index		
7	5,6		B-Tree	Project1 due	Exam 1
8	6		Optimized Query	Project2 description	
9	7				
10	8, 11				
11	11, 12				
12	12, 13				
13	18				
14	18, 19			Project2 due	
15	19				Exam2

**Important note:**

1. This is a lecture-based course utilizing overhead projector, handouts, and WebCT. Participation in class discussion (questions, answers, and other activities) which enable students to develop concepts learned in class are encouraged.
2. Homeworks, Exams, and Projects will be announced in class.
3. Turn in all assignments on time. No late submissions will be accepted.
4. There will be no make ups for lecture, homework, and projects.
5. Exams can be made up under special circumstances and only if cleared with the instructor prior to the exam. Written medical or personal documentation is required. You will be given two weeks to make up that exam. Otherwise a zero will be recorded. It is your responsibility to make the appointment to do so.
6. Your presence is required and desired. It is only this way that you can benefit maximally from the course. Excuses for class are not needed. You are either there or not there. Lectures will not be repeated in my office or on an individual basis. 5% of your grade will be tied to attendance (participating). Three hours of absences are permitted. Over three will sacrifice the entire 5%. Arriving late or leaving the class without notice will be considered missing the class.