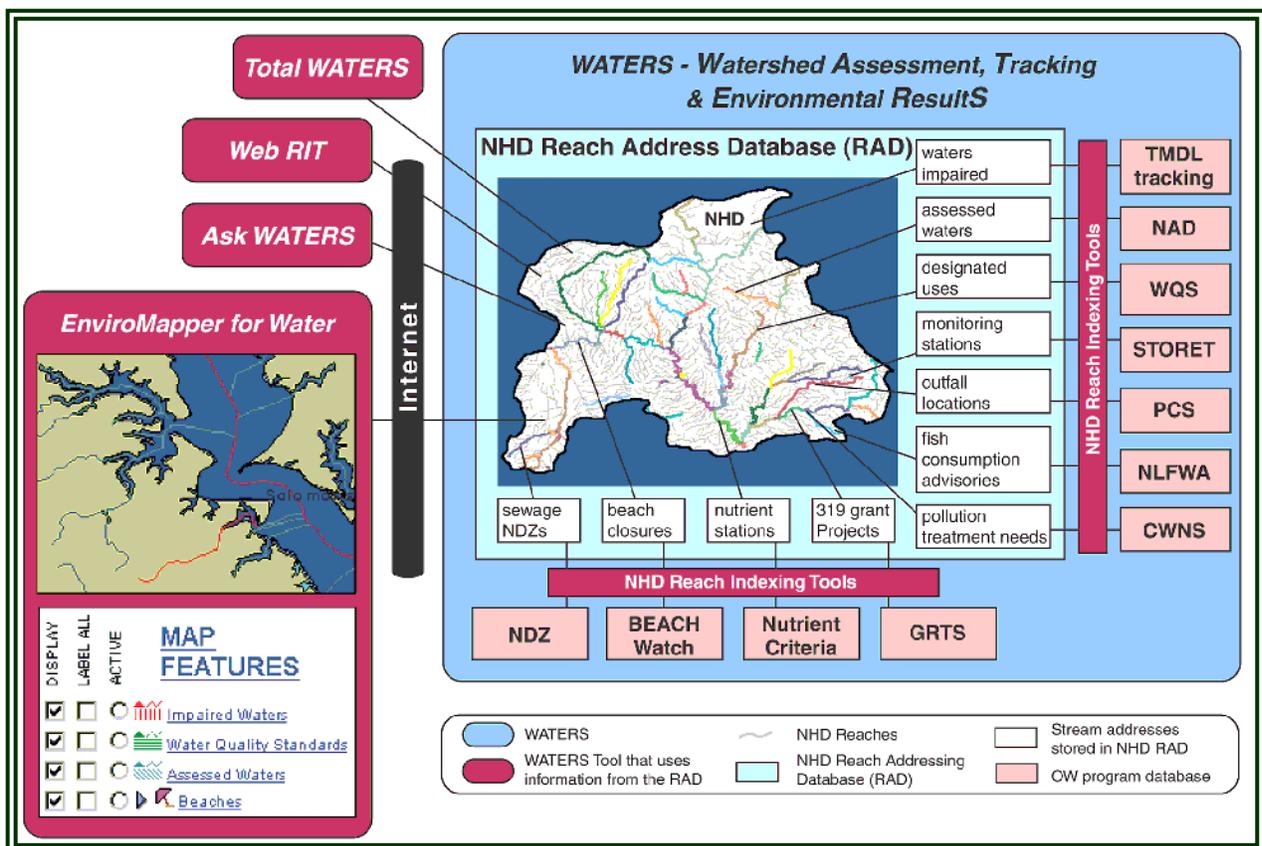


# EOHS 475/HPA 480 Syllabus

## Health Related Database Design and Analysis

### Course description and objectives

The EOHS 475/ HPA 480 is a 4 (four) semester hours online course which introduces students to the design and analysis of relational and spatial health related databases. Throughout the course emphasis is given to the fundamental principles of sound database design from the viewpoint of a database design architect. The nature of the subject matter permits the application of a parallel didactic approach comprised of theory/concepts and practical applications based on database management software (see Schedule).



The architecture of Watershed Assessment, Tracking & Environmental Results (WATERS) database system (source: <http://www.epa.gov/waters/about/arch.html>).

The EOHS 475/ HPA 480 is the introductory course of the Public Health Geographic Information (PHGIS) certificate program; qualified SPH students may take the course provided they obtain the consent of the instructor. The major educational objectives of this course are to:

-  introduce the principles of relational and spatial database design.
-  understand the structure and basic characteristics of spatial and temporal environmental health data.
-  facilitate a critical understanding of the limitations and potentials of databases.
-  familiarize the students with storage, indexing, and query processing.
-  familiarize the students with the analysis techniques of relational and spatial databases.

For this course, assignments, quizzes, and projects will be used to: develop DBM skills, illustrate relational and spatial data structures, identify problems, find solutions, stimulate discussion, and integrate database analysis techniques into the many applications areas found in the public and environmental health fields. This course relies on MICROSOFT Office ACCESS<sup>®</sup> (and to a lesser extent on MICROSOFT Excel<sup>®</sup> for analysis) which is a relational database management (DBM) system widely applied in the field. By successfully finishing this course, the students are expected to:

- ◆ be able to design relational and spatial databases.
- ◆ create actual health related relational and spatial databases.
- ◆ apply techniques for data quality assurance and quality control (QA/QC), conversion, storage, manipulation, and presentation.
- ◆ retrieve and analyze data from well established health related databases (e.g., IRIS, WATERS, STORENET, TRI, AQS, GEMSTAT, etc.).

To fulfill the learning objectives students will have to study the database design theories and techniques and, almost concurrently, to apply these techniques to real data bases. To this end the students will have to use a practical data base management system such as the MICROSOFT Office ACCESS<sup>®</sup>. The first two weeks of the class the students must acquire, install, and become familiar with this software. After the 2<sup>nd</sup> week, examples and assignments will be used to illustrate the common database management practices.

## Where to start?

One thing to be aware of is that in the past Internet Explorer 7.0 (IE7.0) had compatibility problems with Bb. To avoid endless hours of configuration settings I recommend you use another browser (e.g., [www.mozilla.com](http://www.mozilla.com)). If you learn, as many people do by trial and error, familiarize yourself with the Bb areas of this course by clicking the buttons on the left side of the main Bb screen. Before you logoff, **do**

**not forget to read**, very carefully, this Syllabus. If you need more Bb information, go to: <http://www.uic.edu/depts/accc/itl/blackboard>. This link is very helpful and, I hope, you will find there the answers to most of your Bb questions.

Before starting, you will need to have the **Adobe Acrobat** (at least AA 9.0) reader installed and operational; in case you are not sure, or you are wondering what is AA, go to: <http://get.adobe.com/reader>. The majority of the documents for this class will be in a pdf (portable document) format. To optimize efficiency, **you should first download** (save) the pdf documents to your hard drive and **then** open them in order to become independent of the UIC server and your internet service provider (ISP). To reduce "clutter" it is recommended that you save all the documents in one location (i.e., folder), for example, c:\EOHS475 (which you can further subdivide into: c:\EOHS475\RM (reading material), etc.).

The **Content and Activities** and the **Discussion Board** areas of Bb are the most important online destinations for this class. The **Announcements**, which are difficult to miss, will give you initial guidance of what goes on during each week, inform you about changes, and remind you about deadlines. You can look up your grades in the **Student Tools** Bb area.

## **Help and virtual office hours for all!**

For those of you who may be nervous about taking a course on the internet (and if the Help button does not help), you can e-mail your questions to one of your instructors (for more contact information see "**Staff Information**"). After the first two weeks, please, post your technical questions in the appropriate forums (**Discussion Board, FAQ forum**). **I strongly recommend** that you resolve all your technical problems during the first two weeks of the class.

We want to answer any question you have as promptly as possible and minimize repetition. For this reason, post questions related to **technical problems** (software, or hardware) in the FAQ forum, we will answer them within 24 hrs.

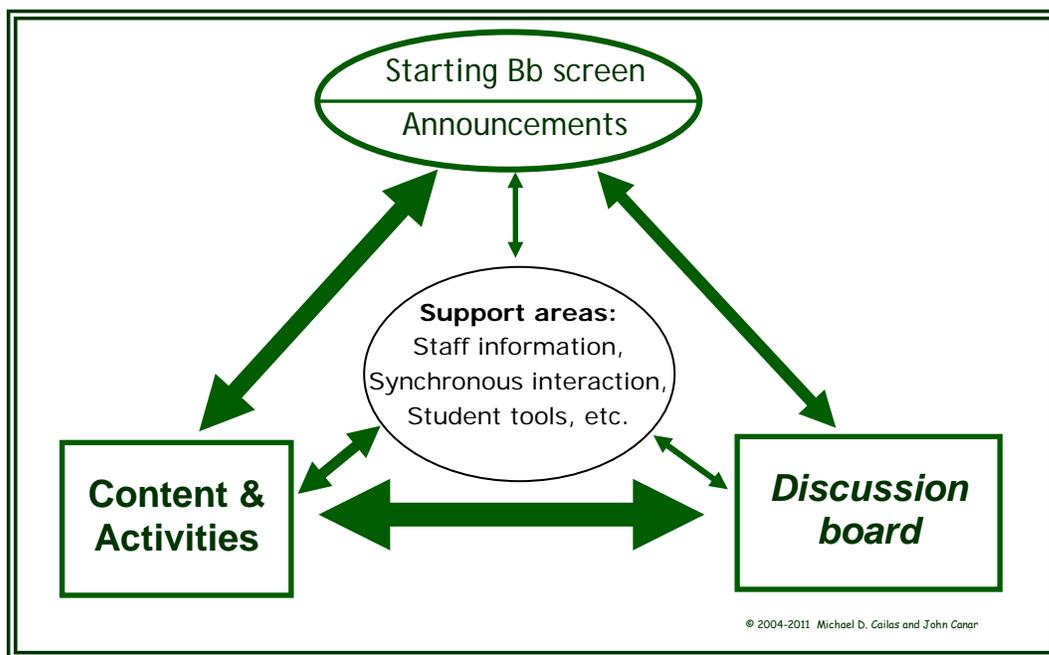
**Content related questions** should be posted in the discussion board forum of the relevant week (click: **Discussion Board**, you will see the Weeks there). You can always use more traditional means of communication such as e-mails (see contact information).

## **Instructional Design**

The entire course will be offered online, accessible, directly, through the Blackboard (Bb) interface at: <http://blackboard.uic.edu/>.

After more than ten years of online teaching, Dr. Cailas and Dr. Canar have designed for their courses a didactic process based on three virtual domains: didactic content and activities (C&A), interaction (Discussion board), and support/interaction. For the current Bb interface, this process is further enhanced with the use of “weekly” thematic C&A sessions. Simplicity of use and transition was the paramount determinant for this online configuration as well as Dr. Cailas’ teaching perspective and approach.

In the **Content and Activities (C&A)** domain you will find all the didactic material (e.g., instructions, lecture notes, reading material, articles, etc.) and educational activities you will need (e.g., Quizzes, Assignments, etc.). The quiz questions are based on the posted material. As such, please, develop a means of “taking notes” that you can use during your quizzes. The **C&A** domain is organized into thematic sessions, having, in most cases, a weekly duration.



Schematic of the basic instructional design established by Drs Cailas and Canar for the EOHS 475 (as well as for the HPA/EOHS 564, HPA/EOHS 565, EOHS 400, EOHS 411, HPA 407, HPA 466, EOHS 512, and EOHS 572). The arrows indicate transition potential and their thickness the expected frequency of use.

Interaction and feedback will occur in the forums of the **Discussion Board** area. Students benefit by each other's comments and the responses of the instructors and teaching assistants. For this reason, we urge you to post your questions and comments in these weekly forums. Content-related questions should be posted

there as well for the benefit of the entire class. Responses to questions will be given within 24 hours by either the faculty (or the teaching assistant(s)). If you have a personal problem, please email the principle instructor, directly.

## Required software, reading materials, and data files

You will need to work on a PC that meets the minimum requirements for the Blackboard system and MS ACCESS<sup>®</sup>. This is a data base management course, so be prepared to deal with GBs of data for the assignments and the project which we will provide. I am assuming that all of you have MS Excel<sup>®</sup> loaded on your system and that you will be glad to know that as a UIC student you can have MS ACCESS<sup>®</sup> (part of the **Office 2010 Professional Plus** Personal Use package) available for a nominal price at the ACCC e-sales site at: <https://webstore.illinois.edu/Shop/> In addition, for those on the UIC campus MS ACCESS<sup>®</sup> is available on all Windows PCs in the ACCC public labs.

We will be providing sufficient reading material to cover all the theories and techniques; however, to fulfill the learning objectives students will have to study the database design theories and techniques and, almost concurrently, to apply these techniques to real data bases. To this end the students will have to use a practical data base management system such as the MICROSOFT Office ACCESS<sup>®</sup>. The first two weeks of the class the students must acquire, install, and become familiar with this software. After the 2<sup>nd</sup> week, examples and assignments will be used to illustrate the common database management practices. You will need a reference to help you out with MS ACCESS<sup>®</sup>. For this purpose our team of experts recommended:

**"Microsoft<sup>®</sup> Access<sup>®</sup> 2010 Inside Out"** by Jeff Conrad and John Viescas. Microsoft Press; O'Reilly Media, Inc. (September 1, 2010).  
**ISBN-13:** 978-0735626850.

Please, order the book ASAP; after week 1 you will need it.

**Reading materials** (RM) will be also posted in the form of lecture notes covering specific DBM topics (make sure you have, as a minimum, Adobe Acrobat reader installed and operational), you will find these files in the weekly **C&A** area. Certain weeks, these lecture notes will be enriched with published articles to provide a more in-depth coverage of the underlying theory. I recommend that you organize all your reading material on your hard drive separately from the other files (e.g., C:\EOHS475\RM).

## Grading and Evaluation Criteria

The final grade range in this class is defined as follows:

- The A range starts at: 90% from max grade – Avg(St. Dev. of Quizzes)
- The B range starts at: 80% from max grade – Avg(St. Dev. of Quizzes)

The Avg(St. Dev. of Quizzes) is an adjustment based on the average standard deviation of the quizzes that gives the benefit of the doubt, if there is any, to the student (starting the scale at the max grade is another beneficial adjustment).

<b>Evaluation criteria summary table</b>	
Assignments:	45%
Quizzes:	15%
Projects:	40%
<b>Total</b>	<b>100%</b>

Your grades will be posted in your Grade link (Click: Student tools, then, Check My Grade link).

**Participation:** Distance learning offers many advantages to professionals wishing to enhance their education in the environmental health sciences disciplines. A paramount component of the didactic process is active and critical participation and that is why we strongly encourage you to participate by posting questions, comments, thoughts, etc.

**Assignments:** There are four **(4) Assignments** (45% total). The assignments cover specific aspects of the DBM techniques and you will be required to use the introduced DBM systems (e.g., Access). Another aspect of the assignments will be the "qualitative" small essay questions which will help you clarify the potentials/limitations of the various DBM methodologies. For each assignment you will have at least two weeks (see workload distribution chart), during that period you can post questions in the relevant forum. Feedback and grades will be given after, approximately, two weeks. The assignment work must be **an individual effort**.

**Projects:** There is one comprehensive project (40% total). The project will involve a comprehensive DBM case from start (almost "paper" format; electronic

download form) to finish (data base) and the application of the various DBM systems for resolving problems, analyzing data, and optimizing functionality (as opposed to specific aspects of DBM methodologies, i.e., assignments). Depending on the class size, the project might be a group effort. For the project you will be required to generate a final report and to comment on the work of another assigned group and post your comments in the forum.

**Quizzes:** There are **three (3) quizzes** with questions based on the reading material and the assignments. In addition, a voluntary test quiz is given to familiarize you with the Blackboard quiz format and to help you understand the syllabus content; it is worth a 0.5 bonus point. The format of quizzes will be multiple choice, true/false, etc. Details about the quiz will be posted in advance (content, format, duration, number of questions, etc.). To avoid connection problems the quizzes are split in two, or more, parts. The quiz will be accessible during **a specified time period only** (app. 7 days); make sure you take it during **this time period**. In addition, when you start the quiz you will have a few only minutes to finish it (e.g., 15 minutes). Part of the quiz will have a multi attempt format (you can take it as many times as you want –Bb keeps on record the score of the latest attempt, not the highest). Keep in mind that **all** these quizzes are designed to assess your critical comprehension of the material [during my student years they even had an element of surprise: “Good morning class, what a nice day for a quiz!"]. **Summary Feedback** will be given, approximately, two weeks after the deadline date. The summary feedback will include the correct answer, the average score of the entire class per question (**not** your individual scores), and detailed comments and discussion for “problematic” questions (i.e., questions in which the class had a success rate less than 60%).

**Note.** In case you have not noticed: there is **NO FINAL EXAM!**

## Schedule, themes, skills, and tasks

Wk	Major themes	DB Skills	Major tasks and workload		
1 – 8/22	Introduction to DB and DBMS	ACCESS interface, fields and records, relational tables, entities & attributes, primary keys, domains Chs 1 to 4  Modifying tables, records, fields, sorting, deleting, entering data (Ch. 5).	<b>Install Access</b>		
2 – 8/29	Tasks, task flow, data				
3 – 9/5	Design principles of DB				
4 – 12/9	Relational DB concept				
5 – 19/9	Relational DB – example				
6 – 26/9	Relationships & Validation				
7 – 3/10	Normalization - efficiency	Importing/linking data (ch. 8), creating and using Queries (ch. 9).	A1	Work on basic ACCESS problems	Test Q
8 – 10/10	Spatial data characteristics and GIS models				
9 – 17/10	Study week (to catch up)		A2	Project	Q2
10 – 24/10	Spatial DB	Complex queries and action Queries (Chp. 10 & 11)			
11 – 31/10	DB quality control issues				
12 – 7/11	Spatial DB introduction	DB applications			
13 – 14/11	Spatio-temporal DB (intro/example)				
14 – 21/1	Project presentation	Analyzing data in Excel	A4	Q3	
15 – 28/11	DB issues, potentials, and limitation				
16 – 5/12	<b>Final week</b>		<b>No exam</b>		

**Notes:** In the above table each row represents approximately 7 days.

Exact deadline dates will be announced, posted, and reminded regularly.

Q is a Quiz, P is a project, A an assignment, and DB is a Data Base.

► **Sept. 2, Friday**, is the **last day** to drop the course without receiving a "W" grade.

## Procedures for submitting and making-up assignments

Time is paramount for the flow of information, the planning of activities, and the measure of progress, for this reason make sure you do not fall behind with the weekly C&A and, most importantly, you do not miss the deadlines. If you do, **you will have to notify us ASAP**. For the first 10 weeks, there is a buffer of one to

two weeks, depending on the assignment; however, when the feedback for the assignment is posted then the late submission will be automatically penalized (-50%). After week 10, there is **no submission buffer for assignments**. For the quizzes we are providing ample time, 7 days, to take them. If you miss a quiz during this long period you **will not be able to make up** the lost points. The project, which is a group effort (or individual effort, depending on the size of the class), **does not have a buffer** and the lack of participation will be penalized (the scale is proportional to participation).

## Academic Integrity Statement

Academic dishonesty is an offense against the University and course instructors are obligated to report an incident to the Associate Dean for Academic Affairs. Dishonest behavior may also be reported to the UIC Dean of Students. Academic dishonesty includes, but is not limited to, cheating or assisting someone else in academic dishonesty, plagiarism, unauthorized possession of class materials (e.g., tests), and unauthorized changing of one's grade

Students found guilty of engaging in an act of academic dishonesty may receive a failing grade for the assignment or course. Such students may also be prohibited from holding an assistantship or leadership position within the School, and/or be barred from competing for School scholarships and other awards

Two excellent sources which define plagiarism and how to avoid it are located at: <http://www.indiana.edu/~wts/pamphlets/plagiarism.shtml> and <http://owl.english.purdue.edu/owl/resource/589/01/>.

Students are also encouraged to consult their instructor on rules for proper citation.

## Mutual Tolerance and Respect

Public health deals with controversial issues from multiple perspectives and consideration of these issues may cause disagreements among us or may evoke strong personal feelings, depending on our individual experience, histories, identities and worldviews. Therefore, in all of our interactions and communications, it is important that we strive to have mutual respect and tolerance for one another and for any course guests and members of the community with whom we come into contact. If you feel you have been offended by any content or interactions, you are encouraged to discuss this with the instructor or another faculty member (created by the UIC-SPH-CEP on 2/23/05).

## Disability Statement

If you need assistance because of a disability and are registered with the Office of Disability Services at UIC, or if you have an emergency medical condition that affects your ability to function, please inform me immediately by email at: [mihalis@uic.edu](mailto:mihalis@uic.edu).