

Database Development and Use
PLS 290 (1 unit) CRN 78318
Mondays 12-1pm in PES 2004

Faculty Sponsor: Richard Plant

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This seminar is intended to familiarize students with database form and function, and when it is appropriate to use one. We will cover important terminology and concepts during the first couple of weeks, followed by example-based demonstration of these concepts. Each case-study presentation will build upon material covered in the previous lectures/presentations. ANSI SQL (structured query language) will be used extensively throughout this course, therefore individuals not familiar with SQL should see the suggested reading section below. The last 3 weeks of the seminar are reserved for getting your own data into a database. If there is sufficient interest, more advanced or specific database topics can be covered during the last couple of weeks.

After completing the seminar, it is expected that each attendee will be able to:

1. design a simple database schema for their own data
2. have a basic understanding of ANSI SQL (structured query language)
3. perform common queries including sorting, joining, aggregation, etc.
4. extract summarized information from the database
5. connect to the database from statistics software (such as R)

A companion lab section will be sponsored by the geography graduate group, providing an opportunity to work on topics discussed in the seminar section. CRN 84357 GEO 290-001, 2 Units Tuesdays 3-5 in the PES computer lab 1137.

Schedule: (subject to change)

Week 1 (9/29) -- Lecture 1 [DB]: course logistics, structured data, when to use a database

Week 2 (10/6) -- Lecture 2 [DPW]: database fundamentals and terminology

Week 3 (10/13) -- Lecture 3 [DB]: introduction to structured query language (SQL)

Week 4 (10/20) -- Case Study 1 [DPW]: CA Butterfly Database

Week 5 (10/27) -- Case Study 2 [DB]: Digital Soil Survey Database (SSURGO)

Week 6 (11/3) -- Case Study 3 [DB/AS]: Soil Profile Data / Soil Moisture Data

Week 7 (11/10) -- Case Study 4 [QH]: Spatial Databases (PostGIS)

Week 8 (11/17) -- Open: (possibly a holiday)

Week 9 (11/24) -- Open: (data cleaning, validation, QA/QC)

Week 10 (12/1) -- Open: (???)

Suggested Reading:

* The Structured Query Language (SQL): <http://en.wikipedia.org/wiki/SQL>

* Common SQL operations:

- [http://en.wikipedia.org/wiki/Select_\(SQL\)](http://en.wikipedia.org/wiki/Select_(SQL))

- [http://en.wikipedia.org/wiki/Join_\(SQL\)](http://en.wikipedia.org/wiki/Join_(SQL))

* Interactive SQL practice: <http://sqlzoo.net/>

* General definitions at Wikipedia:

- <http://en.wikipedia.org/wiki/Database>

- http://en.wikipedia.org/wiki/Relational_database