

# Database Design and Management

ENR 8890.02 – Ecological Restoration Seminar (2 credits)

Class number – 34616

Spring Semester 2017

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**Instructor:** Matt Davies  
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**Course meetings:**

Day: Tuesdays

Location: Olentangy River Wetland Research Park (Room 128)

Time: 11:30 am – 1:30 pm (2 hours)



*Hey Matt, did you manage to get all the field data entered into Excel yet?*

**Course description:** Is all of your data sitting around going moldy on field record sheets? Do you look at your data in Excel and wonder just how on earth you did all those calculations? Did you just miss-sort your data and find it's now all in the wrong order? Don't worry, help is at hand – call ENR 889 0022 and learn how to stop worrying and learn to love databases. For a one-time fee of 2 credits safe, secure storage of your data and archive management can be yours today.

Storing data in Excel is quick and easy but rarely the stable means to management it in the long-run. Relational databases like Microsoft Access offer multiple advantages in terms of file size, efficiency of data entry and security against data become disorganized or corrupted. Importantly databases allow you to document your “metadata” and the relationships between different levels of your monitoring or experimental design meaning they can be interpreted much more readily by others. Built in queries and reports allow the calculation of summary statistics at the click of a button whilst allowing others to easily see what they do. Forms can make data entry simple and safe by designing input pages that mimic field record sheet and have controls of the type of data that can be entered in a particular field. With multiple journals and federal agencies demanding that data be archived or made publicly accessible databases offer the best way to meet these requirements.

**Course objectives:** This course will introduce the key concepts involved in database design and management using Microsoft Access. This will include – defining the first, second and third “normal forms” for data, building and linking hierarchical data tables, controlling the data types and formats that can be entered for variables, documenting metadata, producing drop-down menus for rapid data-entry, building forms to facilitate data entry and using queries to extract data summaries and import, update

and correct your data. The first few weeks will focus on these key skills with the latter half of the course run as workshops to enable students to build databases for use with existing or planned data.

**Prerequisites:** The course assumes students have a basic understanding of experimental design and statistics and are confident using Microsoft Excel.

**Grading:** The course will be graded based on demonstration of competency in key stages in the database design process. Students will be expected to show the ability to develop:

- Metadata tables
- Tables (with controls on data types)
- Primary keys
- Links between tables
- Relational database structures
- Data import procedures (from Excel or other file types)
- Look-up tables
- Queries (including update and append queries)
- Data entry forms

**Academic misconduct:** Academic misconduct is defined in this course as submitting plagiarized work to meet academic requirements, including the representation of another's works or ideas as one's own; the unacknowledged use and/or paraphrasing of another person's work; and/or the inappropriate unacknowledged use of another person's ideas; and/or the falsification, fabrication, or dishonesty in reporting research results. Students engaged in academic misconduct will be prosecuted accordingly. Please contact an instructor if you have any questions regarding interpretation of this policy.

**Accommodations:** If you need an accommodation based on the impact of a disability, please contact me to discuss as soon as possible. We can discuss the course format, anticipate your needs and explore potential accommodations. I rely on the Office for Disability Services for assistance in verifying the need for accommodations and developing accommodation strategies. If you have not previously contacted the Office for Disability Services, I encourage you to do so (<http://www.ods.ohio-state.edu>, Phone: 614-292-3307). Arrangements can be made for enabling students with language, speech, hearing, or visual impairment to participate in the course, e.g., through assistance of transcribers or readers. Contact the course instructors immediately to discuss if you need some form of accommodation.