

**FACULTY OF ENVIRONMENTAL AND URBAN CHANGE  
YORK UNIVERSITY**

**ENVS 6599B (3 credits) Ecological Footprint Informatics  
Winter 2025**

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Tuesdays 9 AM – 12 Noon on Zoom to be able to include graduate students at University of Iceland

### Short Course Description

This course develops computational analytical skills that are used to produce the National Ecological Footprint and Biocapacity accounts, and which are also transferable to other data-intensive initiatives. These accounts quantify how much of the planet's regenerative capacity is needed, and is available, to support humans with food, fibers, wood products, areas for settlements, and the sequestration of anthropogenic carbon emissions. Requires completion of ENVS 6599A Ecological Footprint Applications.

### Special notes

- You cannot directly enroll in this course through REM. Enrolment is by permission of the instructor through the dossier system; please contact the course director for instructions to enroll through the dossier.
- This course is designed to follow ENVS 6599A Ecological Footprint Informatics held in the fall term.
- This course is held online to enable equal participation of graduate students at University of Iceland.

### Expanded Course Description

By the end of the course, you should be able to: 1) understand different types of data and techniques for optimizing their storage and retrieval and integrity; 2) develop MySQL queries and scripts using MySQL Workbench to upload data and to transform and retrieve data; 3) understand data-cleaning techniques and apply them using data-cleaning scripts in R Studio; 4) use QGIS and Microsoft Excel to visualize spatial and temporal data, respectively; 5) communicate data derived from National Ecological Footprint and Biocapacity Accounts.

Topics are:

- Data types and provenance
- Data integrity
- Scripts & Repositories
- Excel workbooks
- NEFBA data and research
- Charts and graphs
- GIS and geospatial data
- Data cleaning
- Quality assurance
- Modelling and projections
- Data in an organizational and societal context

Success in this course, and the prerequisite course ENVS 6599A Ecological Footprint Applications, will prepare you for the option of summertime work producing national accounts, and optional subsequent work on your major research project/paper/thesis/portfolio.

## Required Hardware and Software

You may use a Windows-based or Mac computer. A second monitor is highly recommended to extend your desktop, so Zoom can be on a separate monitor. This course requires you to install specific software on your computer, at no additional cost to you as a student: MySQL Workbench, R, Microsoft Office 365, QGIS, CotEditor (Mac) or Notepad++ (Windows).

## Anticipated Course Readings or Texts

No textbook is assigned for this course. Academic articles are hyperlinked on the course website and routed through the library proxy. Data and other material are provided through an online file share.

## Evaluation: Grading and Course Requirements

50%: Completing 10 computational assignments, at 5% each

Assignments are problems that can be answered using specialized software to demonstrate computational skills that you will have developed. The problems will be assigned at the end of a session and will be due 20 hours in advance of the next session.

50%: Data Story

A data story will be a succinct blog-style post about an interesting data point (or series) sourced from the most recent edition of the National Ecological Footprint and Biocapacity Accounts. The story will integrate text and informative charts and figures generated by your own computations of the data from our server and any additional data that you source. Optionally, this story will be posted on our research website.

## Important Course information

All students are expected to familiarize themselves with the following information, available on the [Senate Committee on Academic Standards, Curriculum & Pedagogy webpage](#)

- Senate Policy on Academic Honesty and the Academic Integrity Website
- Ethics Review Process for research involving human participants
- Course requirement accommodation for students with disabilities, including physical, medical, systemic, learning and psychiatric disabilities
- Student Conduct Standards
- Religious Observance Accommodation

## Generative Artificial Intelligence (GenAI)

Any unauthorized use of GenAI for assignments in this course will be considered a breach of academic honesty. Any authorized use of GenAI must be cited. Students at York University are governed by [York's Senate Policy on Academic Honesty](#).

## Intellectual Property Notice

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