Research Concepts and Methods in Agent Modelling

COURSE: Research Concepts and Methods in Agent Modelling (COB644)

TECHNICAL REQUIREMENTS:

1. *STABLE INTERNET CONNECTION*   2. *COMPUTER OR LAPTOP*

3. *WORKING MICROPHONE*   4. *WORKING WEBCAM*

COURSE MEETS: Biweekly Meetings (TBD)

ADMIN CONTACT:

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COURSE EXECUTIVES:

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COURSE DESCRIPTION

This is a post-secondary level course developed for the Complex and Organized Behavior Within Environmental Bounds (COBWEB) Program. This transdisciplinary program involves students from various faculties and backgrounds all interested in agent-based modelling.

OBJECTIVES

Essential concepts and practices that all researchers must develop have been identified and included in this course (COB644). The material of this course will be taught at a level that is accessible to all participants regardless of prior experience and specialization. By the end of the course, students will be able to create agent-based models, understand research in a broad range of topics, conduct their own experiments, and effectively communicate their own work.

Schedule

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The Three-Part Course consists of lectures, lab modules, discussions, and presentations by students. Each module will be self-taught and can be done at the student's own pace. Projects will be individual with guidance from mentors and colleagues.

PART 1 - COBWEB & Research Basics:

Lectures and assignments provided during this portion of the course can be done at the student's own pace. Assignments will be provided following each lesson. They are to be completed on Thinkific and students must achieve the minimum score per assignment to progress. Successful completion of Part 1 will unlock Part 2 of the course for students.

COBWEB Basics - Module 1
➔ What Is COBWEB & How to Use It
➔ Double Agents in the Environment: Agent & Environment Tabs
➔ Agents Eating Food & Each Other: Resources & Food Web Tabs
➔ Digital Zoning Laws: Abiotic Factors & Agent Abiotic Tabs
➔ Ah! Toxic Waste: Toxin Tab
➔ Who Is Coughing?: Disease Tab
➔ Even in the Computer There Is Garbage: Waste Tab
➔ Human Statistics & Human-Like Machines: Genetics & AI
➔ To Betray or Not Betray: Prisoner's Dilemma
➔ When Your Teacher Has Nothing More to Teach You: Exploring COBWEB

Troubleshooting COBWEB Technical Issues - Module 2
➔ Good Saving Practices
➔ Addressing Common Technical Problems With COBWEB

Parts of a Paper - Module 3
➔ Overview of Research Article Sections
➔ How to Read and Take Notes on a Scientific Paper

PART 2 - Experimental Basics:

Part 2 can be completed at the student's own pace. A forum page run by a mentor will be available to allow students to ask questions about their project and course content. Each student who successfully completes Part 2 will be admitted into Part 3 to complete their own research project and gain first-hand experience in creating a research project.

Literature Search Workshop - Module 4
- ➔ Identifying a Research Topic
- ➔ Database Searching
- ➔ Reference Managers

Experimental Design - Module 5
- ➔ Types of Studies
- ➔ Scientific Method
- ➔ Translating Experimental Design Into COBWEB

Statistics 101 - Module 6
- ➔ Qualitative vs. Quantitative Data
- ➔ Data Analysis: ANOVA, Kruskal-Wallis Tests, Post Hoc Analysis
- ➔ Errors in Statistics

How to Write and Publish a Manuscript - Module 7
- ➔ Writing Sections of a Manuscript
- ➔ How to Publish a Manuscript
- ➔ Introduction to the Peer Review Process

Poster Presentation Tips - Module 8
- ➔ Poster Presentation Layouts
- ➔ How to Captivate Your Audience

PART 3 - Independent Research Project:

Part 3 allows students to create their independent research projects from identifying their research question to developing a COBWEB model. Mentors will provide one-on-one guidance to students to provide feedback through various platforms including scheduled meetings, forums, and tutorials. Successful projects will have the opportunity to be presented at the annual Canadian National COBWEB Conference.

ACCESSIBILITY

Please contact the course admins if there are any alternative formats required for the course or if other arrangements are suggested to make this course more accessible for you.

PLAGIARISM AND ACADEMIC OFFENCES

Scholastic offences are taken seriously and can result in the termination of the program. Students shall not submit false credentials, cheat on examinations, or falsify any work completed during the program. Plagiarism is not tolerated and is defined as "The act or an instance of copying or stealing another's words or ideas and attributing them as one's own." Excerpted from Black's Law Dictionary, West Group, 1999, 7th ed., p. 1170. This applies equally to assignments and one's own work. Assignments and work completed from external institutions shall not be turned in for credit in the COBWEB program. Students also shall not interfere with the work of others.

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