The Faculty of Science Graduate Admissions & Studies Committee has approved the following courses and offers them for approval.

1.0 Department of Computer Science

Effective date for Motion 1.1: 201820

1.1 Motion that CS 890 EQ – Topics in Geographic Information Systems (GIS): Spatial Analysis, Geoprocessing and Programming (3) be created effective Spring/Summer 2018.

A comprehensive introduction to GIS and spatial analysis, including spatial data models, data visualization and mapping, remote sensing data, geodatabases, spatial analysis, raster and vector analysis, data quality assessment. GIS automation and programming, including model building, GIS programming languages, Python fundamentals, and geoprocessing using Python: working with datasets, geometries, rasters, debugging / error handling, scripting, building / sharing script tools, introduction to Web GIS.

Rationale: Geographic Information Systems (GIS) are computer-based systems designed to access, manipulate, visualize, and analyze a wide array of information that has a geographical reference. GIS is not simply for making maps; it can help discover trends, patterns, associations, and linkages in many types of spatially-tied data across a variety of disciplines and taking advantage of a variety of platforms. Moreover, GIS is not just a tool for geographers: it has wide applications throughout science, engineering, business, and government. GIS-related careers, above the user level, require expertise in problem-solving, organization of solutions, data handling, programming, application development and customization to serve a specific purpose or user group, and software management. GIS involves the integration of spatial and tabular data, knowledge of relational database management systems (RDBMS) and SQL (structured query language) are invaluable. Programming languages, such as Python, are used extend the functionality of traditional desktop GIS applications (e.g., ArcGIS and QGIS). Web applications involve the use of JavaScript and HTML. The course exposes graduate students to potential research and career opportunities. Computer Science students, in particular, will be aware of the potential value their programming, database, and web skills can bring to the field and to the more effective application of GIS in these organizations. GIS programming and automation make the application of GIS more effective. Data science research opportunities involving GIS may include application of GIS in new ways, using different types or sources of data, improving and developing new algorithms for data processing, integration of models, and the application of Artificial Intelligence to spatial analysis and reasoning.

Within the university, GIS has been of interest to students or faculty in biology, kinesiology, business administration, public policy, environmental engineering, geography, and economics, for example. Computer Science can provide new and valuable skills and approaches to these disciplines to enhance their use of GIS, which are not normally available from a strictly geography-focused perspective.
2.0 Department of Biology

Effective date for Motion 2.1: 2018-20

2.1 Motion to change the name of BIOL 835AM from “Quantitative Methods in Biology” to “Modelling Biological Data”.

**Rationale:** BIOL 835AM is an “integrated course” in statistics, focused on the use of R. It is co-taught with BIOL 490BW, which has recently been renamed Modelling Biological Data (it’s original name was also Quantitative Methods in Biology). We think that the two courses should have the same name.

2.2 Motion to modify the course description of BIOL 835AM from: “A guide to contemporary methods for fitting quantitative models to biological data. Emphasizes practical skills in using software for implementing models, testing hypotheses, and making predictions about biological and ecological systems. Students will independently analyze a dataset using methods presented in the course”, to: “A guide to contemporary statistical models for biological data. Emphasizes practical skills in using software for implementing models, testing hypotheses, and making predictions about biological and ecological systems. Prior programming experience is recommended.”

**Rationale:** The updated course description better describes the course.

2.3 Motion to renumber BIOL 835AM to BIOL 810.

**Rationale:** The Biology Dept. has recently approved converting both courses (undergraduate, graduate) to regular courses (as opposed to Selected Topics courses). The Biology Dept. is planning on offering this integrated course on a regular basis, and thus Selected Topics numbering is no longer appropriate.