UNIVERSITY OF TORONTO SCARBOROUGH

OFFICE OF THE CAMPUS COUNCIL

FOR APPROVAL **PUBLIC** **OPEN SESSION**

TO: UTSC Academic Affairs Committee

SPONSOR: Prof. William Gough, Vice-Principal Academic and Dean
CONTACT INFO: 416-208-7027, vpdean@utsc.utoronto.ca

PRESENTER: Prof. Mary Silcox, Vice-Dean, Graduate
CONTACT INFO: 416-208-7027, vdgraduate@utsc.utoronto.ca

DATE: Tuesday, September 27, 2016

AGENDA ITEM: 4

ITEM IDENTIFICATION:

Out-of-Cycle Graduate Curricular Change

JURISDICTIONAL INFORMATION:

University of Toronto Scarborough Academic Affairs Committee (AAC) "is concerned with matters affecting the teaching, learning and research functions of the Campus" (*AAC Terms of Reference, Section 4*). Under section 5.6 of its terms of reference, the Committee is responsible for approval of "Major and minor modifications to existing degree programs." The AAC has responsibility for the approval of Major and Minor modifications to existing programs as defined by the University of Toronto Quality Assurance Process (*UTQAP, Section 3.1*).

GOVERNANCE PATH:

1. **UTSC Academic Affairs Committee [For Approval] (September 27, 2016)**

PREVIOUS ACTION TAKEN:

No previous action in governance has been taken on this item.

HIGHLIGHTS:

One new graduate course is being proposed out-of-cycle to be offered in Winter 2017:

1. Department of Physical and Environmental Sciences
   - EES1137H Quantitative Applications for Data Analysis

FINANCIAL IMPLICATIONS:

There are no net financial implications to the campus operating budget.

RECOMMENDATION:

Be It Resolved,

THAT the new courses submitted by UTSC graduate academic units, as described in the package dated September 6, 2016 and recommended by the Vice-Principal Academic and Dean, Professor William Gough, be approved to be effective immediately for the academic year 2016-17.

DOCUMENTATION PROVIDED:

1. 2016-17 Curriculum Cycle: Graduate Minor Modifications Report 2, dated September 6, 2016

UNIVERSITY OF TORONTO SCARBOROUGH

2016-17 Curriculum Cycle
Graduate Minor Curriculum Modifications Report 2
September 6, 2016

Department of Physical and Environmental Sciences

New Course – EES 1137H Quantitative Applications for Data Analysis
Approved by Graduate Department: August 8, 2016

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New Course	
Course Designator and Number:	*EES1137H*
FCE Weight:	*0.5*
Full Course Title for Transcript:	*Quantitative Applications for Data Analysis*
Abbreviated Title:	*Quantitative Applications*
Available via Student Web Service:	*Y*
Course Type:	*Regular*
Online Course:	*No*
Required Course:	*No*
Grading Scale:	*Letter Grades*
Course Prerequisites, if yes please list:	*none*
Course Credit Exclusions, if yes please list:	*none*

Effective Date

Winter 2017

Course Description

This course provides an introduction to use of programming languages R and Python, and their applications in the biological and physical sciences. Students will use their own data to explore R and Python based statistical packages. Students will be trained in the use of Python for data processing and analysis in bioinformatics, climate science and other areas will be detailed.

Academic Rationale

The ability to analyze data statistically is crucial for a number of fields. While various commercial packages have dominated analyses in the past, both R and Python have arisen as open source, highly versatile platforms for analysis and plotting. The ability to code in Python is an enabling skill for sequence processing or other text based analysis needs such as web development. Acquiring the ability to learn both of these languages, and to become familiar with the various open source tools will promote research success for a variety of graduate students.

Learning Outcomes

Students who complete the course will be able to:
- Write simple code in R and Python;

- Use community shared programs (scripts) in R and Python for wide range of statistical analysis and data analysis purposes.

Similarity/Overlap with other Courses & Consultation

The course description for STA1007, which is cross listed with STAD29 states that it is “a high-speed survey of advanced statistical methods" using R: “review of regression and analysis of variance, logistic regression, survival analysis, MANOVA and repeated measures, discriminant analysis, multidimensional scaling, cluster analysis, principal components, factor analysis, log-linear models”. Although it once included an introduction to R, it no longer does. The proposed course would provide a full introduction to the language and its platforms, and would tailor the statistical instruction to the students’ needs. In addition, this course would compare and contrast R with Python, and introduce the students to the many versatile and different uses of Python script in science.