

# MATHEMATICAL SCIENCE (MSCI)

Department of Mathematics and Statistics, College of Engineering and Physical Sciences

## Major (Honours Program)

Knowledge of Mathematics and Statistics is crucial for understanding our world. This unique program provides a core of both mathematics and statistics with a choice of a Mathematics stream or a Statistics stream. This major also requires the completion of an area of emphasis as listed. Students are encouraged to speak with a Program Counsellor when choosing courses for the selected stream and area of emphasis.

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor. A total of 20.00 credits is required to complete the Major which includes at least 10.00 credits in Mathematics & Statistics, 0.50 credits in Computing and Information Science, and an additional 2.50 credits in an area of emphasis. Of the total credits required, students are required to complete 2.00 Mathematics and/or Statistics credits at the 4000 level and an additional 3.00 Mathematics and/or Statistics credits must be at the 3000 or 4000 level.

**Note:** A major in Mathematical Science cannot be combined with a minor in Mathematical Science, Mathematics, or Statistics.

Code	Title	Credits
<b>Semester 1</b>		
MATH*1160	Linear Algebra I	0.50
MATH*1200	Calculus I <sup>1</sup>	0.50
1.50 credits selected from the College of Arts and the College of Social and Applied Human Sciences <sup>2</sup>		1.50
<b>Semester 2</b>		
MATH*1210	Calculus II <sup>3</sup>	0.50
STAT*2040	Statistics I	0.50
1.50 electives <sup>4</sup>		1.50
<b>Semester 3</b>		
CIS*1300 or CIS*1500	Programming Introduction to Programming	0.50
MATH*2200	Advanced Calculus I	0.50
STAT*3100	Introductory Mathematical Statistics I	0.50
1.00 electives or restricted electives		1.00
<b>Semester 4</b>		
MATH*2130	Numerical Methods	0.50
STAT*2050	Statistics II	0.50
1.50 electives or restricted electives <sup>5</sup>		1.50
<b>Semester 5</b>		
2.50 electives or restricted electives		2.50
<b>Semester 6</b>		
2.50 electives or restricted electives		2.50
<b>Semester 7</b>		
2.50 electives or restricted electives		2.50
<b>Semester 8</b>		

MATH*4440	Case Studies in Mathematics and Statistics	0.50
2.00 electives or restricted electives		2.00

1

MATH\*1080 Elements of Calculus I or IPS\*1500 Integrated Mathematics and Physics I can be taken in place of MATH\*1200 Calculus I

2

These courses should be chosen from the list of Semester 1 requirements as listed in the Program Regulations for the BA.

3

MATH\*1090 Elements of Calculus II or IPS\*1510 Integrated Mathematics and Physics II can be taken in place of MATH\*1210 Calculus II

4

Students are reminded that they must meet the BA distribution requirements of 1.50 credits in the humanities and 1.50 credits in the social sciences. PHIL\*2110 Formal Logic is recommended.

5

CIS\*2500 Intermediate Programming is recommended

Students are required to complete 5.50 credits from either the Mathematics Stream or the Statistics Stream as follows:

### Mathematics Stream

Code	Title	Credits
MATH*2000	Proofs, Sets, and Numbers	0.50
MATH*2210	Advanced Calculus II	0.50
MATH*2270	Applied Differential Equations	0.50
MATH*3160	Linear Algebra II	0.50
MATH*3200	Real Analysis	0.50
3.00 additional credits in MATH or STAT at 3000 level or above of which at least 1.50 credits must be MATH at the 4000 level		3.00

### Statistics Stream

Code	Title	Credits
STAT*3110	Introductory Mathematical Statistics II	0.50
STAT*3240	Applied Regression Analysis	0.50
0.50 additional credits in MATH at 2000 level or above		0.50
1.00 additional credits in MATH or STAT at 2000 level or above		1.00
3.00 additional credits in MATH or STAT at 3000 level or above of which at least 1.50 credits must be STAT at the 4000 level		3.00

## Areas of Emphasis

Students are required to complete 2.50 credits from **one** of the following Areas of Emphasis:

Each Area of Emphasis is 2.50 credits from a single field of study.

### Computer Science (CS) \*

The following credits must be taken:

Code	Title	Credits
CIS*2430	Object Oriented Programming	0.50
CIS*2500	Intermediate Programming	0.50
CIS*2520	Data Structures	0.50

Select at least 1.00 credits from the following:

## 2 Mathematical Science (MSCI)

CIS*3110	Operating Systems I	0.50
CIS*3190	Software for Legacy Systems	0.50
CIS*3490	The Analysis and Design of Computer Algorithms	0.50
CIS*3530	Data Base Systems and Concepts	0.50

\*

Students are reminded that they must meet the BA requirement that at least 7.00 credits must be at the 3000 level of above.

Note: CIS\*2750 Software Systems Development and Integration is recommended in addition to the Area of Emphasis requirements for students interested in Computer Science

### **Economics (ECON) \***

The following credits must be taken:

Code	Title	Credits
ECON*1050	Introductory Microeconomics	0.50
ECON*1100	Introductory Macroeconomics	0.50
ECON*2310	Intermediate Microeconomics	0.50
Select at least 1.00 credits from the following:		
ECON*3100	Game Theory	0.50
ECON*3710	Advanced Microeconomics	0.50
ECON*4710	Advanced Topics in Microeconomics	0.50

\*

Students are reminded that they must meet the BA requirement that at least 7.00 credits must be at the 3000 level of above.

### **Individualized (IND) \***

It is required that 2.50 credits are taken from humanities and social science electives where 1.00 credits must be at the 3000 level or above.

Students declaring an Individualized Area of Emphasis must have their choice of 2.50 credits approved by an academic advisor.

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Students are reminded that they must meet the BA requirement that at least 7.00 credits must be at the 3000 level of above.