

September 2006

Dear Student,

The School of Mathematical Sciences at Rochester Institute of Technology is proud to offer combined undergraduate and graduate programs. In the following pages, you will find details about our programs, requirements, application process, and facilities available. RIT is known for its commitment to career education and life-long learning and this program reflects that philosophy.

If you have any questions or concerns, please feel free to contact me. You may also use our web site, [math.rit.edu](http://math.rit.edu), to request an application packet and graduate catalog.

We hope that you will give serious consideration to this program as you plan to meet your higher education goals.

Sincerely,



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# CONTENTS

## **B.S. and M.S. (M.B.A.) Programs from different colleges**

**B.S. in Computational Mathematics and M.S. in Computer Science (SMAK)**

**B.S. in Applied Mathematics (Business Concentration) and M.B.A.**

**B.S. in Applied Statistics (Business Concentration) and M.B.A.**

**B.S. in Applied Statistics and M.S. in Applied Statistics (SMAZ)**

## **B.S. and M.S. Programs from the Department of Mathematics & Statistics**

**B.S. in Computational Mathematics and M.S. in Applied Mathematics (SMAN)**

**B.S. in Applied Mathematics and M.S. in Applied Mathematics (SMAI)**

**B.S. in Applied Statistics and M.S. in Applied Mathematics (SMAD)**



The School of Mathematical Sciences offers seven options for combining undergraduate and graduate degrees, enabling the students to complete bachelors' and masters' degrees in one year of full-time study beyond the normal undergraduate requirements. The seven options are:

- B.S. in Computational Mathematics and M.S. in Computer Science (SMAK)
- B.S. in Applied Mathematics (Business Concentration) and M.B.A.
- B.S. in Applied Statistics (Business Concentration) and M.B.A.
- B.S. in Applied Statistics and M.S. in Applied Statistics (SMAZ)
- B.S. in Computational Mathematics and M.S. in Applied Mathematics (SMAN)
- B.S. in Applied Mathematics and M.S. in Applied Mathematics (SMAI)
- B.S. in Applied Statistics and M.S. in Applied Mathematics (SMAD)

### **WHAT ARE COMBINED PROGRAMS?**

An undergraduate (BS) degree requires a minimum 180 qch and a master's degree requires a minimum of 45 qch by New York State law. Thus, to get a BS and an MS (or MBA), a minimum of 225 qch is required. However, most BS degrees require more than 180 qch (for examples: SMAM-184, SMAC-189, and SMAS-188) and most MS degrees require more than 45 qch (for example, the RIT MBA requires 72 qch). Also, most MS degrees have prerequisites that must be taken before entering the MS program or during the MS program (for example, the MS in Computer Science has 8 computer science prerequisite courses).

Combined programs take into account the 'overlap' between BS and MS programs to obtain a combined program with fewer total credit hours required than would be needed by taking the BS and MS independently. RIT has two types of combined programs: Dual Degree Programs and Accelerated Programs. A dual degree program is one in which the student is enrolled in both the BS and MS program at the same time. For example, a student could get a BS degree in computational mathematics (SMAC) and then get an MS in computer science (VCSG), or that same student could enter the combined program (SMAK), at the completion of which the student would get both the BS in computational mathematics and the MS in computer science. An accelerated program is one where the student still enrolls in the separate BS and MS programs but where there is an agreement between the BS and MS departments that allows the student to take fewer graduate courses provided that he/she takes certain undergraduate courses as part of the BS program.

Dual degree programs available to School of Mathematical Sciences majors are:

- B.S. in Computational Mathematics and M.S. in Computer Science (SMAK)
- B.S. in Applied Statistics and M.S. in Applied Statistics (SMAZ)
- B.S. in Computational Mathematics and M.S. in Applied Mathematics (SMAN)
- B.S. in Applied Mathematics and M.S. in Applied Mathematics (SMAI)
- B.S. in Applied Statistics and M.S. in Applied Mathematics (SMAD)

Accelerated programs available to School of Mathematical Sciences majors are:

- B.S. in Applied Mathematics (Business Concentration) and M.B.A.
- B.S. in Applied Statistics (Business Concentration) and M.B.A.

## **APPLICATION AND ACCEPTANCE PROCEDURES**

Students may apply to the appropriate graduate program while in the fourth or fifth year of their undergraduate studies and must complete all the admission requirements of the graduate program. For the dual degree options the student must inform the Head of the School of Mathematical Sciences in writing of his/her desire to pursue the BS/MS option. To denote their dual status the students' program codes will be changed as follows:

B.S. in Computational Mathematics and M.S. in Computer Science: SMAC to SMAK  
B.S. in Applied Statistics and M.S. in Applied Statistics: SMAS to SMAZ  
B.S. in Computational Mathematics and M.S. in Applied Mathematics: SMAC to SMAN  
B.S. in Applied Mathematics and M.S. in Applied Mathematics: SMAM to SMAI  
B.S. in Applied Statistics and M.S. in Applied Mathematics: SMAS to SMAD

As the student approaches completion of the dual degree program the student needs to apply for both degrees. Both departments (the undergraduate and graduate) will certify the student following his/her graduation date and the Registrar's Office will record both degrees at the same time.

A student who begins one of the dual degree programs and cannot continue graduate study but has completed all the undergraduate requirements will be awarded the appropriate undergraduate degree. Should the student decide at a future time to complete graduate study, then the full requirements of the graduate curriculum at that time will apply. There will be no reduction in required credit and no overlapping credit; graduate courses that had previously been used to fulfill undergraduate requirements will not apply toward the master's degree.

All students considering a combined program should consult with the Undergraduate Programs Director in the School of Mathematical Sciences as early in their undergraduate program as possible about the proper undergraduate courses to take to ensure success in their combined program. It is also important that the student consult with the Graduate Program Director in the MS program they choose.

Applied Mathematics (SMAM) or Applied Statistics (SMAS) students who wish to pursue the accelerated MBA should take the GMAT exam in their last year of undergraduate study and apply for admission to the MBA program in the College of Business.

## **TUITION AND FEES**

Students will pay the normal undergraduate tuition and fees until the minimum quarter credit hours have been completed for their program [189 for Computational Mathematics (SMAC), 184 for Applied Mathematics (SMAM) and 188 for Applied Statistics (SMAS)]. Upon completion of these quarter credit hours, the normal graduate tuition and fees will apply in each successive quarter.

## SPECIFICS OF EACH OPTION

### Accelerated MBA for Applied Mathematics and Applied Statistics

The traditional MBA program requires 18 courses or 72 quarter credit hours. Of the 18 courses required for the MBA, 7 are foundation courses. A maximum of 6 of the 7 foundation courses may be waived in the MBA if the student has obtained a grade of at least ‘B’ in certain undergraduate courses. The following table lists the MBA foundation courses and equivalent undergraduate courses:

<b>College of Business MBA Foundation Course</b>	<b>Undergraduate Courses(s)</b>
0101-703 Financial Accounting	0101-301 Financial Accounting 0101-302 Managerial Accounting
0102-740 Organization Behavior & Leadership	0102-430 Organizational Behavior <i>and choose one from the following:</i> 0102-460 Management & Leadership 0102-536 Organizational Performance & Design 0102-462 Management Development
0106-782 Statistical Analysis for Decision Making	1016-351 Probability & Statistics I 1016-352 Probability & Statistics II
0103-705 Economics for Managers	0511-301 Principles of Economics I 0511-401 Principles of Economics II
0105-761 Marketing for Customer Satisfaction	0105-463 Principles of Marketing <i>and choose one from the following:</i> 0105-505 Buyer Behavior & Satisfaction 0105-530 Marketing Channels
0104-721 Financial Analysis for Managers	0104-441 Corporate Finance <i>and choose one from the following:</i> 0104-5-452 Managing Corporate Assets & Liability 0104-453 Intermediate Investments
0106-743 Operations Management	0106-401 Operations Management

SMAM and SMAS students fulfill the requirements for 0106-782 under mathematics requirements in the undergraduate program. Students who select an Economics concentration or minor in Liberal Arts fulfill the requirements for 0103-705. Requirements for the remaining 4 foundation courses may be taken in free electives (SMAM and SMAS) and in the Technical Concentration for SMAM and in the Math/Stat/Concentration courses for SMAS. SMAM students have 21 to 24 qch available (in free electives and technical concentration) and SMAS students have 29 to 32 qch available (in free electives and math/stat/concentration) to fulfill the requirements for the remaining foundation courses.

Students must submit an application for admission into the MBA program. Minimum GMAT scores and GPA's as specified by the Association to Advance Collegiate Schools of Business (AACSB) are required.

### **BS in Computational Mathematics and MS in Computer Science**

This is a dual degree program with the School of Mathematical Sciences in the College of Science and the Computer Science Department in the B. Thomas Golisano College of Computing and Information Sciences. A computational mathematics major (SMAC) selecting this option (SMAK) should take the following computer science courses as Computer Science Required Electives in his/her undergraduate program:

1. 4003-450 Programming Language Concepts or 4003-709 Programming Language Concepts
2. 4003-440 Operating Systems I or 4003-713 Operating Systems

A computational mathematics major interested in this program should consult with the Undergraduate Programs Director in the School of Mathematical Sciences and the Graduate Programs Director in the Department of Computer Science.

### **BS in Applied Statistics and MS in Applied Statistics**

This is a dual degree program with the School of Mathematical Sciences in the College of Science and the Applied Statistics Department in the College of Engineering. An applied statistics major (SMAS) selecting this option (SMAZ) should consult with the Undergraduate Programs Director in the School of Mathematical Sciences and the Graduate Programs Director in the Department of Applied Statistics.

### **B.S. in Computational Mathematics and M.S. in Applied Mathematics**

#### **B.S. in Applied Mathematics and M.S. in Applied Mathematics**

#### **B.S. in Applied Statistics and M.S. in Applied Mathematics**

These are dual degree programs in the School of Mathematical Sciences in the College of Science. An applied mathematics major selecting this option (SMAI), an applied statistics major selecting this option (SMAD), or a computational mathematics major selecting this option (SMAN) should consult with the Undergraduate Programs Director and the Graduate Coordinator in the School of Mathematical Sciences.

## BS IN APPLIED MATHEMATICS / MASTER OF BUSINESS ADMINISTRATION

(Suggested Schedule For Taking Courses)

<u>YEAR</u>	<u>FALL</u>	<u>WINTER</u>	<u>SPRING</u>
<b>1st</b>	1016-210 1016-281 4003-231 *LA or SCI LA 1105-048	1016-211 1016-282 4003-232 SCI LA 1105-049	1016-283 1016-265 LA SCI Physical Ed Activity
<b>2nd</b>	1016-305 1016-351 LA *SCI or LA	1016-306 1016-352 1016-399 ELECTIVE LA	Math Elective 1016-331 ELECTIVE LA
	<u><b>FALL/WINTER</b></u>		<u><b>SPRING/SUMMER</b></u>
<b>3rd</b>	1016-432 1016-461 MATH ELECTIVE APPLICATIONS MINOR LA		MATH ELECTIVE MATH ELECTIVE APPLICATIONS MINOR LA LA LA SENIOR SEMINAR
<b>4th/5th</b>	1016-411 1016-531 MATH ELECTIVE APPLICATIONS MINOR LA ** 1016-511 or 1016-512 LA		1016-412 1016-532 MATH ELECTIVE LA LA SENIOR SEMINAR Physical Ed Activity

**\*NOTE:** LA denotes a Liberal Arts course and SCI denotes a Science course. The student should carefully choose the sequencing of Liberal Arts and Science courses in consultation with her/his advisor, especially with respect to pre-requisites (e.g., physics requires a quarter of calculus).

**\*\*NOTE:** Only one of 1016-511 or 512 is required. Any of the others may be taken as electives.

**NOTE:** In order to qualify for the 'Accelerated MBA', it is strongly suggested that the student select Economics (ECO) for the LA Concentration and 'Business (MBA)' for the Technical Minor. The suggested courses are listed on the checklist for the BS in Applied Mathematics that is included in the appendix.

**BS in APPLIED STATISTICS/ MASTER OF BUSINESS ADMINISTRATION**

(Suggested Schedule for Taking Courses)

<b><u>YEAR</u></b>	<b><u>FALL</u></b>	<b><u>WINTER</u></b>	<b><u>SPRING</u></b>
<b>1st</b>	1016-210	1016-211	1016-283
	1016-281	1016-282	1016-265
	4003-231	SCI	1016-260
	*SCI/LA	LA	SCI
	LA	Elective	Wellness Activity
	1105-048	1105-049	
<b>2nd</b>	1016-305	1016-306	1016-353
	1016-351	1016-352	1016-360 (co-req of 353)
	LA	1016-399	1016-331
	*LA/SCI	LA	***1016-358
		ELECTIVE	LA
	<b><u>FALL/WINTER</u></b>		<b><u>SPRING/SUMMER</u></b>
<b>3rd</b>	1016-432		ELECTIVE
	1016-355(Fall)		MATH ELECTIVE
	1016-354(Winter)		ELECTIVE
	LA		LA
	*** 1016-457		
<b>4th</b>	1016-454 (FALL)		**MATH ELECTIVE
	**MATH ELECTIVE		**MATH ELECTIVE
	LA		ELECTIVE
	LA		LA
<b>5th</b>	1016-451 (WINTER)		1016-452
	LA		1016-555
	LA SENIOR SEMINAR		LA
	**MATH ELECTIVE		Physical Ed Activity

**\*NOTE:** LA denotes a Liberal Arts courses and SCI denotes a Science course. The student should carefully choose the sequencing of Liberal Arts and Science courses in consultation with her/his advisor, especially with respect to pre-requisites (e.g., physics requires a quarter of calculus).

**\*\*NOTE:** Up to 16 quarter credit hours of required math/statistics electives may be chosen from the approved courses listed under the Applied Mathematics minor in the School of Mathematical Sciences BS Student Handbook. In order to qualify for the ‘Accelerated MBA’, students should take courses from the SMAM business technical minor here and in free electives and select Economics (ECO) as the LA concentration.

**\*\*\*NOTE:** Only one of 1016-358 or 457 is required. The other course may be taken as an elective.

**BS in Applied Mathematics or Applied Statistics and MBA (continued)**

<u>YEAR</u>	<u>FALL</u>	<u>WINTER</u>	<u>SPRING</u>
6 <sup>th</sup>	0102-759	Business Conc.	Business Elective
	0102-710	Elective	Elective
	0102-740 or	Elective	Elective
	0104-721 or	Business Conc.	Elective
	0105-761		
	Business Conc.		

**NOTE:** The schedule shown above allows for up to six quarters of co-operative education experience, thus enabling the student to complete his/her requirements in one year beyond the five year BS in Applied Mathematics or Applied Statistics program. Another option, without co-op or with minimal co-op, enables the student to complete the entire combined option in a total of five years.

**NOTE:** This particular plan of study is based upon the undergraduate and graduate requirements in effect in 2003-04. Plans for other years will be similar but may have different requirements. Students should create and approve a schedule with a graduate advisor in the College of Business and in consultation with the Director of Undergraduate Programs in the Department of Mathematics & Statistics.

**NOTE:** The above schedule is for the Accelerated track with one concentration area.

**NOTE:** Students must take the Graduate Management Admission Test (GMAT) before requesting admission to MBA program

**College of Business Courses Listed in the Document**

Fall Quarter Courses

0102-759 Competitive Strategy	(core)
0102-710 Management Information Systems Concepts	(core)
One of the Following:	
0102-740 Organizational Behavior & Leadership	(core)
0104-721 Financial Analysis for Managers	(core)
0105-761 Marketing Concepts	(core)

The Winter and Spring quarters consist of 4 Business Concentration courses and 5 Elective courses (outside the selected Business concentration). The electives must be selected from the Business Concentrations and the Technical Concentrations.

Business Concentrations: Corporate Accounting, CPA Accounting, Finance, Marketing & Sales Management, Marketing Research, International Business, Management & Leadership, Entrepreneurship

Technology Concentrations: Technology Management, Management Information Systems, E-Business Marketing, Quality & Organizational Improvement, Manufacturing Management, Quality & Applied Statistics

**BS in COMPUTATIONAL MATHEMATICS / MS in COMPUTER SCIENCE**

**SMAK**

(Suggested Schedule for Taking Courses)

<b><u>YEAR</u></b>	<b><u>FALL</u></b>	<b><u>WINTER</u></b>	<b><u>SPRING</u></b>
<b>1st</b>	1016-210 1016-281 4003-231 *LA or SCI LA 1105-048	1016-211 1016-282 4003-232 SCI LA 1105-049	1016-283 1016-265 4003-233 SCI Physical Ed Activity
<b>2nd</b>	1016-305 1016-351 4003-334 *LA or SCI	1016-306 1016-352 1016-399 **SMAC Concentration LA	1016-331 **SMAC Concentration ELECTIVE LA
	<b><u>FALL/WINTER</u></b>		<b><u>SPRING/SUMMER</u></b>
<b>3rd</b>	1016-432 1016-467 COMP SCI ELECTIVE LA 1016-461 ** SMAC Concentration		MATH ELECTIVE 4010-361 LA LA ** SMAC Concentration
<b>4th/5th</b>	1016-411 1016-511 1016-531 ELECTIVE LA LA 1016-512 ** SMAC Concentration		1016-532 MATH ELECTIVE ** SMAC Concentration LA LA - Senior Seminar LA LA Physical Ed Activity

**\*NOTE:** LA denotes a Liberal Arts course and SCI denotes a Science course. The student should carefully choose the sequencing of Liberal Arts and Science courses in consultation with her/his advisor, especially with respect to pre-requisites (e.g., physics requires a quarter of calculus).

**\*\*NOTE:** SMAC Concentration. Five are required. Two must be Math/Stat and two must be Computer Science. The 5<sup>th</sup> may be either Math/Stat or Comp Sci.

**NOTE:** Students who do not choose CS elective courses 4003-450 Prog. Language Concepts & 4003-440 Operating Systems I need to take these courses (or 4003-709 and 4003-713) as part of the CS 'Bridge Program' before starting graduate program.

BS/MS SMAK (continued)

<u>YEAR</u>	<u>FALL</u>	<u>WINTER</u>	<u>SPRING</u>
6 <sup>th</sup>	4005-700	4005-730	4005 Elective
	4005-710	4005-800	4005 Elective
	4005-720	4005 Elective	4005 Elective
		4005 Elective	4005 Project

**NOTE:** The schedule shown above allows for up to six quarters of co-operative education experience, thus enabling the student to complete his/her requirements in one year beyond the five year BS in Computational Mathematics program. Another option, without co-op or with minimal co-op, enables the student to complete the entire combined option in a total of five years.

**NOTE:** This particular plan of study is based upon the undergraduate and graduate requirements in effect in 2003-4. Plans for other years will be similar, but may have different requirements. Students should create and approve a schedule with a graduate advisor in the Computer Science Department and in consultation with the Director of Undergraduate Programs in the Department of Mathematics & Statistics.

**Computer Science Department Courses Listed in Document**

Prerequisites (Bridge Program): 4003-450 and 4003-440 or 4003-709 and 4003-713

**Fall Quarter Courses**

4005-700 Foundations of Computing Theory	(4 qch)
4005-710 Programming Language	(4 qch)
4005-720 Computer Architecture	(4 qch)

**Winter Quarter Courses**

4005-730 Distributed Operating Systems I	(4 qch)
4005-800 Theory of Computer Algorithms	(4 qch)
4005 Elective	(4 qch)
4005 Elective	(4 qch)

**Spring Quarter Courses**

4005 Elective	(4 qch)
4005 Elective	(4 qch)
4005 Elective	(4 qch)
4005-891 Project	(5 qch)

**NOTE:** Total of 45 qch in MS program. The SMAK degree is 189 qch. Total qch for BS/MS is 189+45= 234 qch (exceeds NYS minimum of 225 qch).

**NOTE:** The above program is for 10 courses plus a project. A student may also take 9 courses plus a thesis (9 qch) (4005-890 Thesis).

**BS in APPLIED STATISTICS/ MS in APPLIED STATISTICS**

**SMAZ**

(Suggested Schedule for Taking Courses)

<b><u>YEAR</u></b>	<b><u>FALL</u></b>	<b><u>WINTER</u></b>	<b><u>SPRING</u></b>
<b>1st</b>	1016-210 1016-281 4003-231 *SCI/LA LA 1105-048	1016-211 1016-282 SCI LA Elective 1105-049	1016-283 1016-265 1016-260 SCI Wellness Activity
<b>2nd</b>	1016-305 1016-351 LA *LA/SCI	1016-306 1016-352 1016-399 LA ELECTIVE	1016-353 1016-360 (co-req of 353) 1016-331 ***1016-358 LA
	<b><u>FALL/WINTER</u></b>		<b><u>SPRING/SUMMER</u></b>
<b>3rd</b>	1016-432 1016-355(Fall) 1016-354(Winter) LA *** 1016-457		ELECTIVE MATH ELECTIVE ELECTIVE LA
<b>4th</b>	1016-454 (FALL) **MATH ELECTIVE LA LA		**MATH ELECTIVE **MATH ELECTIVE ELECTIVE LA
<b>5th</b>	1016-451 (WINTER) LA LA SENIOR SEMINAR **MATH ELECTIVE		1016-452 1016-555 LA Physical Ed Activity

**\*NOTE:** LA denotes a Liberal Arts courses and SCI denotes a Science course. The student should carefully choose the sequencing of Liberal Arts and Science courses in consultation with her/his advisor, especially with respect to pre-requisites (e.g., physics requires a quarter of calculus).

**\*\*NOTE:** Up to 16 quarter credit hours of required math/statistics electives may be chosen from the approved courses listed under the Applied Mathematics minor in the School of Mathematical Sciences BS Student Handbook.

**\*\*\*NOTE:** Only one of 1016-358 or 457 is required. The other course may be taken as an elective.

BS/MS SMAZ (continued)

<u>YEAR</u>	<u>FALL</u>	<u>WINTER</u>	<u>SPRING</u>
6 <sup>th</sup>	0307-782	0307-731	0307-784
	0307-830	0307-802	0307-803
	0307-856	0307-831	0307-842
	0307-875	0307-862	0307-824 or 0307-883

**NOTE:** The schedule shown above allows for up to six quarters of co-operative education experience, thus enabling the student to complete his/her requirements in one year beyond the five year BS in Applied Statistics program. Another option, without co-op or with minimal co-op, enables the student to complete the entire combined option in a total of five years. Co-op is available at the graduate level, if desired.

**NOTE:** This particular plan of study is based upon the undergraduate and graduate requirements in effect in 2003-04. Plans for other years will be similar, but may have different requirements. Students should create and approve a schedule with a graduate advisor in the Applied Statistics Department and in consultation with the Director of Undergraduate Programs in the Department of Mathematics & Statistics.

**Applied Statistics Department Graduate Courses Listed in the Document**

**Fall Quarter Courses**

0307-782 Quality Engineering	(3 or 4 qch)
0307-830 Multivariate-Theory	(3 qch)
0307-856 Interpretation of Data	(3 qch)
0307-875 Empirical Model Building	(3 qch)

**Winter Quarter Courses**

0307-731 Statistical Acceptance Control	(3 or 4 qch)
0307-802 Design of Experiments II	(3 or 4 qch)
0307-831 Multivariate-Applications	(3 qch)
0307-862 Reliability Statistics I	(3 qch)

**Spring Quarter Courses**

0307-784 Statistical Consulting	(3 qch)
0307-803 Design of Experiments III	(3 qch)
0307-842 Regression Analysis II	(3 or 4 qch)
0307-824 Probability Models	(3 qch)
or 0307-883 Quality Engineering by Design	(3 qch)

Total of 37 qch (so long as one of the above courses listed as '3 or 4 qch' is taken for 4 qch). The SMAS degree is 188 qch:  $188+37=225$  qch (minimum required by NYS).

**NOTE:** If a SMAS student opts for 1016-457 Research Sampling and does not take 1016-358 Statistical Quality Control, then the student must take 0307-721 Statistical Process Control in the Fall Quarter (rather than 0307-875 Empirical Model Building).

**BS IN APPLIED MATHEMATICS / MS IN APPLIED MATHEMATICS**

**SMAI**

(Suggested Schedule For Taking Courses)

<b><u>YEAR</u></b>	<b><u>FALL</u></b>	<b><u>WINTER</u></b>	<b><u>SPRING</u></b>
<b>1st</b>	1016-210 1016-281 4003-231 *LA or SCI LA 1105-048	1016-211 1016-282 4003-232 SCI LA 1105-049	1016-283 1016-265 LA SCI Physical Ed Activity
<b>2nd</b>	1016-305 1016-351 LA *SCI or LA	1016-306 1016-352 1016-399 ELECTIVE LA	Math Elective 1016-331 ELECTIVE LA
	<b><u>FALL/WINTER</u></b>		<b><u>SPRING/SUMMER</u></b>
<b>3rd</b>	1016-432 1016-461 MATH ELECTIVE APPLICATIONS MINOR LA		MATH ELECTIVE MATH ELECTIVE APPLICATIONS MINOR LA LA LA Senior Seminar
<b>4th/5th</b>	1016-411 1016-531 MATH ELECTIVE APPLICATIONS MINOR LA ** 1016-511 or 1016-512 LA		1016-412 1016-532 MATH ELECTIVE LA LA SENIOR SEMINAR Physical Ed Activity

**\*NOTE:** LA denotes a Liberal Arts course and SCI denotes a Science course. The student should carefully choose the sequencing of Liberal Arts and Science courses in consultation with her/his advisor, especially with respect to pre-requisites (e.g., physics requires a quarter of calculus).

**\*\*NOTE:** Only one of 1016-511, 512 or 437 is required. Any of the others may be taken as electives.

**BS in APPLIED STATISTICS/ MS in APPLIED MATHEMATICS**

**SMAD**

(Suggested Schedule for Taking Courses)

<b><u>YEAR</u></b>	<b><u>FALL</u></b>	<b><u>WINTER</u></b>	<b><u>SPRING</u></b>
<b>1st</b>	1016-210 1016-281 4003-231 *SCI/LA LA 1105-048	1016-211 1016-282 SCI LA Elective 1105-049	1016-283 1016-265 1016-260 SCI Wellness Activity
<b>2nd</b>	1016-305 1016-351 LA *LA/SCI	1016-306 1016-352 1016-399 LA ELECTIVE	1016-353 1016-360 (co-req 353) 1016-331 LA
	<b><u>FALL/WINTER</u></b>		<b><u>SPRING/SUMMER</u></b>
<b>3rd</b>	1016-432 1016-355(Fall) 1016-354(Winter) LA *** 1016-457		ELECTIVE MATH ELECTIVE ELECTIVE LA
<b>4th</b>	1016-454 (FALL) **MATH ELECTIVE LA LA		**MATH ELECTIVE **MATH ELECTIVE ELECTIVE LA
<b>5th</b>	1016-451 (WINTER) LA LA SENIOR SEMINAR **MATH ELECTIVE		1016-452 1016-555 LA Physical Ed Activity

**\*NOTE:** LA denotes a Liberal Arts courses and SCI denotes a Science course. The student should carefully choose the sequencing of Liberal Arts and Science courses in consultation with her/his advisor, especially with respect to pre-requisites (e.g., physics requires a quarter of calculus).

**\*\*NOTE:** Up to 16 quarter credit hours of required math/statistics electives may be chosen from the approved courses listed under the Applied Mathematics minor on in the School of Mathematical Sciences BS Student Handbook.

**\*\*\*NOTE:** Only one of 1016-358 or 457 is required. The other course may be taken as an elective.

**BS in COMPUTATIONAL MATHEMATICS / MS in APPLIED MATHEMATICS**

**SMAN**

(Suggested Schedule for Taking Courses)

<b><u>YEAR</u></b>	<b><u>FALL</u></b>	<b><u>WINTER</u></b>	<b><u>SPRING</u></b>
<b>1st</b>	1016-210 1016-281 **4003-231 *LA or SCI LA 1105-048	1016-211 1016-282 4003-232 SCI LA 1105-049	1016-283 1016-265 4003-233 SCI Physical Ed Activity
<b>2nd</b>	1016-305 1016-351 4003-334 *LA or SCI	1016-306 1016-352 1016-399 ***SMAC Concentration LA	1016-331 4003-352 ELECTIVE LA
	<b><u>FALL/WINTER</u></b>		<b><u>SPRING/SUMMER</u></b>
<b>3rd</b>	1016-432 1016-467 COMP SCI ELECTIVE LA 1016-461 ***SMAC Concentration		MATH ELECTIVE 4010-361 LA LA ***SMAC Concentration
<b>4th/5th</b>	1016-411 1016-511 1016-531 ELECTIVE LA LA 1016-512 ***SMAC Concentration		1016-532 MATH ELECTIVE ***SMAC Concentration LA LA - Senior Seminar LA Physical Ed Activity

**\*NOTE:** LA denotes a Liberal Arts course and SCI denotes a Science course. The student should carefully choose the sequencing of Liberal Arts and Science courses in consultation with her/his advisor, especially with respect to pre-requisites (e.g., physics requires a quarter of calculus).

**\*\*NOTE:** The sequence 4002-208/210 may be substituted for 4003-231/232. If this substitution is made, the third course of the sequence should be 4003-263, Computer Science for Transfers, which is offered Fall Quarter.

**\*\*\*NOTE:** Only one of 1016-358 or 457 is required. The other course may be taken as an elective.

BS/MS SMAI, SMAD OR SMAN (continued)

<u>YEAR</u>	<u>FALL</u>	<u>WINTER</u>	<u>SPRING</u>
6 <sup>th</sup>	1016-712 1016-767 Concentration Concentration	1016-725 Concentration Concentration Concentration	1016-807 Concentration Thesis or Project

The program consists of:

Four core courses:

1016-712	Numerical Linear Algebra	4 qch
1016-807	Boundary Value Problems	4 qch
1016-725	Stochastic Processes	4 qch
1016-767	Combinatorics	4 qch

Six concentration courses (24 qch):

These six specialized courses are selected by the student, in consultation with his or her Advisory Committee, to form a well-defined and meaningful concentration. Examples of concentrations are Operations Research, Biomathematics, Discrete Mathematics, Differential Equations/Dynamic Systems, Imaging Sciences, and Computer Sciences.

Thesis or project work:

The core and concentration courses provide the information necessary to analyze the thesis topic or to undertake the project work.