Montclair State University
College of Science and Mathematics
Bachelor of Science in Science Informatics
Major Effective Fall 2003
General Education Effective Fall 2002
Degree Requirements

I. MAJOR REQUIREMENTS

CORE COURSES	67	SEMESTER HOURS
CONCENTRATION COURSES	17-18	SEMESTER HOURS [1]

II. GENERAL EDUCATION REQUIREMENTS 37 SEMESTER HOURS [2]

A. New Student Seminar (included in major, SCIF 151)	0
B. Interdisciplinary Courses	
1. GNED 201 Contemporary Issues I: Scientific Issues (waived by major course in major SCIF 491)	0
2. GNED 202 Contemporary Issues II: National Issues	3
3. GNED 303 Contemporary Issues III: Global Issues	3
C. Communications	
1. ENWR 105 Writing/Literature	6
2. ENWR 106 Communication	3
D. Fine and Performing Arts	3
E. World Languages	3-6
F. Humanities	
1. World Literature/General Humanities	3
2. Philosophy/Religion	3
G. Computer Science (waived by course in major, CMPT 183)	0
H. Mathematics (waived by course in major, MATH 122)	0
G. Natural/Physical Sciences (waived by course in major, CHEM 120)	0
J. Physical Education	1
K. Social Science	
1. American or European History	3
2. Non-Western Cultural Perspectives	3
3. Social Science Course	0-3
L. General Education Elective (waived by course in major, BIOL 230)	0

TOTAL CREDITS REQUIRED TO COMPLETE THE MAJOR 121-122 SEMESTER HOURS

MINIMUM TOTAL FOR GRADUATION 120 SEMESTER HOURS

1 The number of semester hours required to complete a concentration depends on the concentration selected.

2 The number of semester hours required to complete the general education requirement in category K depends on the number of courses needed to fulfill the Foreign Language requirement. Students required to take 6 semester hours to meet the foreign language requirement will take 6 semester hours in the Social Science category. Students required to take 3 semester hours to meet the foreign language requirement will take 9 semester hours in the Social Science category. For students who take 6 semester hours of foreign language, the courses SCIF 153 & SCIF 475 will be used to meet the Social Science requirement in category K. 3.

Montclair State University
College of Science and Mathematics
Bachelor of Science in Science Informatics
Major Effective Fall 2003
Major Requirements

NAME _____ SSN _____ DATE _____

I. Major Requirements – core courses required of all majors (67)

Required Science Informatics Courses			(16)
SCIF	151	Colloquium in Science Informatics I	(1)
SCIF	152	Colloquium in Science Informatics II	(1)
SCIF	253	Colloquium in Science Informatics III	(1)
SCIF	254	Colloquium in Science Informatics IV	(1)
SCIF	250	SCIF Sophomore Summer Internship	(2)
SCIF	350	SCIF Junior Summer Internship	(2)
SCIF	475	Ethics in Science Informatics	(2)
SCIF	491	Research Experience in Science Informatics I	(3)
SCIF	492	Research Experience in Science Informatics II	(3)
Required Biology and Molecular Biology Courses			(11)
BIOL	230	Cell and Molecular Biology	(4)
BIOL	380	Genetics	(4)
BIOL	434	Introduction to Molecular Biology	(3)
Required Chemistry and Biochemistry Courses			(17)
CHEM	120	General Chemistry I	(4)
CHEM	121	General Chemistry II	(4)
CHEM	230	Organic Chemistry I	(3)
CHEM	231	Organic Chemistry II	(3)
CHEM	470	Biochemistry I	(3)
Required Computer Science Courses			(13)
CMPT	183	Foundations of Computer Science I	(3)
CMPT	184	Foundations of Computer Science II	(3)
CMPT	250	Web Tools: Perl, XML & JavaScript	(2)
CMPT	287	Data Structures, Algorithms & File Structures	(4)
CMPT	300	Introduction to Science Data Bases	(1)
Required Mathematical Sciences Courses			(10)
MATH	122	Calculus I	(4)
CMPT	285	Discrete Mathematics	(3)
STAT	440	Fundamentals of Modern Statistics	(3)

The above courses are taken by all Science Informatics majors and provide them with a broad knowledge base in the foundations of the discipline. In addition majors must select one of three concentrations; Biochemistry, Computer Science or Molecular Biology. The concentration provides a deeper understanding in one of the disciplines. The requirements for each concentration are listed on the next page.

Additional Courses in one of the three Required Concentrations (17 - 18)

Concentration in Biochemisty			(17)
	CHEM 232	Experimental Organic Chemistry I	(2)
	CHEM 450	Computational Chemistry	(3)
	CHEM 471	Biochemistry II	(3)
	CHEM 472	Experimental Biochemistry I	(2)
	CHEM 473	Instrumental Biochemistry Lab	(3)
	CMPT 371	Software Engineering I	(4)
Concentration in Computer Science			(17)
	CMPT 280	Assembly Language and Computer Architecture	(3)
	CMPT 350	Parallel and Distributed Processing	(3)
	CMPT 371	Software Engineering I	(4)
	CMPT 372	Software Engineering II	(4)
	CMPT 483	Data Base Systems	(3)
Concentration in Molecular Biology			(18)
	BIOL 112	Principles of Biology I	(4)
	BIOL 113	Principles of Biology II	(4)
	BIOL 350	Microbiology	(4)
	BIOL 435	Experimental Molecular Biology	(3)
	BIOL	(Molecular Biology Elective)1	(3)

Total Core Credits in the major	(67)
Concentration Credits	(17 – 18)
General Education Credits	(37)
Total Credits for the Science Informatics Major	(121 - 122)

1 In consultation with an advisor, students will select course(s) from the list of approved electives for the Molecular Biology major as listed on page 77 of the 2002-2004 Undergraduate Catalog. See the department for the current list of approved elective courses.

Montclair State University
College of Science and Mathematics
Bachelor of Science in Science Informatics

General Education Courses
Effective Fall 2003

Name _____ Social Security Number _____

II. General Education Requirements (37 semester hours)
Core Requirements

A. New Student Seminar (0) SCIF 151

B. Interdisciplinary Courses
1. Contemporary Issues I.... (waived by courses in major) (0) SCIF 491
2. Contemporary Issues II..... (3) _____
3. Contemporary Issues III..... (3) _____

Distribution Requirements
C. Communications
C1. Writing/Literature (ENRW 105 & 106)..... (6) _____
_____
C2. Communication ..... (3) _____

D. Fine and Performing Arts ..... (3) _____

E. World Languages .....…. (3-6) _____
_____

F. Humanities
F1. World Lit or General Humanities..... (3) _____
F2. Philosophy or Religion ..... (3) _____

G. Computer Science ..... (0) CMPT 183
(waived by course in major)
H. Mathematics ..... (0) MATH 122
(waived by course in major)
I. Natural or Physical Science ..... (0) CHEM 120
(waived by course in major)
J. Physical Education ..... (1) _____

K. Social Science
K1. American or European History ..... (3) _____
K2. Non-Western Cultural Perspectives ..... (3) _____
K3. Social Science ..... (0-3) _____

L. General Education Elective..... (0) BIOL 230
(waived by course in major)

Total semester hours of General Education courses depends on language requirement. Students who take 6 semester hours of foreign language may use SCIF 253 and SCIF 475 to meet the requirement K3. Social Science.

SUGGESTED SEQUENCE OF COURSES FOR
SCIENCE INFORMATICS MAJOR - BIOCHEMISTRY CONCENTRATION
Effective Fall 2003, with General Education Requirements Effective Fall 2002

The following sequence assumes satisfaction of, or exemption from, all basic skills requirements.

FALL or First Semester

†	SCIF 151	Colqm in Sci Info I (Freshman Seminar)	(1)
	CHEM 120	General Chemistry I	(4)
	CMPT 183	Foundations of Computer Science I *	(3)
	MATH 122	Calculus I *	(4)
	ENWR 105	Writing	(3)
		Total	(15)

SPRING or Second semester

†	SCIF 152	Colloquium in Science Informatics II	(1)
	CHEM 121	General Chemistry II	(4)
	CMPT 184	Foundations of Computer Science II	(3)
		World Language	(3)
	ENWR 106	Literature	(3)
		Physical Education	(1)
		Total	(15)

FALL or Third Semester

†	SCIF 253	Colloquium in Science Informatics III	(1)
	CHEM 230	Organic Chemistry I	(3)
	CMPT 287	Data Structures, Algorithms & File Struct	(4)
	CHEM 232	Experimental Organic Chemistry I	(2)
	GNED 202	Contemporary Issues II	(3)
		World Language	(3)
		Total	(16)

SPRING or Fourth Semester

†	SCIF 254	Colloquium in Science Informatics IV	(1)
	CHEM 231	Organic Chemistry II	(3)
	CMPT 285	Discrete Math Structures	(3)
	BIOL 230	Cell and Molecular Biology	(4)
	CMPT 371	Software Engineering I	(4)
		Total	(15)

Second year – Summer Pre-session

†	SCIF 250	SCIF Sophomore Summer Internship	(2)

FALL or Fifth Semester

	CHEM 470	Biochemistry I	(3)
†	CMPT 250	Web Tools	(2)
	STAT 440	Fundamentals of Modern Statistics	(3)
	BIOL 380	Genetics	(4)
	CHEM 472	Experimental Biochemistry	(2)
		Total	(14)

SPRING or Sixth Semester

	BIOL 434	Introduction To Molecular Biology	(3)
†	CMPT 300	Introduction to Sci Data Bases	(1)
	CHEM 471	Biochemistry II	(3)
	CHEM 473	Instrumental BioChem Lab	(3)
	GNED 303	Contemporary Issues III	(3)
		Communication	(3)
		Total	(16)

Third year – Summer Pre-session

†	SCIF 350	SCIF Junior Summer Internship	(2)

FALL or Seventh Semester

†	SCIF 491	Research Experience in Sci Informatics I	(3)
†	CHEM 450	Computational Chemistry	(3)
		Fine and Performing Arts	(3)
		Social Science	(3)
		Total	(12)

SPRING or Eight Semester

†	SCIF 492	Research Experience in Sci Informatics II	(3)
†	SCIF 475	Ethics in Science Informatics	(2)
		World Literature/General Humanities	(3)
		Social Science	(3)
		Philosophy/Religion	(3)
		Total	(14)

† Denotes the nine (9) new SCIF courses and two (2) new CMPT courses in the common core for the major plus one (1) CHEM 450 and one (1) CMPT 350 course in the corresponding concentrations that have not yet gone through the curriculum approval process.

* Students who do not have a high school mathematics background that includes exponential, logarithmic and trigonometric functions are advised to take Math 112: Pre-Calculus Mathematics before taking Calculus I. Math 112: Pre-Calculus, or an equivalent course, is a pre-requisite for both CMPT 183 and MATH 122.
In some cases, students who have taken high school courses in Calculus, Computer Science or the sciences may receive advanced standing with credit based upon either the Advanced Placement Exams or departmental exams. Departments may not have advanced placement exams for all courses. Consult the appropriate Deputy Chairperson or Undergraduate Advisor for further details.

SUGGESTED SEQUENCE OF COURSES FOR
SCIENCE INFORMATICS MAJOR - COMPUTER SCIENCE CONCENTRATION
Effective Fall 2003, with General Education Requirements Effective Fall 2002

The following sequence assumes satisfaction of, or exemption from, all basic skills requirements.

FALL or First Semester

†	SCIF 151	Colqm in Sci Info I (Freshman Seminar)	(1)
	CHEM 120	General Chemistry I	(4)
	CMPT 183	Foundations of Computer Science I *	(3)
	MATH 122	Calculus I *	(4)
	ENWR 105	Writing	(3)
		Total	(15)

SPRING or Second semester

†	SCIF 152	Colloquium in Science Informatics II	(1)
	CHEM 121	General Chemistry II	(4)
	CMPT 184	Foundations of Computer Science II	(3)
		World Language	(3)
	ENWR 106	Literature	(3)
		Physical Education	(1)
		Total	(15)

FALL or Third Semester

†	SCIF 253	Colloquium in Science Informatics III	(1)
	CHEM 230	Organic Chemistry I	(3)
	CMPT 287	Data Structures, Algorithms & File Struct	(4)
	CMPT 280	Assembly Lang & Computer Architecture	(3)
	GNED 202	Contemporary Issues II	(3)
		World Language	(3)
		Total	(17)

SPRING or Fourth Semester

†	SCIF 254	Colloquium in Science Informatics IV	(1)
	CHEM 231	Organic Chemistry II	(3)
	CMPT 285	Discrete Math Structures	(3)
	BIOL 230	Cell and Molecular Biology	(4)
	CMPT 371	Software Engineering I	(4)
		Total	(15)

Second year – Summer Pre-session

†	SCIF 250	SCIF Sophomore Summer Internship	(2)

FALL or Fifth Semester

	CHEM 470	Biochemistry I	(3)
†	CMPT 250	Web Tools	(2)
	STAT 440	Fundamentals of Modern Statistics	(3)
	BIOL 380	Genetics	(4)
	CMPT 372	Software Engineering II	(4)
		Total	(16)

SPRING or Sixth Semester

	BIOL 434	Introduction To Molecular Biology	(3)
†	CMPT 300	Introduction to Sci Data Bases	(1)
†	CMPT 350	Introduction to Parallel Processing	(3)
	GNED 303	Contemporary Issues III	(3)
		Communication	(3)
		Total	(13)

Third year – Summer Pre-session

†	SCIF 350	SCIF Junior Summer Internship	(2)

FALL or Seventh Semester

†	SCIF 491	Research Experience in Sci Informatics I	(3)
	CMPT 483	DataBase Systems	(3)
		Fine and Performing Arts	(3)
		Social Science	(3)
		Total	(12)

SPRING or Eight Semester

†	SCIF 492	Research Experience in Sci Informatics II	(3)
†	SCIF 475	Ethics in Science Informatics	(2)
		World Literature/General Humanities	(3)
		Social Science	(3)
		Philosophy/Religion	(3)
		Total	(14)

† Denotes the nine (9) new SCIF courses and two (2) new CMPT courses in the common core for the major plus one (1) CHEM 450 and one (1) CMPT 350 course in the corresponding concentrations that have not yet gone through the curriculum approval process. That action is planned for Fall 2002.

* Students who do not have a high school mathematics background that includes exponential, logarithmic and trigonometric functions are advised to take Math 112: Pre-Calculus Mathematics before taking Calculus I. Math 112: Pre-Calculus, or an equivalent course, is a pre-requisite for both CMPT 183 and MATH 122.
In some cases, students who have taken high school courses in Calculus, Computer Science or the sciences may receive advanced standing with credit based upon either the Advanced Placement Exams or departmental exams. Departments may not have advanced placement exams for all courses. Consult the appropriate Deputy Chairperson or Undergraduate Advisor for further details.

SUGGESTED SEQUENCE OF COURSES FOR
SCIENCE INFORMATICS MAJOR – MOLECULAR BIOLOGY CONCENTRATION
Effective Fall 2003, with General Education Requirements Effective Fall 2002

The following sequence assumes satisfaction of, or exemption from, all basic skills requirements.

FALL or First Semester			SPRING or Second semester		
† SCIF 151	Colqm in Sci Info I (Freshman Seminar)	(1)	† SCIF 152	Colloquium in Science Informatics II	(1)
CHEM 120	General Chemistry I	(4)	CHEM 121	General Chemistry II	(4)
CMPT 183	Foundations of Computer Science I *	(3)	CMPT 184	Foundations of Computer Science II	(3)
BIOL 112	Principles of Biology I	(4)	BIOL 113	Principles of Biology II	(4)
ENWR 105	Writing	(3)	ENWR 106	Literature	(3)
	Total	(15)		Total	(15)

FALL or Third Semester			SPRING or Fourth Semester		
† SCIF 253	Colloquium in Science Informatics III	(1)	† SCIF 254	Colloquium in Science Informatics IV	(1)
CHEM 230	Organic Chemistry I	(3)	CHEM 231	Organic Chemistry II	(3)
CMPT 287	Data Structures, Algorithms & File Struct	(4)	CMPT 285	Discrete Math Structures	(3)
BIOL 230	Cell and Molecular Biology	(4)	BIOL 380	Genetics	(4)
MATH 122	Calculus I *	(4)	GNED 202	Contemporary Issues II	(3)
				Physical Education	(1)
	Total	(16)		Total	(15)

Second year – Summer Pre-session

† SCIF 250	SCIF Sophomore Summer Internship	(2)

FALL or Fifth Semester			SPRING or Sixth Semester		
CHEM 470	Biochemistry I	(3)	BIOL 434	Introduction To Molecular Biology	(3)
† CMPT 250	Web Tools	(2)	† CMPT 300	Introduction to Sci Data Bases	(1)
STAT 440	Fundamentals of Modern Statistics	(3)	GNED 303	Contemporary Issues III	(3)
BIOL 350	Microbiology	(4)		Communication	(3)
	World Language	(3)		World Language	(3)
				Social Science	(3)
	Total	(15)		Total	(16)

Third year – Summer Pre-session

† SCIF 350	SCIF Junior Summer Internship	(2)

FALL or Seventh Semester			SPRING or Eight Semester		
† SCIF 491	Research Experience in Sci Informatics I	(3)	† SCIF 492	Research Experience in Sci Informatics II	(3)
BIOL 435	Experimental Molecular Biology	(3)	† SCIF 475	Ethics in Science Informatics	(2)
	Molecular Biology Elective	(3)		World Literature/General Humanities	(3)
	Fine and Performing Arts	(3)		Social Science	(3)
				Philosophy/Religion	(3)
	Total	(12)		Total	(14)

† Denotes the nine (9) new SCIF courses and two (2) new CMPT courses in the common core for the major plus one (1) CHEM 450 and one (1) CMPT 350 course in the corresponding concentrations that have not yet gone through the curriculum approval process. That action is planned for Fall 2002.

* Students who do not have a high school mathematics background that includes exponential, logarithmic and trigonometric functions are advised to take Math 112: Pre-Calculus Mathematics before taking Calculus I. Math 112: Pre-Calculus, or an equivalent course, is a pre-requisite for both CMPT 183 and MATH 122.
In some cases, students who have taken high school courses in Calculus, Computer Science or the sciences may receive advanced standing with credit based upon either the Advanced Placement Exams or departmental exams. Departments may not have advanced placement exams for all courses. Consult the appropriate Deputy Chairperson or Undergraduate Advisor for further details.

NOTES

This Curriculum Guide, the College Catalog and the semester Schedule Books contain important advising and academic information necessary for an accurate understanding of the degree requirements. Students with questions are urged to consult the program's Coordinator of Undergraduate Advising.

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FAILURE TO BE AWARE OF AND FOLLOW COLLEGE ACADEMIC AND ADMINISTRATIVE POLICIES AS OUTLINED HERE, IN THE COLLEGE CATALOG AND SEMESTER SCHEDULE BOOKS MAY RESULT IN LOSS OF CREDIT AND/OR DELAYED GRADUATION.

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PASS/FAIL LIMITATIONS -	Courses that meet the major or general education requirements may not be taken pass/fail.
PREREQUISITES -	It is the student's responsibility to ensure that courses are taken in the academically correct order. A current list of prerequisites for courses may be found in the current college catalog or through the office of the offering department.
FINAL EVALUATION -	Students who are eligible for graduation must file an "Application for Final Evaluation" with the Registrar according to the following schedule: October 1 for May graduation, March 1 for August graduation, June 1 for January graduation.
RESIDENCY REQUIREMENTS -	A minimum of 32 semester hours must be taken at MSU. This must include at least 18 semester hours of courses in the major, of which at least 12 semester hours must be at the junior (300-399) or senior level (400-499). The last 24 semester hours must be taken in consecutive residence at MSU
FREE ELECTIVES -	Free electives are defined as courses not applicable to general education or major requirements. The exact number of free electives required by an individual student is dependent upon the concentration selected and the number of semester hours needed to complete the World Language requirement.

*IN ALL CASES, THE MINIMUM NUMBER OF SEMESTER HOURS REQUIRED TO GRADUATE IS 120 *