Montclair State University
College of Science and Mathematics
Department of Computer Science
Computer Science Combined BS-MS Program
Major Effective Fall 2014
Undergraduate Requirements

I.	GENERAL EDUCATION REQUIREMENTS	32-42 SEMESTER HOURS[1]
	A. New Student Seminar	1
	B. Contemporary Issues Courses	
	1. Scientific Issues	3
	2. Interdisciplinary National Issues or Global Issues	3
	C. Communications	
	1. Writing (ENWR 105-106)	6
	2. Communications	3
	D. Fine and Performing Arts	3
	F. Humanities	
	1. World Literature/General Humanities	3
	2. Philosophy/Religion	3
	G. Computer Science (included in major)	0
	H. Mathematics (included in major)	0
	I. Natural/Physical Sciences with Laboratory (possibly included in Collateral Req.)	0-4
	J. Physical Education	1
	K. Social Science	
	1. American or European History	3
	2. Non-Western Cultural Perspectives	3
	3. Social Science Course (possibly included in Collateral Req.)	0-3
	L. General Education Elective (possibly included in a Collateral Req.)	0-3
II.	WORLD LANGUAGE AND CULTURES	3-6 SEMESTER HOURS
	Multicultural Awareness	0-3 SEMESTER HOURS[2]
III.	COLLATERAL REQUIREMENTS	8-9 SEMESTER HOURS[3]
IV.	MAJOR REQUIREMENTS	48 SEMESTER HOURS
V.	FREE ELECTIVE CREDITS	6-23 SEMESTER HOURS TOTAL
	UNDERGRADUATE CREDITS:	114 + 6 SEMESTER HOURS[4]

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[1] The actual number of credits required to complete the general education sequence and the collateral sequence will depend on the courses chosen to fulfill the collateral sequence, part II, A. of the major (see p. 3).

[2] Students must also include a course that meets the Multicultural Awareness requirement among their General Education or Free Elective courses.

[3] Students who select collateral sequence number three (Acct I, Acct II and Mgmt 231 see p.3; II A.) will still be required to complete separate general education requirements in Natural / Physical Science and category L electives.

[4] For students admitted to the combined BS-MS program, the six graduate-level credits from CSIT 580 and CSIT 583 will apply as general free elective credits towards the B.S. in Computer Science as well as towards the M.S. The minimum number of total credits for graduation with a B.S. is 120.

CURRICULUM EFFECTIVE FALL 2014

MONTCLAIR STATE UNIVERSITY

COLLEGE OF SCIENCE AND MATHEMATICS

NAME_____SSN_____Date_____

DEPARTMENT OF COMPUTER SCIENCE B.S-M.S. IN COMPUTER SCIENCE

II. Major Requirements

A. Collateral Requirements

Choose ONE of the following Sequences: (12)

1. PHYS 191 University Physics I (4)*
   PHYS 192 University Physics II (4)
2. CHEM 120 General Chemistry I (4) *
   CHEM 121 General Chemistry II (4)
3. BIOL 112 Principles of Biology I (4)
   BIOL 113 Principles of Biology II (4)
   BIOL 213 Introduction to Ecology (4)

***Students who take sequence 1 or 2 must take at least an additional 4 credits from the following list of courses: PHYS 210, PHYS 240, PHYS 242, PHYS 245, PHYS 247, PHYS 280, CHEM 230, CHEM 231, and CHEM 232.**

B. Required Mathematics Courses (18)

MATH 122 Calculus I (4)
MATH 221 Calculus II (4)
MATH 235 Introduction to Linear Algebra (4)
STAT 401 Applied Statistics for the Sciences (3)
CSIT 270 Discrete Mathematical Structures (3)

C. Required Computer Science Courses (24)

CSIT 104 Computational Concepts (3)
CSIT 111 Fundamentals of Programming I (3)
CSIT 112 Fundamentals of Programming II (3)
CSIT 212 Data Structures and Algorithms (3)
CSIT 230 Computer Systems (3)
CSIT 379 Computer Science Theory (3)
CSIT 315 Software Engineering I (3)
CSIT 415 Software Engineering II (3)

D. Required Computer Science Advanced Courses (12)

CSIT 340 Computer Networks (3)
CSIT 355 Database Systems (3)
CSIT 313 Foundations of Programming Languages (3)
CSIT 345 Operating Systems (3)

E. Computer Science Electives (6)

Any two CSIT courses at the 300 level or above

Montclair State University

College of Science and Mathematics

Department of Computer Science

Combined B.S.-M.S. in Computer Science

Effective Fall 2002 Name_____ Student Number: _____

I. General Education Requirements ..... (32 – 42 credits)

A. New Student Seminar ..... (1)_____

B. Contemporary Issues Courses

B1. Scientific Issues ..... (3)_____

B2. Interdisciplinary National Issues or Global Issues ..... (3)_____

Distribution

C. Communications

C1. Writing (ENWR 105-106) ..... (6)_____

C2. Communication ..... (3)_____

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

E. World Languages (see II below)

F. Humanities

F1. World Lit or General Humanities ..... (3)_____

F2. Philosophy or Religion ..... (3)_____

G. Computer Science..... (0)___CSIT 111_____

H. Mathematics ..... (0)__Math 122_____

I. Natural or Physical Science ..... (0-4)_____

(may be filled by collateral course)

J. Physical Education ..... (1)_____

K. Social Science

K1. American or European History..... (3) _____

K2. Non-Western Cultural Perspectives ..... (3) _____

K3. Social Science..... (0-3) _____

(may be filled by collateral course)

L. General Education Elective ..... (0-3)_____

(may be filled by collateral course)

II. WORLD LANGUAGE ..... (3-6)_____

Total required depending on collateral courses and language requirement (35-48)

NOTES

THIS WORKSHEET, THE COLLEGE CATALOG AND THE SEMESTER SCHEDULE BOOKS CONTAIN THE IMPORTANT ADVISING AND ACADEMIC INFORMATION NECESSARY FOR AN ACCURATE UNDERSTANDING OF THE DEGREE REQUIREMENTS. STUDENTS WITH QUESTIONS ARE URGED TO CONSULT THE DEPARTMENT COORDINATOR OF UNDERGRADUATE ADVISING.

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

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RESTRICTIONS - The following courses MAY NOT BE TAKEN FOR GRADUATION CREDIT BY COMPUTER SCIENCE MAJORS: CSIT 107, CSIT 108, CSIT 273, MATH 103, MATH 109, MATH 100, MATH 113, MATH 114, MATH 116, MATH 117, MATH 118, MATH 270, BSED 273, FINQ 270, MGMT 273.

PASS/FAIL LIMITATIONS - Those courses which meet the major, collateral, teacher certification or general education requirements may not be taken pass/fail.

MINORITIES CULTURE REQUIREMENT - All students are required to take one course which satisfies the college minorities culture requirement. Refer to the current college catalog for a complete listing of acceptable courses.

PREREQUISITES - It is the student's responsibility to ensure that courses are taken in the academically correct order. Prerequisite trees for major courses can be found on pages 5-6 of this package. A current list of prerequisites for these and other courses may be found in the current college catalog or through the office of the offering department.

BASIC SKILLS - Students placed into basic skills courses as a result of the New Jersey College Basic Skills Placement Test are required to enroll in those courses the first semester and continue in sequence each semester until required work is completed. All basic skills course work is counted in the cumulative grade-point-average, but only ENGL 100 "Basic Composition" may be used toward the 128 credit degree requirement.

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 credits must be taken at MSU. This must include at least 18 credits of mathematics or computer science courses in the major, of which at least 12 credits must be at the junior (300-399) or senior level (400-499). The last 24 credits must be taken in consecutive residence at MSU.

FREE ELECTIVES - Free electives are defined as credits not applicable to general education or major requirements. The exact number of free electives required by an individual student is dependent upon the collateral sequence chosen in the major (see. p.1, and worksheet p. 2).

IN ALL CASES, THE MINIMUM NUMBER OF CREDITS REQUIRED TO GRADUATE WITH A B.S. IS 120

Computer Science Combined BS-MS Program
Graduate Requirements

I. Required core: CSIT 545*, CSIT 571*, 615[5]

II. Electives: Complete 21 semester hours from the following:

CSIT 515 Software Engineering 3
CSIT 531 Robotics 3
CSIT 535 Human-Computer Interaction (HCI) 3
CSIT 540 Computer Networks 3
CSIT 547 Operating Systems 3
CSIT 551 Mobile Computing 3
CSIT 555 Database Systems 3
CSIT 574 Image Processing 3
CSIT 595 Topics in Computer Science 3
CSIT 615 Advanced Topics in Software Engineering 3
CSIT 635 Advanced Human-Computer Interaction (HCI) 3
CSIT 655 Advanced Database Systems 3
CSIT 656 Scientific Databases 3
CSIT 670 Advanced Computer Algorithms and Analysis 3
CSIT 691 Independent Study: Computer Science 3
CSIT 695 Readings in Computer Science (1-4 hours seminar)

Note: Every student in the combined BS-MS program must take CSIT: 545, 571, and 615, which constitute the core courses in the computer science graduate program. Courses CSIT: 501, 502, 503, CSIT: 505, 506, and 507 are not counted among the 33 semester hours required for completion of any graduate program in the Departments of Computer Science and Mathematical Sciences.

III. Culminating Experience: Every student must select one of the following options:

A. CSIT-698 Master's Thesis: Independent research project done under faculty advisement. Students must follow the MSU Thesis Guidelines, which may be obtained from the Graduate School. Students should take CSIT 699 if they don't complete CSIT 698 within the semester. Students must work with a faculty mentor through an independent study on such projects. Offered in spring, fall and summer sessions. Students must have a 3.3 or higher in the required core courses to register for the Thesis. Submit completed Thesis Original and one copy to the Graduate Office. See Thesis Guidelines.

B. CSIT-697 Master's Project in Computer Science: Completion of the computer science required core courses and permission of graduate coordinator. Special fee. Analysis of a significant problem related to computing and design of a solution. Where appropriate, implementation and testing as well as documentation of the solution. 3 hours lecture. Students must work with a faculty mentor through an independent study on such projects.

C. CSIT-696 Literature Survey in Computer Science: Significant investigation of an area of computing research or practice, culminating in the creation of a comprehensive survey or tutorial. Surveys summarize and organize research results in a novel way that integrates and adds understanding to work in the field by classifying existing literature, developing a perspective on the area, and/or evaluating trends. A tutorial paper organizes and introduces work in the field by emphasizing the basic concepts of a field and providing concrete examples that embody these concepts. 3 hours lecture. Experience is offered only in Spring semester in a course format.

[5] The starred courses (CSIT 545 and CSIT 571) apply as general free electives towards the B.S. in Computer Science as well as towards the M.S.

IV. Grade Point Average

The student must have an overall 3.0 grade point average in all graduate-level courses, as well as a 3.0 grade point average for courses taken in the Departments of Computer Science and Mathematical Sciences. Graduate school policy allows the student to apply at most two C grades (C+, C, or C-) towards the Master of Science degree.

NOTE

A STUDENT WHO WITHDRAWS FROM THE COMBINED BS-MS PROGRAM CAN GRADUATE WITH A BACHELOR OF SCIENCE DEGREE BY COMPLETING THE REQUIREMENTS FOR THE BS IN COMPUTER SCIENCE

Suggested Sequence for the combined BS/MS in Computer Science

First Year

First Semester		Second Semester	
CSIT 104*	(3)	CSIT 111	(3)
MATH 122**	(4)	MATH 221	(4)
Collateral Req. I	(4)	Collateral Req. II	(4)
New Student Seminar	(1)	Gen Ed (Phys Ed)	(1)
Gen Ed	(3)	Gen Ed	(3)
Gen Ed	(3)	Gen Ed	(3)
	(18)		(18)

Summer

Gen Ed	(3)
Gen Ed	(3)
	(6)

Summary

CS: 6 Math: 8
Collateral: 6 (for Business Collateral) – 8 (for Physical Science Collateral)
Gen Ed: 20
Total: 40 (for Business Collateral) – 42 (for Physical Science Collateral)

NOTES

* Students who do not have a strong (4 year) background in high school mathematics, including exponential, logarithmic and trigonometric functions are advised to take Math 112 Pre-calculus Mathematics before Calculus I
** Pre-requisite Math 112 Pre-Calculus or equivalent

ADDITIONAL CURRICULAR SUGGESTIONS

— Students are encouraged to take Enwr 207 "Technical Writing" as a free elective.
— Students who have taken high school courses in Calculus or Computer Science may receive advanced standing with credit based upon either the Advanced Placement Exams or departmental exams. Consult the department Deputy Chairperson or Undergraduate Advisor for further details.
— Students are urged to take as many additional courses as possible in the areas of computer science, statistics, business administration, economics and natural sciences. This will insure maximum flexibility in employment opportunities and professional growth.
— Students interested in the honors program in mathematics or computer science should contact the department chairperson for further information.

Second Year

Third Semester		**Fourth Semester**	
CSIT 112	(3)	CSIT 212	(3)
CSIT 270	(3)	CSIT230	(3)
Collateral Req. III or Gen Ed	(3)	Gen Ed	(3)
Gen Ed	(3)	Gen Ed	(3)
Gen Ed	(3)	Gen Ed	(3)
World Language	(3)	World Language	(3)
	(18)		(18)

Summer

Gen Ed	(3)
Gen Ed	(3)
	(6)

Second Year Summary
CS: 19 Math: 8
Collateral: 8 (for Phys Collateral) – 9 (for Bus Collateral) (finished)
Gen Ed: 41 (for Bus Collateral) – 44 (for Phys Collateral)
Free Electives: 3
Total: 80 (for Bus Collateral) - 82 (for Phys Collateral)

Third Year

Fifth Semester		**Sixth Semester**	
CSIT 315	(3)	CSIT 415	(3)
CSIT 340	(3)	CSIT 355	(3)
CSIT313	(3)	CSIT345	(3)
Math 235	(4)	Stat 401	(3)
Computer Science Elective	(3)	Computer Science Elective	(3)
	(16)		(18)

Summer

Free Elective (if needed)	(3)

Third Year Summary
CS: 33 (finished) Math: 15 (finished)
Collateral: 8 (for Phys Collateral) – 9 (for Bus Collateral) (finished)
Gen Ed: 44 (finished)
World Language: 6 (finished)
Free Elective: 9
Total: 115 (for Bus Collateral) – 116 (for Phys Collateral)

Fourth Year -- Begin Graduate Study

Seventh Semester		**Eighth Semester**	
CSIT 545	(3)	CSIT 515	(3)
CSIT 571	(3)	Elective I	(3)
Elective II	(3)	Elective III	(3)
	(9)		(9)

Summary at end of Eighth Semester

Undergraduate

CS: 33 (finished) Math: 15 (finished)
Collateral: 8 (for Phys Collateral) – 9 (for Bus Collateral) (finished)
Gen Ed: 44 (finished) World Language: 6 (finished)
Free Elective: 9
Total: 115 (for Bus Collateral) – 116 (for Bus Collateral)

Graduate

CS Core: 12 Specialization: 6

Fifth Year – Complete Graduate Study

Ninth Semseter		**Tenth Semester**	
CSIT 5?? Or 6??	(3)	Graduate Elective	(3)
Graduate Elective	(3)	Graduate Elective	(3)
Graduate Elective	(3)		

For students electing to write a thesis, one of these courses must be CSIT 698. The Department recommends that the student complete an Independent Study (CSIT 691) with the intendended thesis advisor in the semester before registering for CSIT 698. Students electing to produce a Masters Project must enroll in CSIT 697.

Summary at end of Tenth Semester

Undergraduate

CS: 33 (finished) Math: 15 (finished)
Collateral: 8 (for Phys Collateral) – 9 (for Bus Collateral) (finished)
Gen Ed: 44 (finished) World Language: 6 (finished)
Free Elective: 9
Total: 115 (for Bus Collateral) – 116 (for Bus Collateral)

Graduate

CS Core:	12
Additional CS (including specialization):	9
Graduate Electives	12
Total Graduate Credits	33
TOTAL CREDITS	148-14

Alternate Sequence for the combined BS/MS in Computer Science
(Without Summer Courses)

First Year

First Semester		**Second Semester**	
CSIT 104	(3)	CSIT 111	(3)
MATH 122	(4)	MATH 221	(4)
Collateral Req. I	(4)	Collateral Req. II	(4)
New Student Seminar	(1)	Gen Ed (Phys Ed)	(1)
Gen Ed	(3)	Gen Ed	(3)
Gen Ed	(3)	Gen Ed	(3)
	(18)		(18)

First Year Summary
CS: 6 Math: 8 Collateral: 8 Gen Ed: 14 Total: 36

Second Year

Third Semester		**Fourth Semester**	
CSIT 112	(3)	CSIT 212	(3)
CSIT 270	(3)	CSIT 230	(3)
Gen Ed	(3)	Gen Ed	(3)
Collateral Req. III	(4)	Gen Ed	(3)
World Language	(3)	World Language	(3)
	(16)	Gen Ed	(3)
			(18)

Second Year Summary
CS: 9 Math: 3 Collateral: 4 (finished) Gen Ed: 12 World Language: 6 (finished)
Total: 34

Third Year

Fifth Semester		**Sixth Semester**	
CSIT 315	(3)	CSIT 415	(3)
Math 235	(4)	Stat 401	(3)
CSIT 340	(3)	CSIT 355	(3)
CSIT 313	(3)	CSIT 345	(3)
Computer Science Elective	(3)	Computer Science Elective	(3)
	(16)		(15)

Third Year Summary
CS: 18 (finished) Math: 7 (finished) CS Electives 6 (finished) Total: 31

Fourth Year – Begin Graduate Study

Seventh Semester		**Eighth Semester**	
Gen Ed[1]	**(3)**	**Gen Ed or Free Elective[1]**	**(3)**
Gen Ed[1]	**(3)**	**Free Elective[1]**	**(3)**
		Free Elective (if needed)[1]	**(0-3)**
CSIT 545	(3)	CSIT 515	(3)
CSIT 571	(3)	Elective	(3)
	(12)		(12-15)

NOTE - 1. The Department recommends that students contemplating enrollment in the combined BS- MS program take summer courses during the first three years in order to complete all undergraduate requirements by the end of the third year of study.

Summary at end of Eighth Semester
Undergraduate
CS: 33 (finished) Math: 15 (finished)
Collateral: 8 (for Phys Collateral) – 9 (for Bus Collateral)
(finished) Gen Ed: 44 (finished)
World Language: 6
(finished) Free
Elective: 9
Total: 115 (for Bus Collateral) – 116 (for Bus Collateral)
Graduate
CS Core: 12

Fifth Year – Complete Graduate Study

Ninth Semseter	**Tenth Semester**
CSIT 5?? Or 5??	CSIT 5?? Or 6??
CSIT 5?? Or 6??	Graduate Elective
Graduate Elective	Graduate Elective Graduate Elective

For students electing to write a thesis, one of these courses must be CSIT 698. Students electing to produce a Masters Project must enroll in CSIT 697.

Summary at end of Tenth Semester
Undergraduate
CS: 33 (finished) Math: 15 (finished)
Collateral: 8 (for Phys Collateral) – 9 (for Bus Collateral)
(finished) Gen Ed: 44 (finished)
World Language: 6
(finished) Free Elective:
9
Total: 115 (for Bus Collateral) – 116 (for Bus Collateral)
Graduate

CS Core:	12
Additional CS (including specialization):	9
Graduate Electives	12
Total Graduate Credits	33
TOTAL CREDITS	148-149