Program Effective Fall 2002 **Montclair State University**

Name_____

College of Science and Mathematics SSN _____

Department of Computer Science, Department of Mathematical Sciences

DOUBLE MAJOR - MATHEMATICS AND COMPUTER SCIENCE (MATH) & (CPSC)
BACHELOR OF SCIENCE DEGREE REQUIREMENTS

I. MAJOR REQUIREMENTS (78 credits)

A. Required Mathematics and Physics Courses (33 credits)

MATH 122 Calculus I (4)
MATH 221 Calculus II (4)
MATH 222 Calculus III (4)
MATH 335 Elements of Linear Algebra (4)
MATH 340 Probability (3)
MATH 425 Advanced Calculus I (3)
MATH 431 Foundations of Modern Algebra (3)
PHYS 191 University Physics I (4)
PHYS 192 University Physics II (4)

B. Required Computer Science Courses (24 credits)

CMPT 183 Foundations Of Computer Science I (3)
CMPT 184 Foundations Of Computer Science II (3)
CMPT 280 Assembly language and Computer Architecture (3)
CMPT 281 Theory of Digital machines (3)
CMPT 285 Discrete Math Structures (3)
CMPT 287 Data Structures and Algorithms (3
CMPT 381 File Processing (3)
CMPT 384 Systems Software (3)

C. Elective Mathematics Courses - Choose at least 12 credits from MATH 398-469, 480-499, and STAT 440-449.

MATH 398 Vector Calculus (3) _____
MATH 420 Differential Equations (4) _____
MATH 423 Complex Variables (3) _____
MATH 426 Advanced Calculus II (3) _____
MATH 433 Theory of Numbers _____
MATH 436 Elements of Logic (3) _____
MATH 450 Foundations of Geometry _____
MATH 451 (old # 428) Topology (3) _____
MATH 460 Intro. to Applied Mathematics (3) _____
MATH 463 Numerical Analysis (3) _____
MATH 464 Operations Research I (3) _____
MATH 465 Operations Research II (3) _____
MATH 469 Mathematical Modeling (3) _____
MATH 485 (old # 410) Applied Combinatorics and Graph Theory (3) _____
MATH 490 Honors Seminar in Mathematics (3) _____
MATH 495 Topics in Math for Undergraduates (3) _____
MATH 497/8 Undergraduate Research in Mathematics (1-3) _____
STAT 440 Fundamentals of Modern Statistics (3) _____
STAT 441 Statistical Computing (3) _____
STAT 443 Intro. to Mathematical Statistics (3) _____

D. Elective Computer Science Courses (9 credits)

1. Complete at least two courses from Group 1 (see list on back)
   _____(3)
   _____(3)
2. Complete at least one course from Groups 1 or 2 (see list on back)
   _____(3)

II. GENERAL EDUCATION REQUIREMENTS 44-47 SEMESTER HOURS

III. FREE ELECTIVE CREDITS 3-6 SEMESTER HOURS

MINIMUM TOTAL FOR GRADUATION 128 SEMESTER HOURS

Curriculum Effective Fall 2002

Montclair State University
College of Science and Mathematics
Department of Computer Science
Department of Mathematical Sciences
Bachelor of Science Degree in Mathematics and Computer Science (MATH) & (CPSC)

II. GENERAL EDUCATION REQUIREMENTS (44-47 Credits)

Core:

A. New Student Seminar (1) ..... (MATH 102)
B. Interdisciplinary Core
B1. Contemporary Issues I: Scientific Issues (3) ..... (GNED 201)
B2. Contemporary Issues II: National Issues (3) ..... (GNED 202)
B3. Contemporary Issues III: Global Issues (3) ..... (GNED 301)

Distribution:

C. Communication
C1. Writing/Literature (6) ..... _____
C2. Communication (3) ..... _____
D. Fine and Performing Arts(3) ..... _____
E. World Languages(3-6) ..... _____
F. Humanities
F1. World Literature or General Humanities(3) ..... _____
F2. Philosophy/Religion(3) ..... _____
G. Computer Science (0-credit included in major) ..... (CMPT 183)
H. Mathematics (0-credit included in major) ..... (MATH 122,221)
I. Natural/Physical Science (0-credit included in major) ..... (PHYS 191)
J. Physical Education (1) ..... _____
K. Social Science
K1. American or European History(3) ..... _____
K2. Non-Western Cultures(3) ..... _____
K3. Social Science(3) ..... _____
L. General Education Elective(3) ..... _____

III. FREE ELECTIVES (3-6)

A. ..... _____
B. ..... _____

GROUP 1 ELECTIVES

CMPT 472 Computer Graphics (3)
CMPT 474 Software Engineering (3)
CMPT 481 Operating Systems (3)
CMPT 483 Data Base Systems (3)
CMPT 484 Fund of Progmng Languages (3)
CMPT 485 Compiler Construction (3)
CMPT 486 Design of Computer Interfaces (3)
CMPT 487 Local Area Networks (3)
CMPT 493 Advanced Databases (3)
CMPT 495 Topics in Cmptr Sci.for Undergraduates (1-3)
CMPT 497/8 Undergrad Research in Cmptr Sci. (1-3 each)
CMPT 499 Cooperative Education in Cmptr Sci. (3-8) *

GROUP 2 ELECTIVES

CMPT 363 Intro to Numerical Computing (3)
CMPT 382 Systems Analysis and Design (3)
CMPT 385 Computer System Organization (3)
CMPT 387 Data Communications (3)
CMPT 388 Foundations of Artificial Intelligence (3)

* A MAXIMUM OF THREE (3) CREDITS OF COOPERATIVE EDUCATION MAY BE USED IN GROUP 1 AS A MAJOR ELECTIVE.

2/2003

SUGGESTED SEQUENCE FOR FRESHMEN AND SOPHOMORES

DOUBLE MAJOR-MATHEMATICS AND COMPUTER SCIENCE (MATH) & (CPSC)

The following sequence assumes exemption from all basic skills requirements as a result of meeting or exceeding the required scores on the MSU Basic Skills Placement Test.

FALL (Freshman) or First Semester
ENWR 105 College Writing I: Intellectual Prose (3)

MATH 122 Calculus I (4) *
CMPT 183 Fnds. of Computer Science I(3)**
PHYS 191 University Physics I (4)
General Education course (3)
MATH 102 New Student Experience for Mathematical Sciences (1)

SPRING (Freshman) or Second semester
ENWR 106 College Writing II: Writing and Literary Study (3)
MATH 221 Calculus II (4)
CMPT 184 Fnds. Comp Sci II (3)
PHYS 192 University Physics II (4)
General Education course (3)

FALL (Sophomore) or Third Semester
GNED 201: Contemporary Issues I: Scientific Issues (3)
CMPT 280 Asm. Lang. & Comp. Arch. (3)
CMPT 285 Discrete Math Structures (3)
Speech requirement (3)
MATH 222 Calculus III (4)
Physical Education Req. (1)

SPRING (Sophomore) or Fourth Semester
GNED 202: Contemporary Issues II: National Issues (3)
CMPT 281 Th. Of Digital Mach. (3)
CMPT 287 Data Structures (3)
MATH 335 Probability (4)
General Education courses (3)

* 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 Precalculus Mathematics or MATH 111 Applied Precalculus before Calculus I.
** Prerequisite MATH 112 Precalculus Mathematics, or MATH 111 Applied Precalculus, 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 for further details.

--- Students are urged to take as many additional courses as possible in the areas of statistics, computer science, business administration, economics and natural sciences. This will insure maximum flexibility in employment opportunities and professional growth.

--- Students may elect to do independent study in advanced areas of the mathematical sciences under MATH 495 "Topics in Mathematics for Undergraduates" and STAT 495 "Topics in Statistics for Undergraduates."

--- Students interested in the honors program in mathematics or computer science should contact the department chairperson for further information.

NOTES

THIS WORKSHEET, THE MONTCLAIR STATE UNIVERSITY UNDERGRADUATE CATALOG, AND THE SEMESTER SCHEDULE OF COURSES BOOKLETS 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.

****

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

****

RESTRICTIONS - The following courses MAY NOT BE TAKEN FOR GRADUATION CREDIT BY MATHEMATICS MAJORS: CMPT 107, CMPT 108, CMPT 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 that meet the major, collateral, teacher certification, or general education requirements may not be taken pass/fail.

MULTICULTURAL AWARENESS REQUIREMENT - All students are required to take one course that satisfies the university multicultural awareness requirement. Refer to the current university undergraduate 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. A current list of prerequisites for these and other courses may be found in the current university undergraduate catalog or through the office of the offering department.

BASIC SKILLS - Students placed into basic skills courses as a result of the MSU 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 120 credit degree requirement.

FINAL EVALUATION - Students who are eligible for graduation must file an "Application for Final Evaluation" in the Office of the Registrar according to the following deadlines: October 1 for May graduation, March 1 for August graduation, June 1 for January graduation.

RESIDENCE REQUIREMENTS - A minimum of 32 credits must be taken at MSU. This must include at least 18 credits of mathematical 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 at MSU and cannot be acquired through transfer.

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 IS 128 *