



### Computer Science Major Program

Gen Ed Effective Fall 2008

Major Effective Fall 2003

#### Undergraduate Requirements for the **Concentration in Informatics**

I. GENERAL EDUCATION REQUIREMENTS	36-42 SEMESTER HOURS <sup>1</sup>
A. New Student Seminar	1
B. Contemporary Issues Courses	
Removed	
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	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 <sup>2</sup> SEMESTER HOURS
III. COLLATERAL REQUIREMENTS	9 SEMESTER HOURS <sup>3</sup>
IV. MAJOR REQUIREMENTS	51 SEMESTER HOURS
V. FREE ELECTIVE CREDITS	9-21 SEMESTER HOURS
MINIMUM NEEDED FOR GRADUATION:	120 SEMESTER HOURS

<sup>1</sup> 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).

<sup>2</sup> Students must also include a course that meets the Multicultural Awareness requirement among their General Education or Free Elective courses.

<sup>3</sup> 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.

CPIN

Computer Science Major Program Effective Fall 2003

1) General Education Req.	38
a) New Student Seminar _____	1
b) Interdisciplinary Courses	
Scientific Issues _____	3
Interdisciplinary Issues _____	3
c) Communication	
Writing/Lit.	6
_____	
_____	
Comm _____	3
d) Fine & Perf Arts _____	3
f) Humanities	
World Lit / Gen Hum _____	3
Philosophy / Religion _____	3
g) Comp Sci (Satisfied by taking Found Comp Sci I)	
h) Mathematics (Satisfied by taking Calculus I)	
i) Natural / Physical Sciences _____	4
j) Physical Education _____	1
k) Social Science	
Amer / Eur Hist _____	3
Non-Western Cult _____	3
Social _____	0
(Satisfied by courses in Econ in 3)	
l) General Education Elective	3
_____	
2)	
World Languages	3 - 6
_____	
_____	
Multicultural Awareness _____	0- 3

3) Major and Collateral Courses	
<b>Complete the following Sequence:</b>	9
Econ 101 Macro Economics (3) .....	___
Econ 102 Micro Economics (3) .....	___
Mgmt 231 Management Processes. (3) .....	___
a) Required Mathematics Courses	15
Math 122 Calculus I (4) .....	___
Math 221 Calculus II (4) .....	___
Math 335 Elements Of Linear Algebra (4) .....	___
STAT 330 Modern Statistics....I.....(3).....	___
b) Required Computer Science Courses – Core	33
CMPT 183 Found Comp Sci I (3)	___
CMPT 184 Found Comp Sci II (3)	___
CMPT 280 Asm Lang and Comp Arch (3)	___
CMPT 281 Theory of Digital Machines (3)	___
CMPT 285 Discrete Math Structures (3)	___
CMPT 287 Data Str, File Str, and Alg (4)	___
CMPT 371 Soft. Eng. Analysis and Des. (4)	___
CMPT 372 Soft. Eng. Impl. and Testing (4)	___
CMPT 387 Data Communications (3)	___
CMPT 483 Database Systems (3)	___
c) <b>Choose one elective from Group 1, 2, or 3 :</b>	
For courses in the groups, (see list and remarks p.3	
_____ (3).....	___
Total Credits for categories b), c) and d)	51
Total credits for the Concentration in Informatics ...	60

## CPIN

### Computer Science Major Program Effective Fall 2003

THE FOLLOWING COURSES MAY BE USED IN FULFILLMENT OF THE 3 CREDIT COMPUTER SCIENCE MAJOR ELECTIVE CATEGORY. (PLEASE REFER TO THE WORKSHEET ON PAGE 2).

#### GROUP 1 ELECTIVES

CMPT 472	Computer Graphics	3
CMPT 481	Operating Systems	3
CMPT 484	Fundamentals of Programming 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 Computer Science for Undergraduates	3
CMPT 497/8	Undergraduate Research in Computer Science	3

#### GROUP 2 ELECTIVES

CMPT 363	Introduction to Numerical Computing	3
CMPT 385	Computer System Organization	3
CMPT 388	Foundations of Artificial Intelligence	3

#### GROUP 3 ELECTIVE

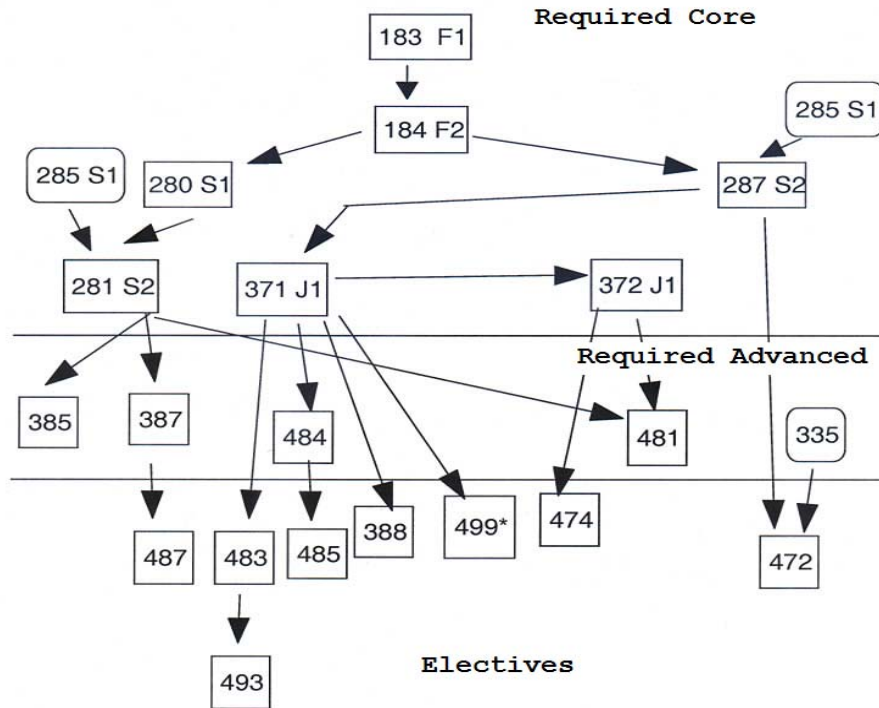
CMPT 499	Cooperative Education in Computer Science	3-8 *
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\* REMARK: A MAXIMUM OF THREE (3) CREDITS OF COOPERATIVE EDUCATION MAY BE AS A MAJOR ELECTIVE.

CPIN

Computer Science Major Program Effective Fall 2003

Concentration in Informatics



PREREQUISITE STRUCTURE

C = Required Core    R = Required Advanced    E = Elective

- |   |                                 |
|---|---------------------------------|
| C 183 Found. of Comp. Sci I                           | E 388 Foundations of AI         |
| C 184 Found. of Comp. Sci II                          | E 472 Computer Graphics         |
| C 280 Asm. Lang. and Comp. Arch                       | R 481 Operating Systems         |
| C 281 Theory of Digital Machines                      | E 483 Database Systems          |
| C 285 Discrete Math Structures                        | R 484 Fund. of Prog. Languages  |
| C 287 Data Structures, File Structures and Algorithms | E 485 Compiler Construction     |
| C 371 Software Analysis and Design – SE I             | E 487 Local Area Networks       |
| C 372 Software Implementation and Testing – SE II     | E 493 Advanced Data Base Theory |
| R 385 Comp. Sys. Organization                         | E 499 COOP in Computer Science  |
| R 387 Principles of Data Comm.                        |                                 |

## CPIN

### Computer Science Major Program Effective Fall 2003

#### SUGGESTED SEQUENCE FOR FRESHMEN AND SOPHOMORE COMPUTER SCIENCE MAJOR

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

##### FALL Freshman or First Semester

ENWR 105 Freshman Composition (3)  
Math 122 Calculus I (4) \*  
Cmpt 183 Fnds. of Computer Science I (3)\*\*  
Collateral course (3-4)  
General Education course (3)

##### SPRING Freshman or Second semester

Reading requirement (3)  
Math 221 Calculus II (4)  
Cmpt 184 Fnds. Comp Sci II (3)  
Collateral Course (3-4)  
General Education course (3)

##### FALL Sophomore or Third Semester

Cmpt 280 Asm. Lang. & Comp. Arch.(3)  
Cmpt 285 Discrete Math Structures(3)  
Math 335 Elements of Linear Algebra (4)  
Speech requirement (3)  
Collateral or General Education course (3)

##### SPRING Sophomore or Fourth Semester

Cmpt 281 Th. Of Digital Mach.(3)  
Cmpt 287 Data Structures (3)  
Stat 330 Modern Statistics I (3)  
Physical Education Req. (1)  
General Education courses (6)

\* 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 before Calculus I

\*\* Pre-requisite Math 112 Pre-Calculus or equivalent

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#### 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 may elect to do independent study in advanced areas of mathematics under Math 495 "Topics in Mathematics for Undergraduates".

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

## CPIN

### Computer Science Major Program Effective Fall 2003

#### NOTES

THIS WORKSHEET, THE COLLEGE CATALOG AND THE SEMESTER SCHEDULE BOOKS (FOUND IN MSU WEBSTIE) 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: 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 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 120 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 IS 120 \***