

Effective: Sept 2008

**EAST STROUDSBURG UNIVERSITY**

**ADVICE TO COMPUTER SCIENCE MAJORS**

**ADMISSION AND GRADUATION REQUIREMENTS**

Candidates for graduation from the Bachelor of Science program will have satisfactorily completed the following course requirements in Computer Science, Mathematics co-requisites and general education courses for a minimum of 120 credits.

**BACHELOR OF SCIENCE IN COMPUTER SCIENCE**

**REQUIRED COMPUTER SCIENCE COURSES**

CPSC 111 - Intro Computer Programming & Problem Solving	Admission to ESU
CPSC 141 - Intro Computer Organization	CPSC 111
CPSC 151 - Linear Data Structures and Algorithm Analysis	CPSC 111
CPSC 232 - Intro Assembly Programming & Architecture	CPSC 141,151
CPSC 240 - Operating Systems Concepts and Design	CPSC 232
CPSC 251 - Non-Linear Data Structures	CPSC 111,151
CPSC 321 - Issues in the Practice of Computer Science	CPSC 111,141,151, 232,251 Junior Standing
CPSC 330 - Programming Languages	CPSC 111,141,151,251
CPSC 430 - Software Engineering	CPSC 111,251,330
CPSC 486 - Computer Science Internship	CPSC 111,141,151,232, 240,251,321,330

Also a minimum of four Computer Science electives numbered over 220:

CPSC 234 - Object Oriented Programming	CPSC 111
CPSC 236 - Programming Using Visual Basic.NET	CPSC 111,151
CPSC 237 - Internet and Web Programming	CPSC 151
CPSC 320 - Topics in Computer Science	CPSC 141,151
CPSC 325 - Fundamentals of Computer Security Engineering I	CPSC 240,251,MATH 220
CPSC 326 - Risk Analysis/Certification & Accreditation	CPSC 325
CPSC 327 - Intro to Computer Forensics	CPSC 325
CPSC 328 - Security in Web Programming	CPSC 251,325
CPSC 335 - Building Graphical User Interfaces (w/Visual.Net)	CPSC 251
CPSC 362 - Cryptographic Application Development	CPSC 151,251
CPSC 421 - Computer Graphics	CPSC 111,251,MATH 320
CPSC 425 - Expert Systems	CPSC 111,251,330
CPSC 428 - Artificial Intelligence and Heuristic Programming	CPSC 111,251
CPSC 429 - Machine Learning	CPSC 111,251,428
CPSC 432 - Natural Language Processing	CPSC 111,141,251,330
CPSC 433 - Compiler Construction	CPSC 111,232,240,251
CPSC 442 - Intro to Computer Game Development	CPSC 240,251
CPSC 444 - Real-time Systems	CPSC 111,141,232,240 MATH 141
CPSC 445 - Networking and Data Communication	CPSC 111,141,232,240
CPSC 447 - Distributed Object Programming	CPSC 335,445
CPSC 448 - Applied Network Security	CPSC 325,445

CPSC 450 - Algorithmic Graph Theory  
CPSC 453 - Data Base Systems  
CPSC 460 - Applied Computer Cryptography  
CPSC 461 - Legal Impacts on Computer Security Solutions

CPSC 111,251  
CPSC 111,232,240,251  
CPSC 325,335,MATH 220  
CPSC 325,326

**MATHEMATICS CO-REQUISITES**

MATH 140 - Calculus I  
MATH 141 - Calculus II  
MATH 220 - Discrete Mathematical Structures  
MATH 311 - Statistics  
MATH 320 - Linear Algebra

**PRE-REQUISITE**

H.S. College Prep Math  
MATH 140  
MATH 140  
MATH 141  
MATH 220

**DISTRIBUTED CO-REQUISITES**

CMST 111 GE - Speech Communication  
ENGL 204 - Technical Writing

**PRE-REQUISITE**

None  
ENGL 103

And one year of Science with associated laboratories. This may be satisfied by either

1) PHYS 161 GE and 162 GE - Physics - I and II  
(PHYS 240 may be substituted for PHYS 162)

OR

2) CHEM 121/123 GE AND 124/126 GE - Intro Chemistry - I and II

OR

3) BIOL 114 GE and 115 GE - Intro Biology - I and II

**NOTES:**

1. A student must attain a grade of 'C' or better in any course, in CPSC or MATH, which is being applied towards the major requirements in Computer Science.
2. Students transferring into Computer Science, whether from off campus or on campus, must meet departmental admissions criteria. The criteria may be obtained from the department chairperson.
3. A student may transfer in at most 15 credits in Computer Science to apply towards the required 47 credits in Computer Science. Of these 15 credits, at most 3 credits may be used for Computer Science courses numbered 300 or higher.
4. A minimum of 30 credits must be taken in upper division courses (300 level or higher); this means a total of 30 out of the 120, not 30 out of 47 in CPSC.
5. The last 32 credits (out of 120) must be taken at ESU (unless a waiver is granted)
6. Home Study - A student can take a maximum of 9 credits with no more than 6 credits from any single department.

Date of Form: Sept 2008  
 East Stroudsburg University  
 Computer Science Department

Name: \_\_\_\_\_  
 Date Entered: \_\_\_\_\_  
 Adviser: \_\_\_\_\_

**FIELD OF CONCENTRATION: COMPUTER SCIENCE**

**GENERAL EDUCATION - 50 S. H.**

*Required of all students:*

<u>Course</u>		<u>Semester/Year</u>	<u>Grade</u>	<u>S. H.</u>
ENGL 103 - English Composition (C or better)	3 S.H.	_____	_____	_____
Physical Education Activities	2 S.H.	_____	_____	_____

**DISTRIBUTIVE ELECTIVES - 45 S.H.** - *S.H. in each group are to be distributed over at least 4 areas; courses acceptable for General Education are tagged as GE; Consult the catalog for each department's listing of GE courses.*

**GROUP A - 15 S.H.** - *English, Fine Arts, Foreign Language, Performing Arts, Philosophy (Cover at least four areas).*

<u>Course</u>		<u>Semester/Year</u>	<u>Grade</u>	<u>S. H.</u>
CMST 111 GE - Speech Communication		_____	_____	_____
_____		_____	_____	_____
_____		_____	_____	_____
_____		_____	_____	_____
_____		_____	_____	_____

**GROUP B - 15 S.H.** - *Biological Science, Chemistry, Computer Science, Mathematics, Physics, Psychology (Cover at least four areas).*

<u>Course</u>		<u>Semester/Year</u>	<u>Grade</u>	<u>S. H.</u>
<i>[One year of the following Science courses with their Labs]</i>				
{PHYS 161 GE - Physics I	}	_____	_____	_____
{PHYS 162 GE - Physics II	}	_____	_____	_____
{PHYS 240 may be substituted for PHYS 162}	OR	_____	_____	_____
{CHEM 121/123 GE AND 124/126 GE	}	_____	_____	_____
{Intro Chem - I and II	}	_____	_____	_____
{BIOL 114 GE / 115 GE	}	_____	_____	_____
{Intro Biology - I and II	}	_____	_____	_____
_____		_____	_____	_____
_____		_____	_____	_____

**GROUP C - 15 S.H. - Economics, Geography, History, Political Science, Sociology/Anthropology (Cover at least four areas).**

<u>Course</u>	<u>Semester/Year</u>	<u>Grade</u>	<u>S. H.</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

**MATHEMATICS (Required: 17 S.H., 'C' or better)**

<u>Course</u>	<u>Semester/Year</u>	<u>Grade</u>	<u>S. H.</u>
MATH 140 GE - Calculus I(4)	_____	_____	_____
MATH 141 GE - Calculus II(4)	_____	_____	_____
MATH 220 - Discrete Mathematical Structures	_____	_____	_____
MATH 311 - Statistics	_____	_____	_____
MATH 320 - Linear Algebra	_____	_____	_____

**COMPUTER SCIENCE - (Required: TOTAL of 47 S.H., 'C' or better)**

<u>REQUIRED COURSES (32 S.H.)</u>	<u>Semester/Year</u>	<u>Grade</u>	<u>S. H.</u>
CPSC 111 GE - Intro to Prog & Problem Solving(4)	_____	_____	_____
CPSC 141 - Intro to Computer Organization	_____	_____	_____
CPSC 151 GE - Linear Data Structures (4)	_____	_____	_____
CPSC 232 - Assembly Programming & Architect	_____	_____	_____
CPSC 240 - Operating Systems Concepts & Design(4)	_____	_____	_____
CPSC 251 - Non-Linear Data Structures (4)	_____	_____	_____
CPSC 321 - Issues in the Practice of CPSC	_____	_____	_____
CPSC 330 - Programming Languages (4)	_____	_____	_____
CPSC 430 - Software engineering	_____	_____	_____
CPSC 486 - Computer Science Internship (minimum of 3 credits)	_____	_____	_____

**ELECTIVES Minimum 15 S.H.; See below for list of acceptable electives; at most 6 credits from courses numbered below 300; 234, 236, 430 and 453 are usually offered once each year; others are usually offered in alternate years; CPSC 486 may not be used for elective credit.**

<u>Course</u>	<u>Semester/Year</u>	<u>Grade</u>	<u>S. H.</u>
CPSC 234 - Object Oriented Programming	_____	_____	_____
CPSC 236 - Programming Using Visual Basic	_____	_____	_____
CPSC 237 - Internet and Web Programming	_____	_____	_____
CPSC 320 - Topics in Computer Science	_____	_____	_____
CPSC 325 - Funds of Comp Security Engin I	_____	_____	_____
CPSC 326 - Risk Analysis/Cert & Accreditation	_____	_____	_____
CPSC 327 - Intro to Computer Forensic	_____	_____	_____
CPSC 328 - Security in Web Programming	_____	_____	_____
CPSC 335 - Building GUIs with Visual.NET	_____	_____	_____
CPSC 362 - Cryptographic Application Development	_____	_____	_____
CPSC 421 - Computer Graphics	_____	_____	_____
CPSC 425 - Expert Systems	_____	_____	_____
CPSC 428 - Artificial Intelligence and Heuristic Programming	_____	_____	_____
CPSC 429 - Machine Learning	_____	_____	_____
CPSC 430 - Software Engineering	_____	_____	_____
CPSC 432 - Natural Language Processing	_____	_____	_____
CPSC 433 - Compiler Construction	_____	_____	_____
CPSC 444 - Real-time Systems	_____	_____	_____
CPSC 445 - Networking & Data Communication	_____	_____	_____
CPSC 447 - Distributed Object Programming	_____	_____	_____
CPSC 448 - Applied Network Security	_____	_____	_____
CPSC 450 - Algorithmic Graph Theory	_____	_____	_____
CPSC 453 - Data Base Systems	_____	_____	_____
CPSC 460 - Applied Computer Cryptography	_____	_____	_____
CPSC 461 - Legal Impacts on Computer Security	_____	_____	_____

**ELECTIVES**

<u>Course</u>	<u>Semester/Year</u>	<u>Grade</u>	<u>S. H.</u>
ENGL 204 - Technical Writing	_____	_____	_____
_____	_____	_____	_____