

Computer Science Department

Student Handbook

Framingham State University
2016/2017 -

<http://www.framingham.edu/computer-science/index.html>
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The Computer Science Department

The Department offers courses leading to the Bachelor of Science in Computer Science with a concentration in Computer Science (CSG) or a concentration in Information Systems(CSI). Non-majors may elect to pursue a minor in Computer Science, Information Systems, Enterprise Systems or an interdisciplinary minor in Information Technology. There are also several certificate programs available through the Division of Graduate and Continuing Education: Computer Programming Languages, Information Technology Fluency, Network and System Administration and Management, Enterprise Systems and Software Engineering.

The primary goals of the Computer Science major are to prepare students for careers in the computer industry and for graduate study. Students are encouraged to participate in cooperative work with local companies for up to one year, receiving course credits, compensation, and job experience that is beneficial in seeking post-graduate employment. Students will have the option to participate in two full-time 6 month cooperative education experiences that will enhance their academic experience, provide hands-on real world problem solving, and potentially lead to full-time employment after graduation. Students who prefer to complete their studies in four years may still participate in one or more part-time internship (co-op) courses. Students can choose to work 12 hours/week for a single course or 24 hours per week for the 15 week semester for 2 course credits.

Mission

The Department of Computer Science's mission is to provide a high-quality undergraduate computer-science education, with hands-on experience in analyzing and solving problems, using critical thinking, communicating effectively, and working individually as well as in teams; we prepare our graduates for successful careers in software development and information technology and provide a strong foundation for life-long learning.

Objectives

Students will have the following capabilities upon successful completion of our programs:

1. Confidently create effective, efficient, and secure computer-based solutions to problems.
2. Professionally critique computer-based solutions to problems.
3. Communicate ethically and effectively while respecting intellectual property rights.
4. Enhance the achievement of a team as a team member.
5. Maintain professional currency in a constantly advancing field of endeavor.

Outcomes

In keeping with ABET requirements [<http://www.abet.org/>], our programs enable students to achieve the following outcomes by the time of graduation:

1. Analyze a problem, and identify and define the appropriate computing requirements
2. Design a computer-based system, process, component or program to meet specifications
3. Implement and test a computer-based design using current techniques, skills and tools
4. Apply mathematical foundations, algorithmic principles and computer science theory in the design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices

Additional objectives that will be enabled include:

5. Ability to function effectively in teams to accomplish a common goal
6. Understand professional, ethical, legal, security and social issues and responsibilities
7. Ability to use oral and written communication effectively
8. Recognize the need for continuing professional development

Computing Facilities:

- Campus-wide wireless local area network
- Labs with over sixty personal computers running Windows operating system
- Windows servers, UNIX servers, mail server, and web server
- Microsoft Visual Studio with C++ and Visual BASIC
- Java Development Kit
- Microsoft Assembler
- Oracle and Microsoft Access Databases
- Classrooms equipped with computers and multimedia systems for teaching
- Software compatibility with Framingham State University laptop program.
- Linux based lab for UNIX System Administration course

Computer Science Rigor

Courses required in the discipline of computer science are rigorous and require students to analyze real world problems and design and implement effective solutions. Students will be able to apply logic and reasoning to problems, develop algorithms, code solutions, test, debug and document their programs. Effective written and oral communication, an understanding of mathematics, and participation in group projects are emphasized.

Educational Philosophy

The mission of Framingham State University is to provide accessible, affordable, relevant, and rigorous academic programs of educational excellence to a diverse, multicultural student body. The university has recognized technology as part of its mission and core values. Emphasis is placed on teaching and lifelong learning, and intellectual, social and ethical development is fostered. Higher

education offers a uniquely effective opportunity to be a catalyst for change to improve individual lives and social structures. The faculty of the Computer Science Department concurs with this philosophy.

Students who enter the rapidly changing field of computer science can expect to be lifelong learners of new and evolving technology, software and communication media and must learn to adapt existing skills and concepts to new knowledge areas.

Computer Science Programs

The Computer Science Major

The student majoring in Computer Science may elect to take one of two concentrations. The Computer Science concentration (CSG) prepares students for careers such as software developer, software designer, lead engineer, or software architect. The concentration in Information Systems (CSI) trains students for technical careers in information systems such as database administration, network and systems administration, web design, technical writing, systems analysis and design, and software quality assurance.

Students also have the additional options of taking either of the above concentrations in conjunction with two full-time 6-month cooperative education experiences. In order to meet the requirements for these new options students must maintain a 3.0 average in their computer science classes or get permission of the computer science department.

The General Education Requirement

All students must satisfy a general education requirement consisting of ten (10) courses. See Appendix F for a list of courses by General Education domain and subdomain.

Common Core Requirements Two (2) Course-Credits Required

- A. ENGL 110 Expository Writing
- B. MATH xxx College-Level Mathematics Course

Domain I Three (3) Course-Credits Required

The study of representations of human experience.

- A. **One (1) course in Creative Arts**
The study of creative expression through the practice of artistic problem solving.
- B. **One (1) course in Humanities**
The study of artistic, literary, and philosophical works through analysis and interpretation.
- C. **One (1) Language course**
The study of language in its cultural contexts.

Domain II Three (3) Course-Credits Required

The study of problem-solving, scientific discovery, logical reasoning, and quantitative analysis.

- A. **One (1) course in Analysis, Modeling, and Problem Solving**
The study of analytical, quantitative, and/or formal reasoning methods involving the manipulation of numbers or other symbols to solve problems
NOTE: Domain IIA is satisfied through the major

B. Two (2) courses in Natural Sciences

(The two courses must be from two different subject codes; at least one of the courses must be a lab science course) The study of classical and modern principles of life and physical sciences, together with a critical appreciation of how scientific knowledge has been constructed, including methods of validating the results of scientific inquiry.

Domain III Three (3) Course-Credits Required

The study of human behavior, cultures, and societies.

A. One (1) course in Perspectives on the Past

The study of human behavior, culture, and expression through explorations of the past.

B. One (1) course in Perspectives on the Contemporary World The study of human behavior, culture, and expression through explorations of the present.

C. One (1) course Global Competency, Ethical Reasoning, and/or Human Diversity

The study of global systems and issues, ethical principles, and/or differences and commonalities among groups of people. Courses in this group can incorporate any or all of these topics.

Changes in Core Computer Science Requirements

Core requirements in the major have changed over the years. Each student is required to fulfill the requirements as listed in the university catalog in the year they matriculated into the university. Requirements for students matriculating in 2015/2016 are summarized on the following pages. The appendices include requirements for the years 2000 through 2015.

Computer Science (CSS/CSG) Concentration Requirements 2016/2017

Computer Science Courses (13.5):

CSCI.120	Introduction to Information Technology
CSCI.130	Computer Science I Using Java (with lab-replaces 152, added S2015)
CSCI.200	Computer Science Professional Exploration Seminar (.5 course added 2013)
CSCI.215	Computer Science II Using Java (with lab- replaces 252-added F2016)
CSCI.258	Introduction to Operating Systems Using UNIX™
CSCI.271	Data Structures
CSCI.317	Discrete Structures
CSCI.347	Analysis of Algorithms
CSCI.352	Computer Architecture and Assembly Language
CSCI.360	Database Management
CSCI.362	Software Engineering
CSCI.460	Theory of Computing
CSCI.465	Operating Systems Internals
CSCI.477	Computer Networking

Computer Science Electives (2)

Any full-credit 300 level course or above except for CSCI.490 Directed Study and internship or co-op courses which currently include: CSCI.350, CSCI.450, CSCI.495 and CSCI.496.

Mathematics and Science Requirements (5 courses)

Required Math Courses:

MATH.117 Statistics (common core math requirement)

MATH.292 Discrete Math 1 or MATH 215 Finite Mathematics

Required Science Courses: (2 from Domain IIB- see note below)

2 Science Courses (1 must be a lab course open to majors in that discipline)

NOTE: Both science courses can fulfill both the CS science requirement as well as General Education Science requirement as long as CSG students select from the restricted list under CS requirements in degree works.

A fifth course can be taken in either Math (beyond pre-calculus) or Science

Information Systems (CSI) Concentration Requirements 2016/2017**Computer Science Courses (9.5):**

CSCI.108 HTML, JavaScript Programming and Web Site Development

CSCI.120 Introduction to Information Technology

CSCI.130 Computer Science I Using Java (with lab-replaces 152, added S2015)

CSCI.200 Computer Science Professional Exploration Seminar (.5 course added 2013)

CSCI.215 Computer Science II Using Java (with lab- replaced 252, added F2016)

CSCI.258 Introduction to Operating Systems Using UNIX™

CSCI.345 Computer and Network Security

CSCI.360 Database Management

CSCI.373 Advanced Web Technologies

CSCI.376 Networking Technologies

Mathematics (2)*

MATH.117 Introduction to Statistics (General Education Goal 2)

MATH.292 Discrete Mathematics I or MATH.215 Finite Math

Business (5):

ECON.101 Principles of Macroeconomics (General Education 3C)

OR ECON.102 Principles of Microeconomics (General Education 3B)

ACCT.220 Introduction to Financial Accounting

BUIS.280 Organizational Behavior

(or MGMT.280) Applied Organizational Theory and Management

BUIS 460 Information Systems Management

(or BADM.398 (or BUIS 398) Projects in Information Systems

BUIS 411 Information Systems Research

(or BADM.477 (or BUIS 477) Management Issues in Information Technology

Electives (3):

Students must take three courses from at least two of the following categories.

Network and System Administration

CSCI.320 Windows Server & Client Management

CSCI.340 UNIX™ System Administration

General IS Electives

CSCI.230 Principles of Information Technology Operations

CSCI.271 Data Structures

CSCI 300 Artificial Intelligence

CSCI.303 Web and Mobile Applications

CSCI.306 Introduction to .NET Using Visual Basic

CSCI 325 Mobile Application Development
CSCI.333 Object-Oriented Programming Using C++
CSCI.347 Analysis of Algorithms
CSCI.352 Computer Architecture and Assembly Language
CSCI.362 Software Engineering
CSCI.400 Special topics in Computer Science
CSCI.404 Seminar in Computer Science
CSCI.428 Software Quality Assurance
CSCI.455 Human-Computer Interaction
CSCI.460 Theory of Computing

Computer Graphics and Technical Writing

CSCI.140 Introduction to the Internet, Graphics and Multimedia
ENGL.286 Professional Writing
ENGL.371 Business Writing
ENGL.372 Technical Writing

***NOTE:** Students may need to take additional math courses if they don't meet the prerequisites for Discrete Math I and/or other post pre-calculus classes.

Minor in Computer Science (5 courses)

Required Courses (4)

CSCI.120 Introduction to Information Technology
CSCI.152 Computer Science I Using Java (or CSCI 130 Introduction to Programming)
CSCI.252 Computer Science II Using Java
CSCI.258 Introduction to Operating Systems Using UNIX™

Elective (1)

One other course from the Computer Science Department.

Minor in Information Systems (5 courses)

Elective Courses (5)

Any five (5) courses from the Computer Science Department including at least one course at the 200 level or above. This includes CSCI.140 Introduction to the Internet, Graphics, and Multimedia.

Minor in Enterprise Systems

Required Courses (5)

CSCI 164 Introduction to Enterprise Systems using z/OS
CSCI 208 COBOL Programming for Enterprise Systems
CSCI 222 Networking and Security for Enterprise Systems
CSCI 234 Introduction to DB2 for z/OS
CSCI 305 Assembler Language for z/OS

Interdisciplinary Minor in Information Technology (5 courses)

Required Courses (3)

- CSCI.120 Introduction to Information Technology
- COMM.140 (or CSCI.1140) Introduction to the Internet, Graphics, and Multimedia
- BUIS.200 (or BADM 200) Introduction to Business Systems

Electives (2)

Selected from the courses listed below.

Art and Music:

- ARTS310 Art and Motion

Communication Arts:

- COMM 200 Introduction to Computer Graphic Design
- COMM 225 Interactive Design
- COMM 316 Advanced Interactive Design
- COMM327 Computer Animation Techniques

Computer Science:

- CSCI 108 HTML, JavaScript Programming, and Web Site Development
- CSCI 152 Computer Science I Using Java (or CSCI 130 Introduction to Programming)
- CSCI 230 Principles of Information Technology Operations
- CSCI 252 Computer Science II Using Java
- CSCI 258 Introduction to Operating Systems using UNIX
- CSCI 306 Introduction to Visual Basic
- CSCI 320 Windows Server and Client Management
- CSCI 345 Computer and Network Security

Geography:

- GEOG 214 Geographic Techniques – Quantitative Methods
- GEOG 216 Introduction to Geographic Information Systems
- GEOG 316 Advanced Geographic Information Systems
- GEOG 328 Introduction to Remote Sensing

Mathematics:

- MATH 208 Biostatistics
- MATH 307 Intermediate Statistics

COMPUTER SCIENCE MAJOR

Information Systems Concentration Worksheet(UCSI)

DOMAIN GENERAL EDUCATION (10 Courses Required): Domain II A is satisfied through completion of the Computer Science major, leaving ten courses to be completed to satisfy the remaining general education subdomains through courses taken outside the major department. Only courses designated (Gen. Ed. Domain) after the course title will meet general education requirements. Please refer to the catalog for full information.

<u>COURSE #</u>	<u>TITLE</u>	<u>SUBDOMAINS MET</u>
<u>ECON 101</u>	<u>Macroeconomics (3C)or</u>	<u>3C or 3B</u>
	<u>ECON 102 Microeconomics(3B)</u>	
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
Domain General Education Subdomains		
Common Core:	A. ENGL 110 Expository Writing	_____
	B. MATH XXX (credit-bearing)	_____
Domain I:	A. Creative Arts	_____
	B. Humanities	_____
	C. Language	_____
Domain II:	A. Analysis, Modeling, Problem-Solving	X
	B. Natural Sciences (two)	_____

Domain III:	A. Perspectives on the Past	_____
	B. Perspectives on Contemp. World	_____
	C. Global Comp., Eth. Reas.,	_____
	Human Div.	_____
_____	Laboratory Science	_____

X = Fulfilled through major
MAJOR AND RELATED COURSES (18.5):

<u>COURSE #</u>	<u>TITLE</u>
<u>CSCI 108</u>	HTML, JavaScript Programming/Web Site Dev.
<u>CSCI 120</u>	Introduction to Information Technology
<u>CSCI 130</u>	Computer Science I Using Java (replaces CSCI152)
<u>CSCI 200</u>	Computer Science Professional Exploration Seminar(.5)
<u>CSCI 215</u>	Computer Science II Using Java (replaces CSCI252)
<u>CSCI 258</u>	Introduction to Operating Systems Using UNIX
<u>CSCI 345</u>	Computer and Networking Security
<u>CSCI 360</u>	Database Management
<u>CSCI 373</u>	Advanced Web Technologies
<u>CSCI 376</u>	Networking Technologies
<u>ACCT 220</u>	Introduction to Financial Accounting
<u>MGMT 280</u>	Organizational Behavior
<u>BUIS 460</u>	Information Systems Management (replaces BADM 398 F14)
<u>BUIS 411</u>	Information Systems Research (replaces BADM477 F14)
<u>MATH 117</u>	Statistics (possible Common Core B)
<u>MATH 292</u>	Discrete Math I or MATH 215 Finite Math

3 RESTRICTED ELECTIVES (SEE CATALOG):

FREE ELECTIVES (4):

Worksheet for CS- General Studies Concentration(UCSG)

DOMAIN GENERAL EDUCATION (10 Courses Required): Domain II A is satisfied through completion of the Computer Science major, leaving ten courses to be completed to satisfy the remaining general education subdomains through courses taken outside the major department. Only courses designated (Gen. Ed. Domain) after the course title will meet general education requirements. Please refer to the catalog for full information.

<u>COURSE #</u>	<u>TITLE</u>	<u>SUBDOMAINS</u>
<u>MATH 117</u>	<u>Introduction to Statistics</u>	<u>MET</u> <u>CCB</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Domain General Education Subdomains

Common Core:	A. ENGL 110 Expository Writing	_____
	B. MATH XXX (credit-bearing)	_____
Domain I:	A. Creative Arts	_____
	B. Humanities	_____
	C. Language	_____
Domain II:	A. Analysis, Modeling, Problem-Solving	<u>X</u>
	B. Natural Sciences (two)	_____
Domain III:	A. Perspectives on the Past	_____
	B. Perspectives on Contemp. World	_____
	C. Global Comp., Eth. Reas., Human Div.	_____

Laboratory Science

X = Fulfilled through major

MAJOR AND RELATED COURSES (18):

<u>COURSE #</u>	<u>COURSE TITLE</u>
<u>CSCI 120</u>	<u>Introduction to Information Technology</u>
<u>CSCI 130</u>	<u>Introduction to Programming (replaces CSCI152)</u>
<u>CSCI 200</u>	<u>Computer Science Professional Exploration Seminar</u>
<u>CSCI 215</u>	<u>Computer Science II Using Java (replaces CSCI252)</u>
<u>CSCI 258</u>	<u>Introduction to Operating Systems Using UNIX</u>
<u>CSCI 271</u>	<u>Data Structures</u>
<u>CSCI 317</u>	<u>Discrete Structures*</u>
<u>CSCI 347</u>	<u>Analysis of Algorithms</u>
<u>CSCI 352</u>	<u>Computer Architecture & Assembly Language</u>
<u>CSCI 360</u>	<u>Database Management</u>
<u>CSCI 362</u>	<u>Software Engineering</u>
<u>CSCI 460</u>	<u>Theory of Computing</u>
<u>CSCI 465</u>	<u>Operating Systems Internals</u>
<u>CSCI 477</u>	<u>Computer Networking</u>

Two (2) restricted Computer Science electives (see catalog):

<u>CSCI</u>	_____
<u>CSCI</u>	_____

Mathematics & Science Requirement (5 courses, some of which satisfy General Education requirements):

<u>MATH 117</u>	<u>Introduction to Statistics</u>
<u>MATH 292</u>	<u>Discrete Math or MATH 215 Finite Math</u>
<u>SCI LAB</u>	<u>Must be a lab course open to science majors</u>
<u>SCIENCE</u>	<u>Lab or Non-lab (Domain 2B)</u>
<u>MATH/SCI</u>	<u>5TH course in Math (beyond Precalc.) or Science</u>

*May be substituted by MATH 294, Discrete Math II

FREE ELECTIVES (3):

_____	_____
_____	_____
_____	_____

Suggested Course Sequences 2016/2017

COMPUTER SCIENCE CONCENTRATION (CSG)

10 required General Education Electives can be taken in any domain sequence- numbers just count up to 10

	FALL SEMESTER	SPRING SEMESTER
Year 1	CSCI.120 ¹ Intro to Information Technology	CSCI.130 ¹ Intro to Programming (r:120,algebra)
	ENGL.110 Expository Writing (Gen Ed core requirement)	MATH.117 ¹ Intro to Statistics (MS1) (Gen Ed core requirement)
	MATH.123 College Algebra (if needed) Free Elective 1	lab Science (MS2)(Domain IIB) General Education elective 4
	General Education elective 3	General Education elective 5
Year 2	CSCI.215 ¹ Computer Science II(r:152,precalc)	CSCI.271 ³ Data Structures (S) (r:252)
	CSCI.258 ² Intro to Operating Systems(F) (Prereq: 152)	MATH.292 ³ Discrete Mathematics I (S) OR MATH.215 Finite Mathematics (MS4) (r:precalc)
	MATH.200 ¹ Precalculus (if needed) (Free elective 2)	General Education elective 7
	Non-lab Science course (MS3) (General Education elective 6)	CSCI.360 ² Database Management (r:152)
	CSCI.200 CS Professional Expl. Seminar	
Year 3	General Education elective 8	General Education elective 9
	CSCI.347 ² Analysis of Algorithms (F) (r:271 +M215)	CSCI.360 ³ Software Engineering (S)(r:271)
	⁸ Computer Science Elective 1	CSCI.317 Discrete Structures OR MATH 294 Discrete Math 2 (r:271 +M215)
	CSCI.352 ² C Arch &.Assy Lang (F)(r:271)	General Education elective 10
Year 4	CSCI.460 ³ Theory of Computing (F) (r:271 +M215)	⁸ Computer Science elective 2
	CSCI.477 ² Computer Networking (F)(r:271)	CSCI.465 ³ Operating Sys Internals (S) r: 258, 271, 355)
	A math or science course (MS5)	Free elective
	Free elective	Free elective

(F): Offered in the fall semester only.

(S): Offered in the spring semester only

(MS) Math /Science Course Requirements for CS majors

NOTE: General Education courses can be taken in any order (except core requirements must be completed in the first year) the sequence above just shows room for 10 General Education courses.

Legend : (Superscripts next to course numbers) Course is offered....

1-Every semester

2-Every fall

3-Every spring

4-Every other fall (odd years)

5-Every other fall (even years)

6-Every other spring (odd years)

7-Every other spring (even years)

8-Variable (not according to any particular schedule or pattern)

9- Other

INFORMATION SYSTEMS CONCENTRATION (CSI) 2016/2017

	FALL SEMESTER	SPRING SEMESTER
Year 1	CSCI.120 ¹ Intro to Information Tech	CSCI.130 ¹ Intro to Programming (r:120,algebra)
	CSCI.108 ² HTML, Javascript... (F)	ECON.101/2 ¹ Micro-/Macroeconomics (Gen Ed Elective 3,)
	MATH.123 College Algebra (if needed) Free Elective 1	MATH.117 ¹ Intro to Statistics (Gen Ed core requirement)
	ENGL 101 Expository Writing Gen Ed core- must be taken yr 1	General Education elective 4
Year 2	CSCI.215 ¹ Computer Science II(R:152)	CSCI.376 ³ Network Technologies (S)(r:258)
	MATH.200 ¹ Precalculus (if needed) (Free elective 2)	MATH.292 ³ Discrete Mathematics I (S) OR MATH.215 Finite Mathematics(r:precalc)
	CSCI.360 ² Database Management (F)(r:152)	ACCT.220 ¹ Intro to Financial Accounting
	CSCI.258 ² Intro to Operating Systems (F) (Prereq: 152)	CSCI.373 ³ Advanced Web Technologies (S) (r: 108, 360)
	CSCI.200 CS Professional Expl. Seminar	
Year 3	General Education elective 5	General Education elective 8
	MGMT.280 ¹ Organizational Behavior	⁸ Information System elective 1
	General Education elective 6	General Education elective 9
	General Education elective 7	General Education elective 10
Year 4	BUIS 460 Information Systems Management (Capstone-new F14)	BUIS411 Information Systems Research (new F14)
	⁸ Information System elective 2	⁸ Information Systems elective 3
	CSCI.345 ² Computer and Network Security (r:258)	Free elective
	Free elective	Free elective

(F): Offered in the fall semester only.

(S): Offered in the spring semester only

NOTE: General Education courses can be taken in any order (except Goal 1 must be completed in the first year) the sequence above just shows room for 12 General Education courses.

Legend : (Superscripts next to course numbers) Course is offered....

1-Every semester

2-Every fall

3-Every spring

4-Every other fall (odd years)

5-Every other fall (even years)

6-Every other spring (odd years)

7-Every other spring (even years)

8-Variable (not according to any particular schedule or pattern)

9- Other

Course Selection

Advising

Each student is assigned to an advisor. Advisors are available during posted office hours, and often at other times as well, for any questions regarding your academic program. Students should feel free to seek advice as issues arise. Advisors assist students in achieving maximum satisfaction in their course of study and graduating in a timely way. Every semester, each student is expected to meet with their advisor to review their course selection for the next semester. This is to make sure courses that are only offered once a year are taken when available and to make students aware of changes in the program.

Math Requirements

All computer science majors must take Statistics which fulfills the common core general education requirement. All majors must also take either MATH 292 Discrete Math 1 or MATH 217 Finite Math 1. We recommend that students take a math course every semester until the math requirements are fulfilled because they are prerequisites for many CS courses. Students with a concentration in Computer Science (CSG) must also take a combined total of 5 Math and Science courses. Both science courses can be selected from Gen Ed Domain IIB as long as the laboratory course chosen is taken by majors in that discipline (if not a waiver may be required of the chair of the science department in which the science lab course was taken).

The math courses must be beyond the Precalculus level which means some students may need to take Precalculus before taking the other required math courses. Precalculus requires either College Algebra or a score of 4 on the math placement exam. Some students may need to use their free electives to satisfy the math prerequisite requirements.

Math Placement Scores

Math Code	Course Options
0	Transfer student needing Math Placement exam
1	Needs MATH.095 General Math
2	Any 100 level non-algebraic course (MATH.110 College Math, MATH.117 Intro. To Statistics, MATH.119 Math for Liberal Arts)
3	Transfer course equivalent to MATH.095 General Math, can take any 100 level Math including Math 123 College Algebra
4	Any 100 level math class including MATH.123 College Algebra
5	Any 100 level or may enroll in MATH 200 Precalculus or, after consultation with the Mathematics Department, MATH 219 Calculus I
9	Indicates college-level math course has been accepted in transfer

See catalog for updated description of scores

Course Prerequisites

Students are to make sure they meet prerequisites and co-requisites for courses in which they wish to enroll. A course flow diagram can be found in Appendix D.

Adding or Dropping Courses

Students may drop a semester course (or change sections of same) without penalty, if they do so before the end of the sixth academic day.

Students may add a semester course, if they do so before the end of the sixth academic day. If the automated system lists a required course as full, it may help to go to the professor at the beginning of the

semester and ask to get in or to be wait listed in the event that another student drops the class or in the event that a professor is willing to take on an extra student.

In the event that students add or drop any course or change a section of the same, they **MUST** get the appropriate form from the Director of Student Records and Registration Services Office or Student Services Center and return it to that office when completed. Failure to submit a withdrawal form by the due date can result in a failing grade on the student transcript. It is the students' responsibility to make sure they submit the signed withdrawal form to the registrar or Student Services Center. Students should keep a copy of the withdrawal for their own records.

Students who desire to add or drop a course or change a section must obtain their advisor's signature on the appropriate form, after determining, with the advisor, that this change will not adversely affect academic load requirements. In cases where questions arise, these changes must meet the approval of the assistant Vice President for Academic Affairs. In addition, they must obtain other appropriate signatures as indicated on the Director of Student Records and Registration Services form.

Retaking a Course

The only courses that may be repeated are courses in which a student receives a grade lower than a "C-". All grades, including those earned in repeated courses, will remain on the academic transcript. Students must bear in mind that the same course has to be repeated and that only the most recent grade, whether higher or lower than the original grade earned, will be the grade calculated in the QPA. Continuing courses in which failing grades have been received must be repeated successfully before the student may take advanced work except when departmental policy permits otherwise. Only grades in Framingham State University courses can be used to recalculate the QPA when repeating courses.

Transfer Courses

Transfer students should meet with their advisor or the chair of the department to determine course equivalencies for their transfer courses within computer science. This will help determine which courses should be taken in their first semester at Framingham State. .

If a student wishes to take a course at another school because it is not offered at FSU in that semester, they must get prior permission from the department chair. Not all courses are equivalent.

Policies

Grading System

Grading policies are provided by faculty to the students at the beginning of the semester via the course syllabus. These policies vary from instructor to instructor. Students are encouraged to bring any issues related to grades to their instructor. Students must receive a C- or better in order to proceed to the next programming course in the programming sequence 130(152), 215(252), 271, 477.:

Class Attendance Requirements

Students are expected to attend all classes. Statistics show that students who attend classes perform better. Each course syllabus will include requirements for class attendance, including the impact of non-attendance on the course grade. These policies vary from instructor to instructor.

Student Preparation

Students should expect to spend 2 hours of preparation for each hour in the classroom per course per week.

Cellular Phone Policy

All cell phones must be kept on silent alert (vibration or visible flash) while in the classroom. Any calls must be answered outside the classroom. Further policies may be implemented depending on the instructor.

Academic Honesty

The Computer Science Department supports the University Policy Regarding Academic Honesty, as published in the Framingham State University Catalog, and the Ram Student Handbook. Cheating and plagiarism are serious offenses, are subject to scrutiny under due process, as specified in the Ram Student Handbook, and can result in an “E” for the course. Instructors must refer any allegation of academic dishonesty to the Dean of Students.

All work submitted in a class (homework, quizzes, tests, projects, papers) are to be done individually by the student without assistance from other students unless the instructor specifies otherwise. Using help from other students or tutors or parents for take home quizzes is considered cheating and can result in a 0 on the quiz/test/paper/... or even a failing grade for the course. Instances of cheating **MUST** be reported to the Dean of Students, but how they affect the grade for the course is up to the instructor. Read your course syllabus to determine professor grading policies.

Plaiagerism

When submitting papers or research, make sure you properly quote copied material and include appropriate citation. As much as possible use your own words. To assist you with citations a few examples are shared below.

APA Citation Guide

An APA Citation Guide - <http://www.bibme.org/citation-guide/apa/>

Citing a Website in APA:

- Author, A.A.. (Year, Month Date of Publication). Article title. Retrieved from URL
- Example: Simmons, B. (2015, January 9). The tale of two Flaccos. Retrieved from <http://grantland.com/the-triangle/the-tale-of-two-flaccos/>

Citing a Book in APA:

- Author, A.A.. (Year of Publication). Title of work. Publisher City , State: Publisher.
- Example: Finney, J. (1970). Time and again. New York, NY: Simon and Schuster.

Citing a Journal article in APA:

- Author, A.A.. (Publication Year). Article title. Periodical Title, Volume(Issue), pp.-pp.
- Example: Nevin, A. (1990). The changing of teacher education special education. Teacher Education and Special Education: The Journal of the Teacher Education Division of the Council for Exceptional Children, 13(3-4), 147-148.

Appeals Procedure

The University Catalog and the Ram Student Handbook outline the procedure for grade appeals. The procedures for other issues regarding curricular/course requirements are as follows:

1. The student is expected to meet with the faculty member involved.
2. If not satisfied with the outcome, the student may meet with the Department Chair, who will seek resolution
3. If the concerns are not met through the above informal discussion, then the student may initiate a formal process by putting his or her concerns in writing to the Department Chair, who will then forward them to the Vice President of Academic Affairs.

Email

When sending an email to your professor, make sure you include your **name and the course name in the subject line**. Use academic language, without texting abbreviations. University policy dictates that all official academic and course related correspondence go to university student email accounts. Check your email periodically for updates from your instructor. Make sure your email is listed correctly on blackboard.

Accommodations

Students who seek accommodations during the semester because of disabilities should provide a Documentation Confirmation from the Office of Academic Support within the first two weeks of class. Academic support is located in the Center for Academic Support and Advising (CASA). Please call 508-626-4906 to speak with the director of the Office of Academic Support if you have questions or if you need to schedule an appointment. You can also check out their website at <http://www.framingham.edu/CASA/Accommodations/>

Snow Emergency Policy

The Following Procedures Will be in Effect During Snow Emergencies

- In the event of severe weather conditions or other emergency situations, notice of delayed openings or cancellation of classes will be broadcast on radio station WBZ 1030 AM and WBZ TV Channel 4.
- Announcements will be made beginning at 6:00 a.m.
- You may also call 508.626.4898 for a recorded weather message.
- PLEASE DO NOT CALL CAMPUS POLICE.
- Please use your good judgment when deciding to come to class.

Student Participation in the Department

Opportunities exist for juniors and seniors to participate in the growth of the department in numerous ways. Student work-study jobs include providing tutoring to students in CS classes, and in some instances assisting professors in departmental projects. Students are also needed to participate in the department curriculum committee and can provide input into the future direction of the department. All students are encouraged to provide feedback and suggestions for curriculum improvement.

Computer Science Clubs

Students are encouraged to participate in the Computer Science Club or Programming and IT Club. The clubs offers students an opportunity to help each other with course work, maintain a club web site, participate in Sand Box events in the spring and to participate in local programming events. Your input and participation is encouraged.

Work and Internship Options

The department encourages students to find part-time internship/co-op or summer positions related to technology. During the school year many students work for ITS (Information Technology Services) in their helpdesk area. This is a wonderful opportunity to learn more about computers, and to gain experience that looks good on your resume. Many of our co-op partners are seeking students who have had some experience with helpdesk- so work on campus will provide an excellent stepping stone in this direction.

The department also needs tutors to assist students in the entry-level courses. If you are interested please contact the department chair.

Awards

The department is looking for new ways to integrate students into department activities. In 2012 we awarded an “Outstanding Service” award to a student who has worked tirelessly on behalf of his peers and the department in motivating students to go above and beyond course work in order to prepare for a professional career after graduation. The department intends to establish additional awards to celebrate student initiatives as merited.

Outstanding Service Award – for service to the department and it’s students above and beyond day to day course work and activities.

Outstanding Student Award – given to a student with an excellent GPA as well as contributions to the department during their tenure at FSU.

Other Awards- to be determined. We would like to consider an award for those students who compete in the fall and spring programming competitions against other schools.

FACULTY

Department Chair: David Keil

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Conny Breuning	HH416B	cbreuning@framingham.edu	x4721
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David Keil	HH418A	dkeil@framingham.edu	x4724
Suban Krishnamoorthy	HH328	skrishnamoorthy@framingham.edu	x4775
Satish Penmatsa	HH418B	spenmatsa@framingham.edu	x4708

NEW Cooperative Education Options (started in 2013)

Computer Science students may elect to:

1. Take no part in an internship or cooperative experience,

2. Remain within the non-cooperative education concentrators but take a part-time internship course (CSCI 495 and CSCI.496) as a free elective(s) based on the number of free electives available.
3. Enroll in one of the two new cooperative education concentrators each of which allows for up to 2 6-month cooperative education experiences.

What is cooperative education?

Cooperative Education has been defined by educators as a “structured educational strategy that integrates classroom studies with learning through productive work experiences in a field related to a student’s academic or career goals.” The student, educational institution, and professional organization agree to work together to enhance the educational experience. Students are able to apply their learning to real world problems under the guidance of a supervisor, while employers are able to assess a student’s abilities with a view toward hiring upon graduation. The educational institution sets up rapport with the community which may lead to speakers in the classroom, professionals sitting on the panel reviewing student projects, and faculty retaining a finger on the pulse of change in industry.

Why Participate in Cooperative Education?

- Gain professional experience
- Enhance academic learning
- Find your niche
- Resolve real world problems
- Acquire supervised hands-on training
- Become part of a team
- Develop an employment network

What are the requirements of the cooperative education concentrations?

The cooperative education concentrators require the same academic courses as their non-cooperative education counterparts, plus participation in 2 6-month coops. If a student elects to take only 1 6-month, they can switch back to the non-coop concentration.

The participation in two 6-month cooperative education experiences extends degree completion by one year but provides the student with valuable experience that leads to a better grasp of academic components and theories, a better understanding of professional requirements, and a better focus on a specific area of study. These cooperative education experiences also enhance a student’s resume and makes the student more attractive to potential employers.

Who is eligible?

Students who want to apply for this option must meet the following requirements:

- Maintain an overall GPA of 2.8 in all courses
- Maintain a GPA of 3.0 in Computer Science courses
- Complete and Submit a co-op application form by the end of their first semester sophomore year (in order to take the pre-coop seminar in the spring of their sophomore year)
- Meet with the cooperative program coordinator to discuss their goals prior to their first coop
- Have junior status to enroll in a cooperative learning experience.
- Complete all Computer Science courses required through end of sophomore year for each concentration as listed on the Computer Science Website.
- Transfer students must have taken three CS courses at FSU prior to participating in first coop.

What is the process?

4. During sophomore year, you submit application and have it reviewed.

5. You register for cooperative experience and work 40 hours per week for a six month period (keeping a journal of their activities – which is used in your post co-op seminar)
6. Resume classes and update your resume and career goals
7. Interview and prepare to go on second 6-month co-op.
8. Complete second six-month coop.
9. Finish up classes and graduate.

What is the cost of this program?

There may a reduction in fees which is determined yearly by the FSU Board of Trustees.

Will I be paid?

Yes ---students on co-op will be paid a fair and equitable wage by the participating companies.

Will I still be considered a full-time student?

Yes, you will be registered as a full-time student and will maintain your financial aid status.

Can I live on campus?



If you wish to live on campus, you will have to pay housing and fees related to on-campus living.

If I get co-op pay, what happens to my financial aid?

You will need to declare your income in the special line provided for cooperative education employment, and your financial aid will be calculated on all of your income, as it is every year.

Suggested 5 YEAR Course Sequences for Co-op Concentrators 2015/2016 and 2016/2017

COMPUTER SCIENCE GENERAL CONCENTRATION with Cooperative Education

	FALL SEMESTER	SPRING SEMESTER
Year 1	CSCI.120 ¹ Intro to Information Technology	CSCI.130 Computer Science I (152)
	ENGL.110 Expository Writing (Gen Ed core requirement)	MATH.117 ¹ Intro to Statistics (MS1) (Gen Ed elective core requirement)
	MATH.123 College Algebra (if needed) Free Elective 1	lab Science (MS2)(Domain IIB) General Education elective 4
	General Education elective 3	General Education elective 5
Year 2	CSCI.215 Computer Science II (252)	CSCI.271 ³ Data Structures (S)
	CSCI.258 ² Intro to Operating Systems(F)	MATH.292 ³ Discrete Mathematics I (S) OR MATH.215 Finite Mathematics (MS4)
	MATH.200 ¹ Precalculus (if needed) (Free elective 2)	General Education elective 7
	CSCI.360 ² Database Management (F)	General Education elective 8
	CSCI200 CS Prof. Expl. Seminar	
Year 3		⁸ Computer Science elective 1
		CSCI.360 ³ Software Engineering (S)
		CSCI.317 Discrete Structures OR MATH 294 Discrete Math 2
		General Education elective 10
Year 4	Non-lab Science course (MS3) (General Education elective 6)	
	CSCI.347 ² Analysis of Algorithms (F)	
	CSCI.352 ² C Arch &.Assy Lang (F)	
	General Education elective 9	
Year 5	CSCI.460 Theory of Computing (F)	⁸ Computer Science Elective 2
	CSCI.477 ² Computer Networking (F)	CSCI.465 ³ Operating Sys Internals (S)
	A math or science course (MS5)	General Education elective 12
	Free elective	Free elective

(F): Offered in the fall semester only.

(S): Offered in the spring semester only

(MS) Math /Science Course Requirements for CS majors

INFORMATION SYSTEMS CONCENTRATION (CSI) 2016/2017

	FALL SEMESTER	SPRING SEMESTER
Year 1	CSCI.120 ¹ Intro to Information Tech	CSCI.130 Computer Science I
	CSCI.108 ² HTML, Javascript... (F)	ECON.101/2 ¹ Micro-/Macroeconomics (Gen Ed Elective 3, Goal 9 or 10)
	MATH.123 College Algebra (if needed) Free Elective 1	MATH.117 ¹ Intro to Statistics (Gen Ed core requirement)
	ENGL 101 Expository Writing Gen Ed core- must be taken yr 1	General Education elective 4
Year 2	CSCI.215 ¹ Computer Science II (252)	CSCI.376 ³ Network Technologies (S)
	MATH.200 ¹ Precalculus (if needed) (Free elective 2)	MATH.292 ³ Discrete Mathematics I (S) OR MATH.215 Finite Mathematics
	CSCI.360 ² Database Management (F)	ACCT.120 ¹ Intro to Financial Accounting
	CSCI.258 ² Intro to Operating Systems (F)	CSCI.373 ³ Advanced Web Technologies (S)
	CSCI200 CS Prof. Expl. Seminar	
Year 3	<div style="color: red; font-size: 2em; font-weight: bold;">Co-op</div> <div style="color: red; font-weight: bold;">Summer & Fall</div>	General Education elective 5
		⁸ Information System elective 1
		General Education elective 6
		General Education elective 7
Year 4	General Education elective 8	<div style="color: red; font-size: 2em; font-weight: bold;">Co-op</div> <div style="color: red; font-weight: bold;">Spring & Summer</div>
	MGMT.280 ¹ Organizational Behavior	
	CSCI.345 ² Computer and Network Security	
	⁸ Information System elective 2	
Year 5	BUIS 460 Information Systems Management (OR) BADM.398 ² Projects in Information Systems	BUIS411 Information Systems Research (new F14) OR BADM.477 ³ Mgt Issues in Info Tech (S)
	General Education elective 9	⁸ Information Systems elective 3
	Free elective	Free elective
	Free elective	Free elective

(F): Offered in the fall semester only.

(S): Offered in the spring semester only

NOTE: General Education courses can be taken in any order (except Goal 1 must be completed in the first year) the sequence above just shows room for 12 General Education courses.

Appendices

Appendix A- CS Course Descriptions

*** Courses phased out 2004 ** Courses phased out 2005 * phased out 2006

NOTE: Gen Ed Goal 16 applies to students who started prior to Fall 2004

CSCI.108 HTML, JavaScript Programming, and Web Site Development (Gen Ed Domain I-A)

An introduction to various features of HTML and JavaScript languages such as tags, images, buttons, forms, and animation files. Students learn to program using these languages to create interactive web pages. Students create a complete web site using various tools including a browser and image editor.

CSCI.120 Introduction to Information Technology (Gen.Ed. Domain II-A)

An overview of computer concepts and Information Technology (IT). Applications of IT in various disciplines are illustrated and the role of information technology in contemporary society, including issues of intellectual property, ethics, privacy and security are discussed. Students are introduced to windowed environments, file management, problem-solving tools and a high-level programming language. Advanced concepts of word processing, spreadsheets, and presentation software required for effective communication, analysis, and design are explored.

Note: Students cannot receive credit for both this course and CSCI.151 Personal Computer (PC) Fundamentals and Applications. Students in the IT minor who have taken CSCI.151 Personal Computer (PC) Fundamentals and Applications should take CSCI.108 HTML, JavaScript Programming and Web Site Development in lieu of CSCI.120 Introduction to Information Technology.

CSCI 130 Introduction to Programming (Gen. Ed. Domain II-A)

An introduction to the general concepts of computer programming and problem-solving through practical hands-on experience using the Java programming language. Topics include: the basics of computer hardware and software; an introduction to the Java program-development environment and the Java Virtual Machine (JVM); problem-solving techniques for programming; development of algorithms, number systems, data types, and operators; input – output operations; program control structures including loops, methods (functions), and arrays; an introduction to object-oriented programming; and designing, implementing, compiling, testing, and debugging programs. Laboratory periods provide hands-on experience using programming exercises that include implementing designed algorithms as well as compiling, testing, and debugging programs. **Laboratory (2 hours)**. Note: Students cannot receive credit for both this course and CSCI 152 Computer Science I Using Java.

Corequisite: MATH 123 College Algebra or minimum score of 2 on the mathematics placement examination.

Prerequisite: CSCI 120 Introduction to Information Technology or permission of instructor.

CSCI.135 Information Technology and Society (Gen.Ed. Domain III-B)

An exploration of the impact of computing and information technology (IT) on individuals and society in the United States and the world. The course addresses the impact of IT on areas such

as: digital technology at home; personal devices; rapid unregulated spread of (mis)information; political processes of dissemination and polling capabilities; empowering individuals and families with information included in medical and other databases; personal and work place communication; the networked information economy and globalization. Other topics may include the interaction of IT with intellectual property, privacy, ethics, security concerns and freedom of expression. (added '06)

CSCI 138 Information Technology and the Environment (Gen. Ed. Domain III-C)

A study of how information technologies can support and affect a clean and sustainable environment. Technologies such as virtualization, data centers, cloud computing, smart grid, tracking, imaging, simulation, document management, sensors, analog/digital devices, telecommuting, and teleconferencing are discussed. Use of social network groups to increase awareness and to mobilize action on environmental issues is addressed. The use of these information technologies in the United States is considered through the examination of geographically distributed resources such as water, glaciers, forests, species, and renewable wind and solar energies. The environmental impact of social consumption, recycling, and improper disposal of IT systems is addressed. The impact of technological forces in the United States on global environment is examined. Note: Computer Science majors may take this course as a free elective.

CSCI 140 Introduction to the Internet, Graphics, and Multimedia (Gen. Ed. Domain I-A)

An introductory course exploring fundamental concepts, vocabularies, and techniques related to graphic design, digital cameras, photo editing, scanning, web design, interactive design, animation and multimedia using a variety of software programs. Students gain a broad foundation that can be applied to more advanced concepts and skills in the Information Technology discipline. Students cannot receive credit for both this course and either COMM 140 Introduction to the Internet, Graphics, and Multimedia or 84.140 Introduction to the Internet, Graphics, and Multimedia.

CSCI.152 Computer Science I using Java(Gen. Ed. Domain II-A)

– replaced with CSCI130 in Spring 2015

An introduction to problem solving using the Java programming language. The course stresses algorithms, object-oriented programming in graphical environments, documentation, testing, and debugging. Topics include hardware basics and number systems, classes, methods, control structures, types, virtual-machine concepts, Internet and client-server computing, human-computer interaction, social, professional, and ethical issues, and general features of programming languages.

Corequisite: MATH.123 College Algebra **or** minimum score of 2 on the math placement examination.

CSCI 200 Computer Science Professional Exploration Seminar (0.5 course-credit)

A required seminar for all computer science majors to prepare them for their future careers. Topics include professional ethics, organizational issues, strategic interviewing techniques, industry research, team roles, oral and written communication skills, as well as other topics relevant to an effective job search and a positive work experience. Students begin developing their portfolios, a focused resume, and a succinct career objective. Students also identify their strengths, weaknesses and career interests in order to maximize the potential of a cooperative education experience, internship, or post-baccalaureate position. This course must be completed

prior to participation in a cooperative or internship experience. This course may be waived with one (1) or more years of full-time relevant professional industry experience at the discretion of the department chair.

Prerequisite: Sophomore standing. Computer Science majors only.

CSCI 215 Computer Science II Using Java (added lab and prereq C- to CS1 and new #)

An intermediate programming course that emphasizes debugging, documentation, and modular and object-oriented design with tools such as the Unified Modeling Language. Topics include event-driven programming, string and array manipulation, sorting and searching, file operations, dynamic memory allocation, inheritance, polymorphism, and exception handling. Laboratory periods provide hands-on experience using programming exercises that include implementing designed algorithms as well as compiling, testing, and debugging programs. Laboratory (2 hours).

Prerequisites: Completion of CSCI 130 Computer Science I Using Java with a minimum grade of C- (1.70) and MATH 200 Precalculus (may be taken concurrently).

CSCI.230 Principles of Information Technology Operations

A study of operations in various information technology areas used at workplaces. Areas covered include managing storage, troubleshooting, printing and faxing, small local networks, connecting to the Internet, protection against viruses, popups, and malware, backup and restore, and email clients. Prerequisite: CSCI.120 Introduction to Information Technology (added '06)

CSCI.252 Computer Science II using Java (replaced with CSCI.215 F2016)

An intermediate programming course that emphasizes debugging, documentation, and modular and object-oriented design with tools such as the Unified Modeling Language. Topics include event-driven programming, string and array manipulation, sorting and searching, file operations, dynamic memory allocation, inheritance, polymorphism, and exception handling.

Prerequisites: MATH.200 Precalculus (may be taken concurrently) **and** CSCI.152 Computer Science I or CSCI 130 Intro. To Programming.

CSCI.258 Introduction to Operating Systems Using UNIX™

An introduction to the basics of networking and operating systems. Topics include the evolution and overview of operating systems, operating system principles, interfaces (GUI, command line, and API), command processors and utilities, file systems, access control, processes, programming and scripting, user accounts and authentication, OSI model, Internet Protocol, networking utilities, net computing, client-server model, FTP, and network file systems. The UNIX™ operating system is used as a primary reference for illustration and hands-on experience.

Prerequisite: CSCI 152 Computer Science I Using Java or CSCI 130 Intro. To Programming

CSCI.271 Data Structures

An in-depth presentation of recursion, collections and iterators, fundamental techniques in graphics, and threading. Students implement linked lists, stacks, queues, trees, heaps, graphs, hash tables and related algorithms. Students implement a significant programming project.

Prerequisites: Completion of CSCI 215 Computer Science II Using Java with a minimum grade of C- (1.70) and MATH 200 Precalculus.

CSCI 300 Artificial Intelligence

An introduction to cognitive science and efforts to implement intelligence in computer hardware and software, with application areas. Topics include search, knowledge representation, reasoning, uncertainty, learning, embodied interaction, future prospects, and philosophical considerations. Concepts are demonstrated with software. Prerequisites: Junior standing, CSCI 258 Introduction to Operating Systems Using UNIX™, and either MATH 117 Introduction to Statistics or MATH 200 Precalculus.

CSCI 303 Web and Mobile Applications

An introduction into the development of mobile web sites and applications. The course provides the basic programming skills required to design and implement quality websites on a variety of mobile platforms. Students learn to distinguish between mobile websites and mobile web applications. Through extensive hands-on activity and coding, students create mobile sites using currently accepted standards and techniques. Students also learn the basis of creating web applications for mobile devices such as smart phones, including the use of software such as PhoneGap to create platform specific packaged mobile apps.

Prerequisites: CSCI 108 HTML, JavaScript Programming, and Web Site Development and CSCI 152 Computer Science I using JAVA.

CSCI.306 Introduction to .NET using Visual Basic

An introduction to the .NET programming environment and the object oriented programming model using the Visual Basic .NET programming language. Topics include object-oriented programming, Visual Basic .NET objects such as forms and controls, code construction, functions and subroutines, parameter passing, looping and other programming structures, persistence of data using text files and database tables, error handling, and debugging of programs. **Note:** Students cannot receive credit for both CSCI.306 Introduction to .NET using Visual Basic and CSCI.205 Introduction to .NET using Visual Basic. Prerequisite: CSCI.252 Computer Science II using Java. (added '06)

CSCI 310 Cooperative Experience I (3 Course-credits)

A supervised practical experience in a public or private organization appropriate to the student's program of study that expands the student's ability to think and develop professionally within the discipline. The cooperative experience is offered in collaboration with participating institutions that provide experience and professional guidance for the student. The student works full-time over a six-month period. The cooperative experience requires written documentation and critical reflection of the student's experiences. Student performance is evaluated by the industry supervisor and reported to the cooperative experience coordinator who assigns a grade. Prerequisite: Satisfactory completion of CSCI 200 Computer Science Professional Exploration Seminar.

CSCI.317 Discrete Structures

An intermediate to advanced course on discrete mathematical structures used in computer science. Students study abstract structures used to represent discrete objects and the relationships between these objects. Topics include principles of logic, incompleteness, diagonal proof, inductive proof, and correctness of simple algorithms. Coverage of set theory will extend to relations, graphs, functions, countability, formal languages, and non-well-foundedness. Students write recurrences to define computable functions and explore discrete probability and randomness from a computational viewpoint.

Prerequisites: CSCI 271 Data Structures and either MATH 215 Finite Mathematics or MATH 292 Discrete Mathematics I

CSCI.320 Windows Server & Client Management

Designed to teach students how to plan, set up, and configure Windows server and client workstations with TCP/IP enterprise protocol; monitor and control security within the systems network; administer user accounts, system disks, file system, mail, print and remote access services; and recover from server failures.

Prerequisite: CSCI.252 Computer Science II

CSCI.340 UNIX™ System Administration

A comprehensive coverage of UNIX™ system administration and management. Topics include system setup, booting and shutdown, management of user accounts, file systems, disk management and serial device management, backup and restore, print and network configuration, security, system logs, performance monitoring, and maintenance.

Prerequisite: CSCI.258 Introduction to Operating Systems Using UNIX™

CSCI 345 Computer & Network Security

A detailed study of the concepts and principles of computer and network security. Topics may include: physical and organizational security, cryptography, public key infrastructure, system and services security, networking fundamentals and protocols, worms and viruses, attacks, prevention, detection and recovery, law, ethics, and privacy. The Windows and UNIX operating systems are used for illustrations.

Prerequisite: CSCI 258 Introduction to Operating Systems Using UNIX.

CSCI.347 Analysis of Algorithms

A presentation of asymptotic time and space complexity of sequential and parallel algorithms, using big-O and related notation. Complexity classes P and NP (tractable and intractable problems) and verification of algorithms by formal methods are also discussed.

Prerequisites: Completion of CSCI 271 Data Structures with a minimum grade of C- (1.70) and either MATH 215 Finite Mathematics or MATH 292 Discrete Mathematics I.

CSCI.352 Computer Architecture and Assembly Language

An introduction to digital logic components, their organization in computer systems, and assembly language programming. Topics include gates and flip-flops, register transfer, and CPU design; memory organization, I/O interfaces, and the interrupt system; representation of data, addressing modes, CPU instructions and pseudo-instructions, assembly language, and the organization of low-level software to control the computer. Note: Students cannot receive credit for this course if they have taken CSCI.355 Computer Architecture.

Prerequisite: Completion of CSCI 271 Data Structures with a minimum grade of C- (1.70).

CSCI.359 Object-Oriented Programming Using C++

A presentation of advanced features of programming with an emphasis on class construction and object-oriented design and programming. Topics covered include namespaces, encapsulation, function and operator overloading, templates, collection classes, containers, iterators, inheritance, polymorphism, and exception handling. Course touches on Standard Template Libraries (STL). Prerequisite: CSCI.252 Computer Science II Using Java.

CSCI.360 Database Management

A comprehensive coverage of database concepts, design, and implementation. Topics include systems analysis, data modeling, relational databases, logical design, normalization, user interfaces, query processing including SQL, database administration, security, backup and restore, and performance evaluation. Popular databases are referenced.

Note: Students cannot receive credit for both CSCI.360 Database Management and CSCI.467 Data Base Management Systems.

Prerequisite: CSCI 152 Computer Science I Using Java or CSCI 130 Intro. To Programming

CSCI.362 Software Engineering

Principles of systematic program design and implementation. Structured programming and top-down segmented program development. Stepwise program development. Chief Programmer Team, HIPO, and other programming techniques. Decision tables. Program correctness and verification Software reliability.

Prerequisite: Completion of CSCI 271 Data Structures with a minimum grade of C- (1.70).

CSCI.373 Advanced Web Technologies

An introduction to dynamic database-driven web site development. Students learn about client- and server-side scripting, maintaining persistent information on the web, and user-interface design concepts.

Prerequisites: CSCI.108 HTML, JavaScript Programming, and Web Site Development, (CSCI.152 Computer Science I or CSCI 130 Intro. To Programming)**and** CSCI.360 Database Management.

CSCI.376 Networking Technologies

An introduction to net-centric computing, communication and networking, network security, network management, client-server computing, wireless and mobile computing, and network applications. Various LAN and WAN networking technologies such as Ethernet, Token Ring, wireless network, virtual private network, personal area network, Storage Area Network, Internet, ATM, telecommunication networks, multimedia data technologies, and internetworking are covered. Business aspects of computer networks are also covered.

NOTE: Students cannot receive credit for both this course and 63.476 Networking Technologies or CSCI 477 Computer Networking.

Prerequisite: CSCI.258 Introduction to Operating Systems Using UNIX™

CSCI.400 Special Topics in Computer Science

A study of a selected topic in computer science to be given from time to time at the discretion of the department. Topics presented here are on a one-time-only basis and will not be part of the permanent curriculum.

Prerequisite: Computer Science major, Junior standing, or permission of the instructor.

CSCI.404 Seminar in Computer Science

An exploration of an advanced topic in computer science. The particular topic is announced at least one semester in advance.

Prerequisite: Permission of the instructor.

CSCI 410 Cooperative Experience II (3 Course-credits)

A second supervised practical experience in a public or private organization appropriate to the student's program of study that expands the student's ability to think and develop professionally within the discipline. The cooperative experience is offered in collaboration with participating institutions that provide experience and professional guidance for the student. The student works full-time over a six-month period. The cooperative experience requires written documentation and critical reflection of the student's experiences. Student performance is evaluated by the industry supervisor and reported to the cooperative experience coordinator who assigns a grade. Prerequisite: Satisfactory completion of CSCI 310 Cooperative Experience I

CSCI.428 Software Quality Assurance

A study of software quality assurance processes and test tools. Topics include requirements analysis, test specifications, test schedule development, installation and test tools, standalone product testing, systems integration testing, interoperability, problem reporting and tracking, product development and quality assurance processes, QA management, product life cycle, software metrics for quality, and product release.

Prerequisite: CSCI.258 Introduction to Operating Systems Using UNIX™

CSCI.455 Human-Computer Interaction

A survey of the field of Human-Computer Interaction (HCI). Emphasis is placed on design strategies for creating and refining an effective user interface throughout the software product life cycle. Task analysis, approaches to user interface design, modeling, and user interface standards are covered as student groups develop a user interface for a software product.

Prerequisites: (CSCI.152 Computer Science I or CSCI 130 Intro. To Programming) and CSCI.360 Database Management.

CSCI.460 Theory of Computing

An introduction to theoretical computer science and some key applications. Course examines models of computation, including finite automata, transducers, pushdown automata, and Turing machines. Concepts of formal language theory are applied to lexical analyzer and compiler construction in programming-language translation. The course will include an introduction to the notions of computability and computational complexity, concepts used in parallel computation, and some aspects of artificial intelligence.

Prerequisites: CSCI 317 Discrete Structures or MATH 292 Discrete Mathematics I.

CSCI.465 Operating Systems Internals

An in-depth coverage of operating system principles and internals such as processes, threads, CPU scheduling, concurrency and process synchronization, deadlock, interprocess communication, memory management, virtual memory, file systems, I/O systems, distributed systems, and protection and security. Several of the concepts are implemented through a programming project.

Prerequisites: CSCI 258 Introduction to Operating Systems Using UNIX™ and CSCI 352 Computer Architecture and Assembly Language and CSCI 362 Software Engineering.

CSCI.477 Computer Networking

An introduction to the seven layers of the OSI model. General topics include network topologies; introduction to Local Area Networks, such as Ethernet, Token Ring, and FDDI; and internet-

working. Special topics include TCP/IP and FTP protocols, socket interface, Remote Procedure Call (RPC), and client-server architecture.

Note: Students cannot receive credit for both this course and CSCI 376 Networking Technologies .

Prerequisite: CSCI 271 Data Structures or equivalent computer industry experience including strong programming skills in C or an object-oriented language or permission of instructor.

CSCI.490 Directed Study

Under the direction of a faculty member, the student researches a topic or topics in computer science. Students should make arrangements with the faculty member who is to direct their work one semester in advance of the work.

CSCI.495 Internship in Computer Science (credit-two courses)

A cooperative program in which students are placed in computer positions in corporate or government settings. Students are expected to work a minimum of 25 hours per week. These positions are normally compensated. Upon completion of the course, students will provide written documentation concerning their work projects.

Prerequisite: Upper-class standing in computer science with at least a 3.0 average in computer courses or permission of instructor.

CSCI 164 Introduction to Enterprise Systems using z/OS(R)

An introduction to the role of mainframe computing systems in the enterprise computing world. Topics include mainframe hardware and architecture, file systems, batch processing, interfaces, and system utilities. Students gain hands-on experience using an IBM mainframe.

CSCI 2xx COBOL for Enterprise Systems

An introduction to structured programming with COBOL on a mainframe computer. Topics include structured coding techniques, sorting, table handling, sequential file processing and report generation. No previous programming experience is required.

Prerequisite: CSCI 164 Introduction to Enterprise Systems using z/OS(R).

CSCI 2xx Introduction to DB2(R) for z/OS(R)

An introduction to DB2(R) concepts for z/OS(R). Topics include DB2 components, architecture, utilities, JCL and SQL for DB2, TSO commands, DB2 administration, and management issues and solutions.

Prerequisite: CSCI 164 Introduction to Enterprise Systems using z/OS(R).

CSCI 2xx Networking and Security for Enterprise Systems

An introduction to networking and security aspects of mainframe computing systems. Network topics include network operations, mainframe networking protocols such as TCP/IP, SNA, SNA/IP, and problem detection and solving. Basic principles of mainframe system security, architecture and virtualization, network security and hardware and software devices for securing mainframe systems are discussed.

Prerequisite: CSCI 164 Introduction to Enterprise Systems using z/OS(R).

CSCI 3xx Assembler Language for z/OS(R)

An introduction to assembler language on the mainframe platform intended for students with some previous programming background in another language (COBOL, Java, C, C++, etc.). Topics include binary data representation, hexadecimal notation, arithmetic operations, data representation, addressing, general and special-purpose registers, instruction formats and conventions, data structures, masks and condition codes, Boolean operations, and macro instructions.

Prerequisites: CSCI 164 Introduction to Enterprise Systems using z/OS(R) and either CSCI 2xx COBOL Programming for Enterprise Systems or a course in any programming language.

MINOR IN ENTERPRISE SYSTEMS (5 COURSES)

Required Courses (5):

CSCI 164 Introduction to Enterprise Systems using z/OS(R)

CSCI 2xx Introduction to DB2 for z/OS(R)

CSCI 2xx Networking and Security for Enterprise Systems

CSCI 2xx COBOL for Enterprise Systems

CSCI 3xx Assembler Language for z/OS(R)

NOTE: In case of differences between this handbook and the current college catalog, the catalog is the authoritative description.

Appendix B – Mathematics Course Descriptions

MATH.117 Introduction to Statistics (Gen. Ed. Domain II-A)

An introduction to the discipline of statistics, emphasizing both statistical thinking and its application to analyzing data. Topics include sampling, design of experiments, organizing and exploring data, probability distributions such as the normal distribution, sampling distributions, hypothesis testing and confidence intervals, correlation and regression. Students are expected to express results of statistical procedures in ordinary non-technical language. Real world applications of statistical topics are emphasized throughout the course.

Prerequisite: Satisfactory score on the mathematics placement examination or permission of the Mathematics Department.

MATH.292 Discrete Mathematics I

A mathematical foundation for computer science. Topics include logic, boolean algebra, sets, functions, sequences, and summations, matrices, mathematical induction, study of algorithms, recursion, combinatorics, graphs, and trees. Note: A student may not receive credit for both MATH.292 Discrete Mathematics I and MATH.320 Discrete Mathematics.

Prerequisite: MATH.200 Precalculus and CSCI.252 Computer Science II, or permission of the instructor.

Mathematics courses beyond Precalculus (any course number beyond MATH.208)

Recommended courses: (list what would help CS majors the most)

Any course MATH.215 Finite Mathematics r: MATH.200 Precalculus

MATH.219 Calculus I r: MATH.219 Precalculus or 2 on Math score

MATH.220 Calculus II r: MATH.219

MATH.221 Calculus III r: MATH.220

MATH.222 Differential Equations r: MATH.220 and MATH.226

MATH.226 Linear Algebra and Applications r: MATH.215 and MATH.220

MATH.231 Euclidean Geometry r: MATH.215 Finite Mathematics

MATH.294 Discrete Mathematics II r: MATH.292 DM I

MATH.301 Problem Solving and Modeling in Mathematics r: MATH.201 Intuitive Geometry and MATH.215 Finite Math

MATH.219 Calculus I (Gen.Ed. Goal 2)

A study of functions, limits, continuity, the derivative, rules of differentiation of algebraic and trigonometric functions, applications of differentiation, definite and indefinite integrals, the Fundamental Theorem of Calculus, and applications of integration.

Prerequisite: MATH.200 Precalculus or a satisfactory score on the mathematics placement examination.

MATH.220 Calculus II

A study of the applications of the integration, logarithmic and exponential functions, elementary differential equations (first order linear and separable variables), techniques of integration, improper integrals, L'Hospital's Rule, sequences, series, Taylor and Maclaurin Series, application of series.

Prerequisite: MATH.219 Calculus I.

Math Courses needed if Prerequisites not satisfied for required courses

MATH.123 College Algebra (Gen. Ed. Domain II-A)

Designed to provide the algebraic skills needed in the natural sciences, social sciences, and precalculus. The course emphasizes problem-solving skills, modeling and real-world applications, and explores multiple approaches (numerical, graphical, and symbolic) to algebraic concepts and problems. Topics include the real number system, algebraic expressions, functions and graphs, polynomial and exponential functions, matrices and systems of equations, and complex numbers. Note: A student may not receive credit for both MATH.123 and MATH.115 College Algebra and Trigonometry.

Prerequisite: MATH.095 General Mathematics or a satisfactory score on the mathematics placement examination.

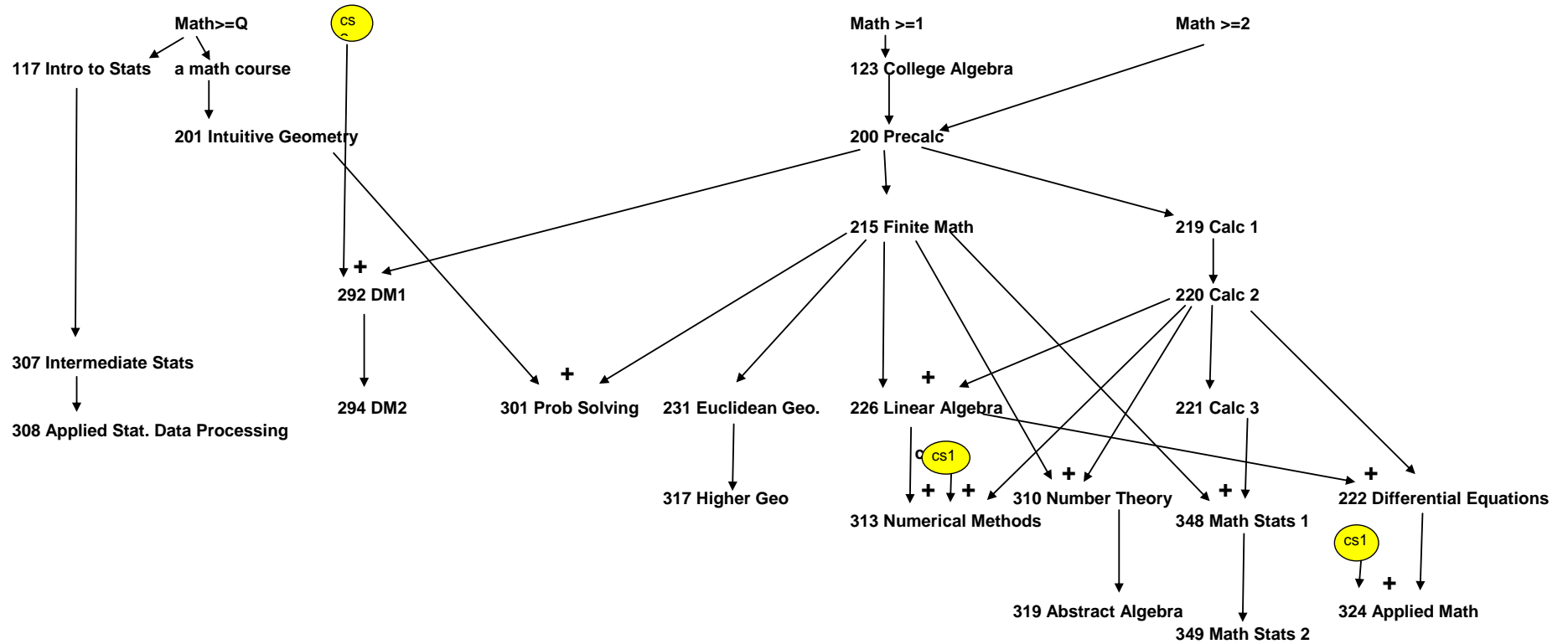
MATH.200 Precalculus (Gen. Ed. Domain II-A)

A thorough introduction to the basic mathematical functions used in the sciences and the background needed to study calculus. After a brief in-depth review of the required algebra and analytical geometry, topics include functions and graphs, polynomial and rational functions, exponential and logarithmic functions, and trigonometric functions. Note: A student may not receive credit for MATH.200 Precalculus and MATH.133 Precalculus, or for MATH.200 Precalculus and MATH.115 College Algebra and Trigonometry.

Prerequisite: MATH.123 College Algebra or a satisfactory score on the mathematics placement examination.

Math Course Sequence FlowChart

Math Course Prerequisite Chart



Appendix C – Economics & Business Course Descriptions

Required for IS Concentration

ECON.101 Principles of Macroeconomics (Gen. Ed. Domain III-C)

The study of the U.S. free enterprise system and its place in the global economy. After a consideration of basic economy concepts, the student is introduced to the forces that determine national income, employment, recession, inflation, and economic growth. Monetary and fiscal policy options are analyzed with emphasis on the economic, social, and political consequences.

ECON.102 Principles of Microeconomics (Gen. Ed. Domain III-B)

An introduction to the behavior of individual decision makers, particularly consumers and firms, who must make choices under conditions of economic scarcity. The course focuses on how markets work to allocate resources, how households maximize their satisfaction from consumer opportunities subject to an income constraint, and how firms organize production and measure costs in order to maximize profits. Related topics include comparative advantage and trade, competition and monopoly, government regulation, and labor markets.

ACCT.220 Introduction to Financial Accounting

A study of financial accounting and accounting systems starting with the accounting cycle and going through the preparation and interpretation of financial statements for all types of business entities. Topics include generally accepted accounting principles, the theory of accounts, and the theory of present value as it relates to financial accounting problems. Prerequisite: Sophomore Standing. NOTE: Credit will not be given for both this course and ACCT120 Introduction to Financial Accounting.

MGMT 280 Organizational Behavior

An in-depth study of the application of management theory to the behavior of individuals and groups in organizations. Topics in the course include: organizational culture, decision making, teamwork, organizational structure and design, change management, motivation, job design, leadership, communication and power in organizations. Note: Students may not receive credit for both MGMT 280 Organizational Behavior and MGMT 280 Applied Organizational Theory and Management.

Prerequisite: Sophomore standing.

BUIS 460 Information Systems Management

A team-based and problem-based application of theories and industry practices used to evaluate, design and implement technology solutions to business problems. Assignments are designed to develop client management, project management, systems development, and presentation and communication skills. Students work in teams to complete projects based upon actual organizations or using business cases. Student projects may be evaluated by an industry panel. Students define a problem statement and justification, requirements analysis, and preliminary and final designs. Course topics may include software and hardware evaluation, strategic use of technology, service level agreements, project planning and control, software sources and licensing, outsourcing, vendor management, ROI requirements and cost/benefit analysis.

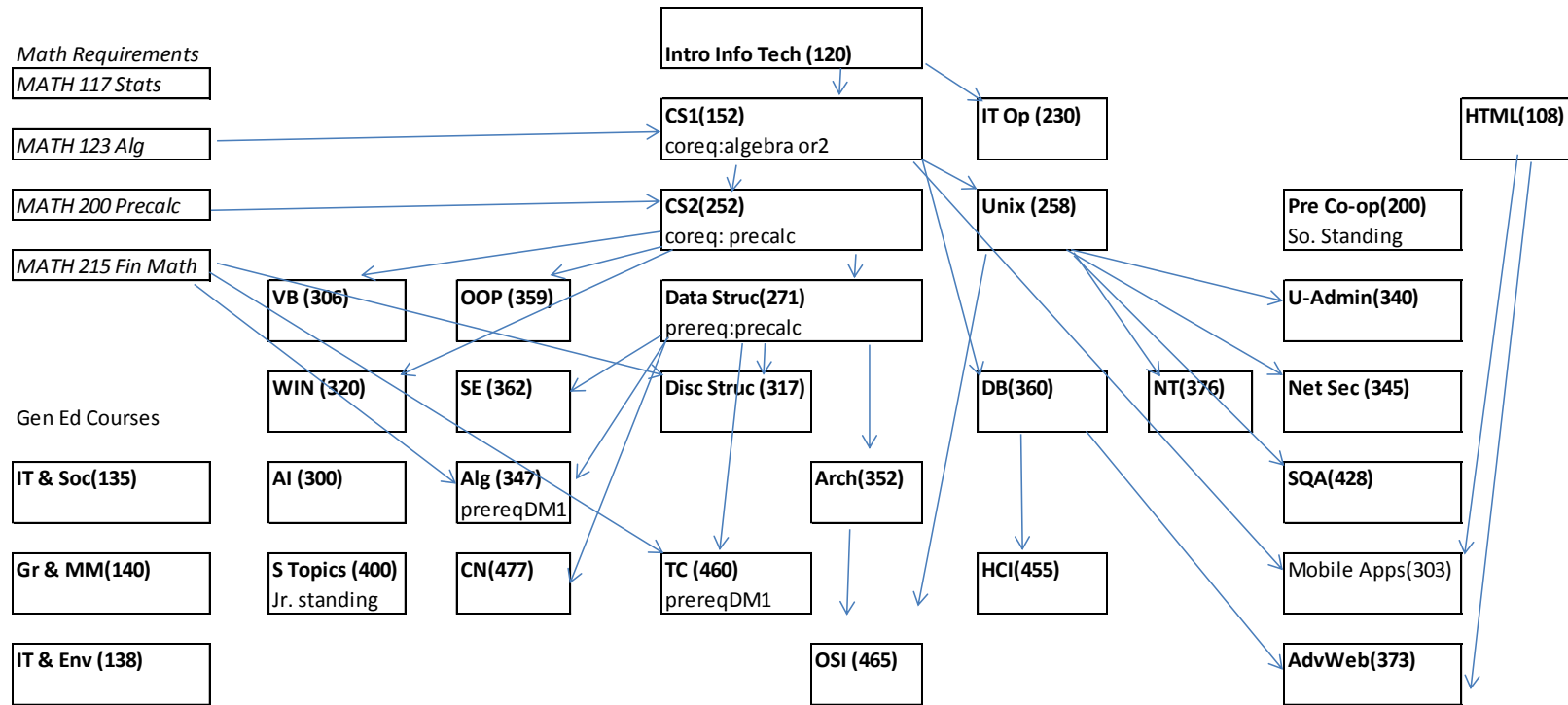
Prerequisites: ACCT 220 Introduction to Financial Accounting, a 300- level course in Computer Science, MGMT 280 Applied Organizational Theory and Management, and senior standing.

BUIS 411 Information Systems Research

An overview of theories, methods and tools used in Information Systems research. Students conduct literature reviews, gather empirical materials and present findings using written and presentation formats acceptable in the field. Students develop skills to evaluate specific studies and identify their limitations. In addition to conducting original research, students learn to analyze business cases. Students are introduced to models and approaches used to analyze business cases, and perform business case analysis using these tools. Students share their findings through a written report and oral presentation. Research and case topics include IT and data security and regulation, ethical use of data and technology, emerging and disruptive technology.

Prerequisites: MGMT 280 Organizational Behavior, a 300- level course in Computer Science, junior standing and, either QUAN 202 Statistical Analysis for Business and Economics or MATH 117 Statistics.

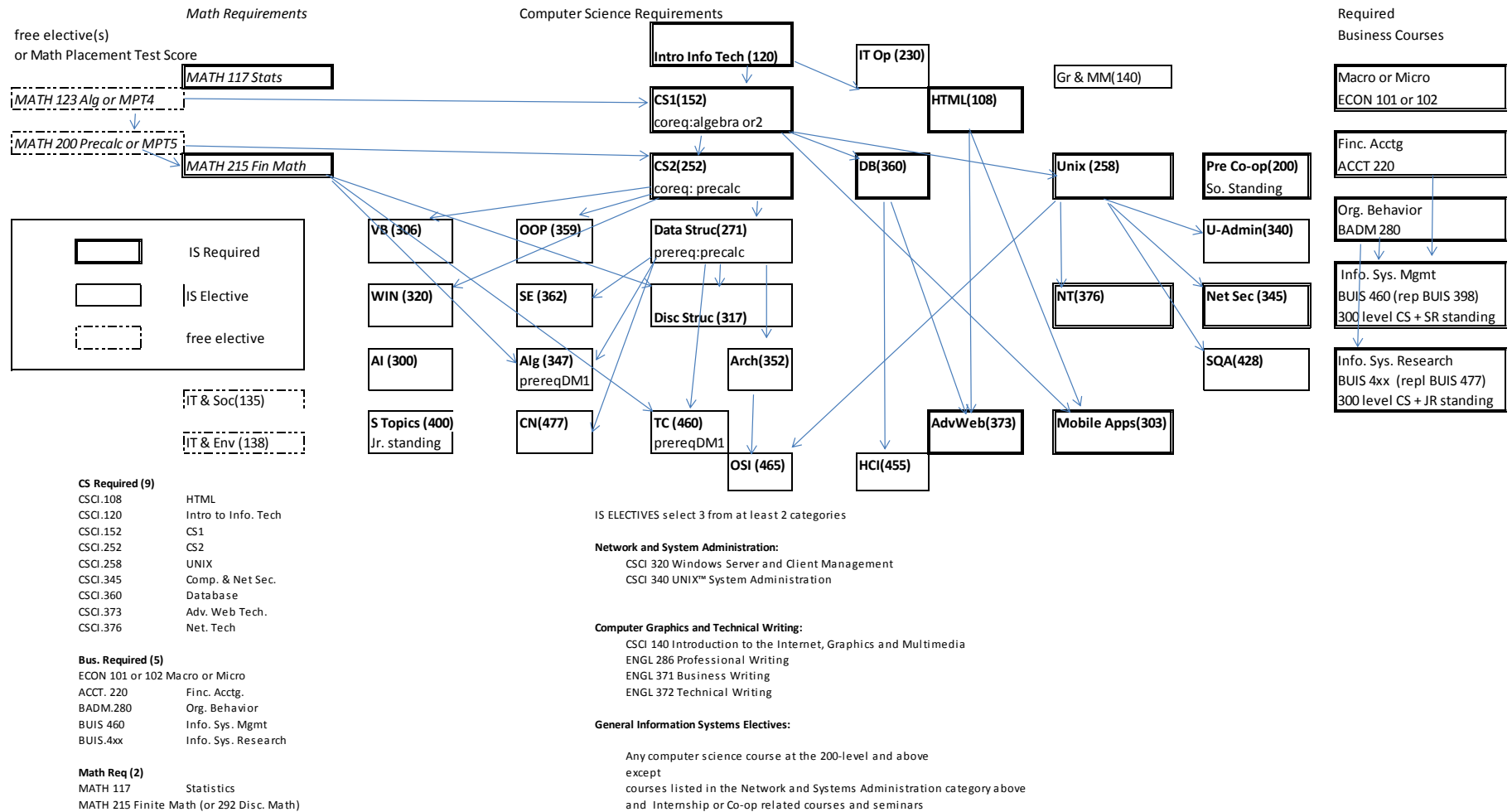
Appendix D - Computer Science (CSG) Concentration Course Prerequisite Flow



CSCI.108 HTML, JavaScript and Web Site Development
 CSCI.120 Intro. To Information Technology
 CSCI.135 Info. Tech. & Society
 CSCI.152 Computer Science I or CSCI130 Intro to Programming
 CSCI.230 Principles of Info. Tech. Operations
 CSCI.252. Computer Science II
 CSCI.258 Intro. To Operating Systems using UNIX
 CSCI.271 Data Structures
 CSCI.300 Artificial Intelligence
 CSCI.303 Web and Mobile Applications
 CSCI.320 Windows Server & Client Management
 CSCI.340 Unix System Admin.
 CSCI.347 Analysis of Algorithms

CSCI.355 Computer Architecture & Assembly language
 CSCI.360 Database management
 CSCI.362 Software Engineering
 CSCI.373 Adv. Web Technologies
 CSCI.376 Networking Technologies
 CSCI.400 Special Topics in Computer Science
 CSCI.428 Software Quality Assurance
 CSCI.455 Human Computer Interaction
 CSCI.460 Theory of Computing
 CSCI.465 Operating Systems Internals
 CSCI.477 Computer Networking

Appendix E -Information System Course Flow



Appendix F - GENERAL EDUCATION REQUIREMENTS

The general education requirement is intended to provide breadth in the baccalaureate degree program to foster student learning beyond a single, narrow discipline or field. General education is designed to facilitate the increase of knowledge, an appreciation for learning in a broad context, the ability to relate new information to what one has learned previously, the capacity to judge information rather than to simply accept it, and the facility to use what one learns in a realistic and logical manner. In addition, the general education requirement is designed to help students to acquire the following learning objectives:

Learning Objectives

Overarching Objective: Solve Problems Using Critical Thinking (*All General Education courses should meet this objective.*)

- 1: Communicate Effectively Orally
- 2: Communicate Effectively in Writing
- 3: Solve Problems Using Quantitative Thinking
- 4: Demonstrate a Critical Understanding of Human Diversity
- 5: Demonstrate Civic Literacy
- 6: Recognize Ethical and Social Responsibilities
- 7: Locate, Evaluate, and Apply Information
- 8: Solve Problems Using Creative Thinking
- 9: Demonstrate Technological Competency
- 10: Work Collaboratively and Independently

To fulfill the general education requirement, students must complete **10 course- credits outside the major department** that meet broadly defined requirements. Students are not allowed to substitute non-general education courses for general education credit. In all majors, except Liberal Studies (with a concentration is either General Studies or Individualized Studies), one general education subdomain is considered satisfied through completion of the major program requirements. Courses are listed under each of the general education subdomains.

At least one course taken in Domain II-B (Natural Sciences) must be a laboratory course. Courses that include a laboratory are identified in the listing.

In conformity with the laws of the Commonwealth of Massachusetts and in consideration of the mission of the State Universities to prepare informed citizens, all students at Framingham State University pursuing teacher licensure must take a course that includes the study of both the United States and Massachusetts constitutions. Courses that include the study of the constitutions are identified in the listing.

Students, transferring from a Massachusetts public institution, who completed that MassTransfer Block may be required to complete no more than two (2) Domain GenEd course requirements at Framingham State University. The two (2) specified requirements will be determined case by case per individual.

Found at the end of each department section in this catalog, each course number and title has a brief description of its content, followed by a statement on prerequisites, if any, explaining the requirements for admission to the course. It is the student's responsibility to be aware of and have met prerequisites prior to attempting any course. Courses appropriate for general education are identified by **(Gen. Ed. Domain)** following the course title.

***Note:** Students who have withdrawn for more than one semester must follow degree and general education requirements stated in the catalog at the time of their return.*

Common Core Requirements Two (2) Course-Credits Required

- A. ENGL 110 Expository Writing
- B. MATH xxx College-Level Mathematics Course
(*Specific course dependent on math placement scores and major requirements*). Any course used to fulfill this requirement cannot be used to fill any other General Education Requirement.

Notes about Courses in the Common Core

- **Writing:** The Common Core writing requirement must be completed within the first year of matriculating at the university
- **Math:** The specific core math course students must take will be dependent on math placement scores and major requirements. This requirement must be completed within the first two years of matriculating at the university.

Domain I Three (3) Course-Credits Required

The study of representations of human experience.

A. One (1) course in Creative Arts

The study of creative expression through the practice of artistic problem solving.

ARTS	241	Ceramics
ARTS	234	Children's Book Illustration
ARTS	200	Drawing Fundamentals ARTS
	120	Introduction to Painting ARTS
	167	Introduction to Studio Art
ARTS	290	Study Tour: Art & Architecture
COMM	208	Basic Photography
COMM	212	Drama Workshop
COMM	107	Effective Speaking
COMM	280	Introduction to Film Production
COMM	262	Television Studio Production COMM
	226	Writing for Visual Media
CSCI	108	HTML, JavaScript Programming, and Web Site Development
CSCI	140	Introduction to the Internet, Graphics and Multimedia
ENGL	282	Creative Writing
INTD	160	Image, Sound and Structure

B. One (1) course in Humanities

The study of artistic, literary, and philosophical works through analysis and interpretation.

ARTH	282	American Art
ARTH	160	Introduction to the World of Art
ARTH	273	Modern Art History
ARTH	290	Study Tour: Art & Architecture
COMM	210	History of Photography
COMM	130	Introduction to Visual
COMM	201	Oral Interpretation of Literature
ENGL	262	American Writers II
ENGL	111	Approaches to Literature
ENGL	232	Irish Literature

ENGL	250	Literature and Gender
ENGL	201	Mythology and Folklore
ENGL	220	Shakespeare
ENGL	243	The American Short Story
ENGL	207	The Language of Film
MUSC	141	American Musics
MUSC	235	History of Rock Music
MUSC	121	Music Appreciation
MUSC	206	Music of the Twentieth Century
MUSC	201	Theory I: Materials of Music
PHIL	118	Introduction to the Philosophy of
PHIL	101	Invitation to Philosophy

C. One (1) Language course

The study of language in its cultural contexts.

MLCH	171	Elementary Chinese I MLCH
	172	Elementary Chinese II MLCH
	271	Intermediate Chinese I MLCH
	272	Intermediate Chinese II MLFR
	101	Elementary French I MLFR
	102	Elementary French II MLFR
	201	Intermediate French I MLFR
	202	Intermediate French II MLPO
	141	Elementary Portuguese I
MLPO	142	Elementary Portuguese II
MLSL	121	American Sign Language I
MLSL	122	American Sign Language II
MLSP	131	Elementary Spanish I MLSP
	132	Elementary Spanish II
MLSP	231	Intermediate Spanish I MLSP
	232	Intermediate Spanish II

Notes about Courses in this Domain

- **Language:** Students who have completed Level IV of a high school foreign language or achieve a placement exam score of 1 or higher through the Modern Language Placement test will then be waived from Domain I-C. Students with this waiver must complete another requirement from within Domain I.

Domain II **Three (3) Course-Credits Required** The study of problem-solving, scientific discovery, logical reasoning, and quantitative analysis.

A. One (1) course in Analysis, Modeling, and Problem Solving

The study of analytical, quantitative, and/or formal reasoning methods involving the manipulation of numbers or other symbols to solve problems.

CSCI	152	Computer Science I Using Java
CSCI	120	Introduction to Information
MATH	219	Calculus I
MATH	123	College Algebra
MATH	110	College Mathematics I
MATH	120	College Mathematics II
MATH	117	Introduction to Statistics

MATH	119	Mathematics for the Liberal Arts
MATH	200	Precalculus
PHIL	103	Introduction to Logic
QUAN	201	Quantitative Modeling for Business Economics

B. Two (2) courses in Natural Sciences

(The two courses must be from two different subject codes; at least one of the courses must be a lab science course)

The study of classical and modern principles of life and physical sciences, together with a critical appreciation of how scientific knowledge has been constructed, including methods of validating the results of scientific inquiry.

ASTR	230	Stars and Galaxies
ASTR	220	The Solar System
BIOL	101	Biological
BIOL	103	Biological Perspectives on Environmental Issues
BIOL	112	Biology of Marine Organisms BIOL
	142	Introduction to Human Biology
BIOL	203	Plants and Society
CHEM	103	General Chemistry
CHEM	107	Principles of Chemistry
CHEM	108	Principles of Chemistry and Quantitative Analysis
CHEM	131	Science, Environment, and Health
CHEM	101	The Chemistry of Life
EASC	131	Conversations with the Earth
EASC	241	Introduction to Meteorology
EASC	246	Oceanography
FDSC	161	Introduction to Food Science and Technology
FDSC	151	Principles of Food Science
GEOL	231	Physical Geology
NUTR	205	Nutrition Science and Applications
PHSC	109	Introduction to Physical Science
PHYS	111	Physics, Nature, and Society PHYS
	201	Introductory Physics
PHYS	211	Principles of Physics I

Notes about Courses in this Domain

- The specific Mathematics course used to satisfy the Common Core requirement cannot be used to fulfill Domain II-A.
- Sciences: Students must take two (2) sciences courses, one of which must be a lab science course. The two courses may not have the same subject prefix code.

Domain III

Three (3) Course-Credits Required

The study of human behavior, cultures, and societies.

A. One (1) course in Perspectives on the Past

The study of human behavior, culture, and expression through explorations of the past.

ANTH	206	Forensic Anthropology
ANTH	172	Interpreting the past: Archeological Perspectives
ARTH	270	History of Art I
ARTH	272	History of Art II
ENGL	209	Film History From 1895-1960
FASH	223	History of Costume
HIST	154	Europe and the World since circa
HIST	153	Europe and the World to circa 1450
HIST	152	United States History since Reconstruction
HIST	151	United States History to
MUSC	209	From Bach to Beethoven
MUSC	205	Music of the Romantic Period

B. One (1) course in Perspectives on the Contemporary World

The study of human behavior, culture, and expression through explorations of the present.

ANTH	258	Critical Approaches to Men and Masculinities
ANTH	161	Cultural Anthropology ANTH
	253	Gender Across Cultures ANTH
	243	Native American Cultures
CRIM	240	Drugs, Social Control and the Law
CRIM	270	Social Deviance
CRIM	121	Sociological Perspectives on Criminology
CRIM	201	White Collar Crime
CSCI	135	Information, Technology and Society
ECON	102	Principles of Microeconomics
ENGL	203	Global Perspectives in Literature
GEOG	211	Cultural Geography
GEOG	101	Introduction to Human Geography
GEOG	180	Native Americans: A Geographic and Legal Perspective
PHIL	105	Introduction to Political and Social Philosophy
POSC	110	Introduction to American Politics
POSC	250	American Legal Systems
PSYC	101	General Psychology
PSYC	200	Psychology of Development
SOCI	280	Aging in Society
SOCI	101	Introduction to Sociology
SOCI	230	Law and Society
SOCI	263	Social Inequality
SOCI	130	Social Problems
SOCI	282	Society, Technology, and the Future
SOCI	212	Sociology of Families
SOCI	218	Women in Society

C. One (1) course Global Competency, Ethical Reasoning, and/or Human Diversity

The study of global systems and issues, ethical principles, and/or differences and commonalities among groups of people. Courses in this group can incorporate any or all of these topics.

ANTH	207	Global Issues in Anthropology
ANTH	290	Non-Western Cultural Studies Tour
ARTH	200	Art and Social Values
ARTH	288	Latin American Art
ARTH	285	The Art of Asia
COMM	245	Cultural Aspects of Media
CSCI	138	Information, Technology and the Environment
ECON	101	Principles of Macroeconomics
EDUC	222	Sheltered English Immersion
ENGL	264	African American Literature
ENGL	260	American Ethnic Literature
FASH	253	Cultural Dress
GEOG	222	Geographic Perspectives on Globalization
GEOG	252	Geography of Europe
GEOG	257	Geography of Latin America
GEOG	254	Geography of Monsoon Asia
GEOG	253	Geography of Russia and the Former Soviet Republics
GEOG	255	Geography of Sub-Saharan Africa
GEOG	256	Geography of the Middle East
GEOG	250	Geography of the United States and Canada
GEOG	165	Global Cities
GEOG	290	Non-Western Regional Geography: Field Study
GEOG	206	Political Geography
GEOG	291	Western Regional Geography: Field Study
GEOG	110	World Regional Geography
GLST	101	Introduction to Global Studies
HIST	155	Comparative History of World Civilizations
HNRS	101	First Year Student Honors Seminar
MLLI	110	The Languages of the World
MUSC	151	History and Literature of Jazz
MUSC	212	Music, Dance, and Ritual in the Pacific
MUSC	220	Women in Music
MUSC	171	World Music Cultures
PHIL	222	Bioethics
PHIL	102	Introduction to Ethics: Why be Moral?
POSC	260	Comparative Politics
POSC	216	Film and Politics
POSC	120	Introduction to World Politics
POSC	220	The Politics of Globalization
SOCI	204	Environmental Sociology
SOCI	288	Immigration in the United States
SOCI	245	Race and Ethnic Relations
SOCI	220	Sport in Society

Laboratory Courses: All students must take one laboratory science, to be chosen from among the following courses that satisfy General Education Domain II-B.

BIOL	101	Biological Concepts
BIOL	112	Biology of Marine Organisms
BIOL	142	Introduction to Human Biology
CHEM	103	General Chemistry
CHEM	107	Principles of Chemistry
CHEM	108	Principles of Chemistry and Analysis
CHEM	131	Science, Environment, and Health
FDSC	161	Introduction to Food Science and Technology
GEOL	231	Physical Geology
GEOL	232	Historical Geology
PHSC	109	Introduction to Physical Science
PHYS	111	Physics, Nature, and Society
PHYS	201	Introductory Physics
PHYS	211	Principles of Physics I

PLACEMENT TESTING

Each incoming student must take placement examinations in writing, mathematics, and reading, which are administered prior to orientation for new students. Students may also take French and/or Spanish placement examinations.

Information regarding Placement Testing dates and times may be found at <http://www.framingham.edu/first-year-programs/placement-testing/index.html>.

Contact the Office of First-Year Programs located in Dwight Hall 216 for reservations.

PLACEMENT CODE INTERPRETATION Writing Scores:

	<u>Code</u>	<u>Explanation</u>
1		May not take a college-level writing course at Framingham State University.
2		Must complete ENGL 100 Introduction to College Writing before enrolling in ENGL 110 Expository Writing.
3		May register for ENGL 110 Expository Writing, which meets the University's general education writing requirement. Note: A Reading Code of <u>3</u> is also required to register for ENGL 110.
4		Completed ENGL 100 Introduction to College Writing.
5		Transfer coursework accepted.

Note: First-Year First-Time students cannot drop ENGL 100 Introduction to College Writing or ENGL 110 Expository Writing unless a completed, including signatures, Course Add/Drop form for another section of the same course is presented to the Office of the University Registrar during the first six class days of the semester.

Reading Scores:

	<u>Code</u>	<u>Explanation</u>
1		Indicates student must retest and is not eligible to enroll in ENGL 110 Expository Writing.
2		Indicates student may enroll in ENGL 110 Expository Writing if Writing

Placement is equal to 3 or higher.

- 3 Indicates student has completed remedial coursework and may enroll in ENGL 110 Expository Writing.
- 4 Indicates two or more credit-bearing courses has been accepted in transfer and student may enroll in ENGL 110 Expository Writing.

Mathematic Scores:

<u>Code</u>	<u>Explanation</u>
1	Indicates student may not take a credit-bearing math course at Framingham State University. Student must first complete MATH 095 General Mathematics or similar remedial course at another college.
2	Indicates student may enroll in non-algebraic math courses: MATH 110 College Mathematics I (for Coordinate majors in Education), MATH 117 Introduction to Statistics, and MATH 119 Math for the Liberal Arts.
3	Indicates remedial coursework equivalent of MATH 095 General Mathematics accepted as transfer coursework and student may take any 100-level math course listed above, as well as MATH 123 College Algebra.
4	Indicates student may take any 100-level math course listed above, as well as MATH 123 College Algebra.
5	Indicates student may enroll in MATH 200 Precalculus or, after consultation with the Mathematics Department, MATH 219 Calculus I; or any 100-level mathematics course appropriate for the student's major discipline.

Modern Languages Scores:

<u>Code</u>	<u>Explanation</u>
0	Indicates student scored between 0 and 49 and may take Elementary I level of a language at Framingham State University.
1	Indicates student scored between 50 and 64 and may take Elementary II level of a language at Framingham State University.
2	Indicates student scored between 65 and 73 and may take Intermediate I level of a language at Framingham State University.
3	Indicates student scored between 74 and 79 and may take Intermediate II level of a language at Framingham State University.
4	Indicates student scored between 80 and 100 and may take any 300-level and above of a language at Framingham State University.
5	Indicates student has completed Level IV of a language in high school.

Note: Student will be waived from Domain I-C General Education requirement if a placement score of 1 or higher is achieved. Students majoring in English with a placement code of 5 will be waived from the English major requirement of completion of Elementary II level of a language.

