

REQUIREMENTS FOR BACHELOR OF SCIENCE IN COMPUTER SCIENCE

for students matriculated Fall 2013 or after

To receive the BS degree in computer science, the student must earn a minimum of 127 credit hours, including transfer credits, with an average of at least C (2.0 GPA), and a minimum of a C average in the major program.

Credit Requirements - A minimum of 127 semester credits of which:

1. a minimum of 60 credits must be in liberal arts and sciences courses
2. a minimum of 30 credits must be earned in Watson School courses

Area Requirements

1. **Communications**.....4 credits
 - One course that meets the Binghamton University General Education Composition requirement.
 - CS 301. Ethical, Social and Global Issues in Computing (included in the CS credits below)
2. **Humanities/social science electives**20 credits
3. **Science**.....12 credits
 - Two course science sequence: BIOL 117 and BIOL 118 or CHEM 107 and CHEM 108 or PHYS 131 and PHYS 132
 - One science elective: chosen from courses that meet the General Education Laboratory Science requirement.
4. **Mathematics**20 credits
 - MATH 221. Calculus I
 - MATH 222. Calculus II
 - MATH 314. Discrete Mathematics (or MATH 330)
 - MATH 327. Probability with Statistical Methods
 - One elective chosen from:
 - MATH 304. Linear Algebra
 - MATH 356. Mathematical Modeling
 - MATH 371. Ordinary Differential Equations
 - MATH 381. Graph Theory
 - MATH 407. Introduction to the Theory of Numbers
5. **Free electives**.....14 credits

At least four credits must be in liberal arts and science. At most one free elective in liberal arts and science may be taken pass/fail instead of a letter grade. At most 2 credits of activity/wellness may be used as free elective credit.
6. **Computer Science**..... 57¹ credits
 - CS 101. Introductory Topics in Computer Science
 - CS 120. Computer Systems I: Machine Organization²
 - CS 140. Programming with Objects²
 - CS 220. Computer Systems II: Arch. and Prog.
 - CS 240. Data Structures and Algorithms
 - CS 320. Computer Systems III: Adv. Computer Arch.
 - CS 350. Operating Systems
 - CS 373. Automata Theory and Formal Languages
 - CS 375. Design and Analysis of Algorithms
 - CS 471. Programming Languages
 - **Four Computer Science electives chosen from A, B, C, and D below. At least one must be chosen from A and at least one from B. At most one can be taken from D.:**
 - A.**
 - CS 428. Computer Networks
 - CS 451. Systems Programming
 - CS 457. Introduction to Distributed Systems
 - CS 476. Programming Models for Emerging Platforms
 - B.**
 - CS 440. Adv. Topics in OO Programming
 - CS 442. Design Patterns
 - CS 445. Software Engineering
 - CS 472. Compiler Design
 - C.**
 - CS 328. Internet Programming
 - CS 338. Introduction to Multimedia Systems
 - CS 346. Enterprise Systems
 - CS 402. SW & Engineering Project Mgmt
 - CS 422. Web-Based Programming
 - CS 423. Design and Impl. of Embedded Systems
 - CS 424. Microcontrollers and Robotics
 - CS 426. Wireless Sensor Networks
 - CS 432. Database Systems
 - CS 431. Enterprise Network Security
 - CS 433. Information Retrieval
 - CS 435. Introduction to Data Mining
 - CS 436. Intro to Machine Learning
 - CS 446. Enterprise Systems Management
 - CS 448. Multimedia Systems
 - CS 455. Introduction to Visual Information Processing
 - CS 458. Introduction to Computer Security
 - CS 460. Computer Graphics
 - CS 480Z. z/VM Virtualization
 - D. To count as a CS elective, must be taken for 4 credits**
 - CS 395. Computer Science Internship
 - CS 396. Computer Science Co-op
 - CS 498. Undergraduate Project
 - CS 499. Undergraduate Research

General Education Requirements Students must fulfill the General Education Requirements for Computer Science. Students normally complete these requirements within the 127-credit program described above.

¹ Credits include the Communications course CS 301

² Students with limited programming experience are recommended to first take CS 110 Programming Concepts and Applications

for students matriculated Fall 2013 or after

Supplemental information regarding the BSCS Degree Requirements

The following information supplements that provided in the University Bulletin. It applies to students who matriculated Fall 2013 or after.

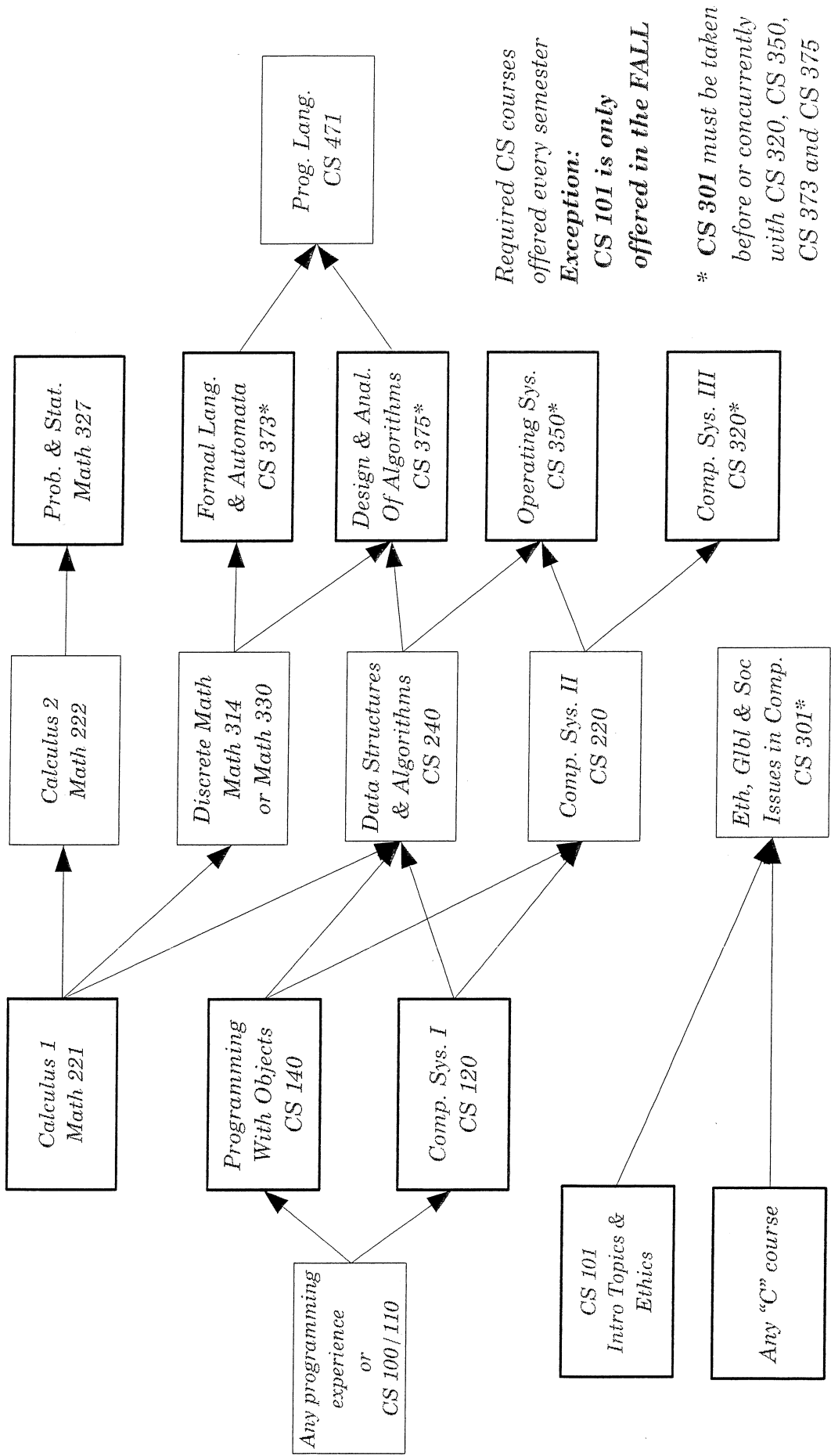
All required Computer Science courses, except CS 101, are offered every semester.

Humanities/Social Science – May be filled by courses offered by the Division of Humanities, the Division of Social Sciences, the Psychology Department and HDEV courses offered by the College of Community and Public Affairs. Many of the courses taken to meet the General Education requirements will fulfill the Humanities/Social Science requirement.

Mathematics - Students who are strong in math are encouraged to take MATH 330 (Number Systems) instead of MATH 314 (Discrete Mathematics). Students with a strong math background may take MATH 381 (Graph Theory) as their Math elective, even though they have not taken MATH 304 (Linear Algebra). The following Binghamton University course can be substituted for MATH 327: MATH 448 (Introduction to Probability and Statistics II).

Free Electives – May be filled by extra courses from any of the areas listed above, SOM courses, or additional Computer Science courses. A maximum of 2 PE credits may be counted as Free Elective credits. At least four of these credits must be in humanities, social sciences, arts and other disciplines (excluding computer science) that provide breadth of background. CS 110 counts as a free elective.

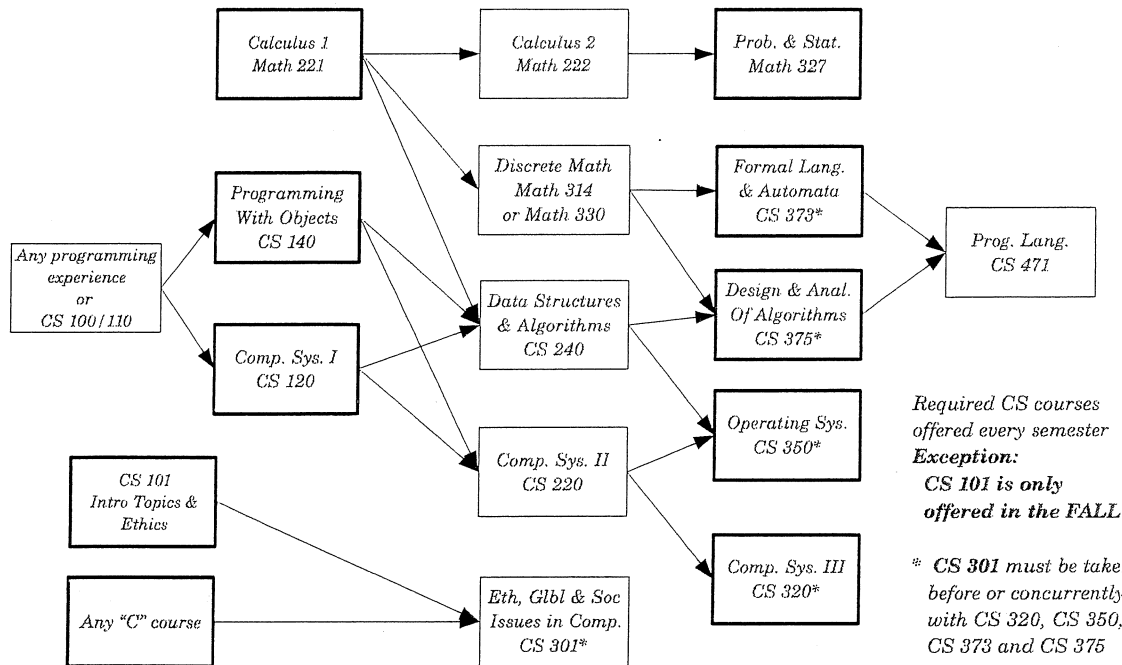
Dependency Flow Chart for CS Required Courses Fall 2013



Required CS courses
offered every semester
Exception:
**CS 101 is only
offered in the FALL**

* CS 301 must be taken
before or concurrently
with CS 320, CS 350,
CS 373 and CS 375

Dependency Flow Chart for CS Required Courses Fall 2013



Dependency Flow Chart for CS Required Courses Fall 2013

