

GUIDE TO REQUIREMENTS FOR A BS OR BA IN
COMPUTER SCIENCE AT KANSAS STATE UNIVERSITY

A student wishing to major in computer science must fulfill the general requirements of the University and must meet the requirements listed below in Sections I and II. The general requirements are listed in Appendix for both a Bachelor of Science Degree and a Bachelor of Arts Degree. A minimum of 120 semester hours are required for graduation. A list of courses offered by the Department of Computer Science can be found in the current issue of the General Catalog.

I. Major Course Requirements in Computer Science

All students are required to take the following seven courses for a Bachelor's Degree in Computer Science:

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| 286 | 315 | Fundamentals of Computer Programming |
| 286 | 400 | Introduction to Algorithmic Processes |
| 286 | 425 | Computer Organization and Programming I |
| 286 | 525 | Computer Organization and Programming II |
| 286 | 440 | Introduction to Programming Languages |
| 286 | 505 | Mathematical Machines and Computability I |
| 286 | 600 | Discrete Structures |

In addition to the preceding Computer Science courses all majors must also complete the following courses:

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|-----|-----|-----------------------------------|
| 245 | 220 | Analytic Geometry and Calculus I |
| 245 | 221 | Analytic Geometry and Calculus II |
| 245 | 505 | Determinants and Matrices |

or

| | | |
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| 245 | 224 | Elements of Applied Linear Analysis |
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One three-hour course in Statistics

BS: Two additional courses in the sciences or engineering sciences

BA: Two additional courses appropriate to desired course of study

Comments:

1. Because of possible scheduling problems, a student should try to complete 286 315 before the end of his sophomore year if he plans to graduate in four years.
2. A student should try to complete 245 200 and 245 211 during his freshman year.
3. The additional science sequence may be taken in a field which is different from that chosen to meet the general requirements.
4. None of the major course requirements can be used to satisfy any of the general requirements listed in Appendix .

II. Programs of Study in Computer Science

Each student majoring in computer science must, by his junior year decide upon a computer science program. These programs, which can be thought of as "minors" or "areas of specialization", are desirable both because the field of computer science is so broad and because many majors in computer science will be expected to work with information and techniques in another distinct professional field. In general, a student is expected to devote at least 15 semester hours of credit toward his minor or area of specialization.

The examples below are only intended as possible selections, not as an exhaustive list of the programs permitted. A student wishing to create a special program tailored to his own interests and the demands of a particular field may do so if the academic composition seems to be directed to the appropriate goals. This can be worked out with the student's advisor. As can be seen from the suggested programs, some fit fairly well the definition of a minor field of study in the usual academic sense, while others offer a specialization within computer science. All such programs are intended to enhance the capabilities of the computer science major and to provide him with an interesting, challenging, and rewarding profession.

A. Program in Systems Programming

A student should take the following courses:

286 620 Programming Systems

Plus one of the following three courses:

286 610 List and String Processing Languages

286 615 Computer Logic

530 651 Design of Digital Systems I

Three other courses should be selected in consultation with the advisor.

B. Program in Business

Every student should take:

286 410 COBOL

Plus at least four courses from the following list:

305 275 Fundamentals of Accounting

305 305 Managerial Accounting

305 361 Cost Accounting

305 371 Intermediate Accounting I (and II)

305 400 Management Concepts

305 425 Business Law I

305 461 Advanced Cost Accounting

305 601 Advanced Management

305 610 Business Measurements and Forecasting

C. Program in Mathematics

A student minoring in mathematics should take the following three courses:

- 245 222 Analytic Geometry and Calculus III
- 245 240 Series and Differential Equations
- 286 506 Mathematical Machines and Computability II

Plus at least two other courses from the following group:

- 245 301 Concepts of Mathematics
- 245 512 Introduction to Modern Algebra I
- 245 530 Introduction to Real Analysis I
- 245 550 Introduction to Applied Mathematics I
- 245 601 Set Theory and Logic

D. Program in Statistics

Those students interested in minoring in statistics should take the following courses:

- 245 222 Analytic Geometry and Calculus III
- 285 410 Introductory Probability and Statistics I
- 285 411 Introductory Probability and Statistics II
- 285 520 Statistical Methods I
- 285 521 Statistical Methods II
- 285 625 Digital Statistical Analysis

and any two of the following:

- 285 630 Multivariate Statistical Methods
- 285 710 Sample Survey Methods
- 185 716 Non-parametric Statistics

E. Program in Operations Research (Industrial Engineering)

A student should meet the following requirements:

- 245 222 Analytic Geometry and Calculus III
- 550 571 Introduction to Operations Research I
- 550 572 Introduction to Operations Research II
- 550 575 Quantitative Techniques in Industrial Engineering

One additional course in industrial engineering, mathematics, or statistics.

F. Program in Computer Systems (electrical engineering)

It is recommended that a student in this program take:

- 265 211 General Physics I
- 500 160 Engineering Concepts

to fulfill the two additional courses in the sciences or engineering sciences in Section I.

The student should also take the following courses:

- 245 222 Analytic Geometry and Calculus III
- 245 240 Series and Differential Equations
- 530 355 Introduction to Computer Engineering
- 530 401 Circuit Theory I
- 530 415 Electronics I
- 530 620 Analog Computation

Comments:

1. If a student plans to go to graduate school in computer science, then he should be adequately prepared for any graduate school if he completes the following courses in addition to or in conjunction with meeting the requirements in Sections I and II.

285 506 Mathematical Machines and Computability II
286 620 Programming Systems
245 222 Analytic Geometry and Calculus III

One additional course in mathematics, preferably in differential equations, linear algebra, mathematical logic, or abstract algebra.

Many graduate schools still require a reading knowledge of at least one foreign language for a Ph.D. degree. Thus a student will find it much easier to satisfy this requirement as a graduate student if he takes a foreign language as an undergraduate student.

2. It should be kept in mind that all of the above programs are only examples. If a student is interested in any other discipline, an appropriate program of study can be worked out to satisfy this minor or specialization requirement. The important thing to remember is that the minor or specialization requirement should include an appropriate number of upper division courses and not be merely an unrelated collection of freshman and sophomore courses.
3. Note that often some of the courses in a student's minor or area of specialization can be included in the general requirements as listed in Appendix D. This gives the student additional flexibility for free electives.

Appendix

Bachelor of Science Degree - 120 hours required for graduation.

General Requirements:

- A. English Composition I and II
- B. Oral Communication I (or Oral Communication II, Argumentation and Debate, or language and Communication as recommended by the Department of Speech.)
- C. Humanities and Social Sciences from Departments of Art, Economics, English, History, Modern Languages, Music Philosophy, Political Science, Psychology, Sociology and Anthropology, Speech, Technical Journalism or Division of Geography (excluding Geography 150 and 151).

Seven courses, taken from at least two departments, including 1 course in Philosophy and 2 advanced level courses (400 level or above or second year of a foreign language).