

DEPARTMENT OF COMPUTER SCIENCE

Professor and Interim Head: Charles B. McCamant
 Professors: Lehmann, Motl
 Associate Professor: Jones
 Assistant Professor: Crouch

Bachelor of Business Administration

(Computer Science major—130 semester hours)

| | <u>Semester Hours</u> |
|---|---------------------------|
| ACADEMIC MAJOR | |
| Computer Science 1361, 1362, 2305, 2311, 3311, 3331, 3344, 4301, 4302, 4306 and 3 additional courses (2 of which must be advanced) | 39 |
| Accounting 2301, 2302, and 3301 | 9 |
| Business Administration 1301, 2345, and 4303 | 9 |
| Finance 3361 | 3 |
| Management 3301 and 3305 | 6 |
| Management Science 2331 | 3 |
| Marketing 3321 | 3 |
| OTHER REQUIREMENTS | |
| Communication 2301 | 3 |
| Economics 2301 and 2302 | 6 |
| English 1301, 1302, sophomore literature, and 3352 | 12 |
| Government 2301 and 2302 | 6 |
| History 1301 and 1302 | 6 |
| Mathematics 2332 and two courses from 1302, 1303, 1321, 1361, 1362 or 2331 | 9 |
| Natural Science - two lab sciences from: | |
| Biology 1410, 1411, 1480, 2401, 2402, 2403, 2411, 2423, 2424. | |
| Chemistry 1301/1101, 1302/1102, 1411, 1412, 2353/2153. | |
| Geology 1401, 1402. | |
| Physics 1301/1101, 1302/1102, 1421, 1422, 1441, 2442. | |
| Physical Science 1301/1101, 1302/1102. | 8 |
| Physical Activity - one course from: | |
| 1111, 1112, 1113, 1114, 1115, 1116, 1117, 1118, 1119, 1120, 1125, 2101, 2102 | 1 |
| Visual and Performing Arts - one course from: | |
| Art 1301, 1302, 2301, 2302. | |
| Drama 1311, 1321, 1351, 2331, 2334, | |
| Music 1310, 1341, 1342, 1351, 1361, 1375, 1376 | 3 |
| MINOR (optional for BBA) | 0 |
| ELECTIVES Electives | 4 |

The above plan meets all core curriculum and general BBA requirements.

Bachelor of Science

(Computer Science major—130 semester hours)

| | <u>Semester Hours</u> |
|---|---------------------------|
| ACADEMIC MAJOR | |
| Computer Science 1361, 1362, 2305, 2311, 3311, 3331, 3344, 4301, 4302, 4306 and 3 additional courses (2 of which must be advanced) | .39 |
| OTHER REQUIREMENTS | |
| Biology or Geology*: | |
| Bio 1410, 1411, 1480, 2401, 2402, 2403, 2411, 2423, 2424 | |
| Geol 1401, 1402 | .8 |
| Chemistry, Physical Science, or Physics (including Physics 3444)* | .6-8 |
| Communication 2301 | .3 |
| English 1301, 1302, sophomore literature, and 3351 | .12 |
| Government 2301 and 2302 | .6 |
| History 1301 and 1302 | .6 |
| Mathematics 2332 and two courses from 1302, 1303, 1321, 1361, 1362 or 2331 | .9 |
| Physical Activity - one course from: | |
| 1111, 1112, 1113, 1114, 1115, 1116, 1117, 1118, 1119, 1120, 1125, 2101, 2102 | .1 |
| Social Science: Economics, 2300, 2301, 2302, Geography 2301, Psychology 1303, 2301, 2304, 2305, Sociology 2301, 1303, 2305, 2307 | .3 |
| Visual and Performing Arts - one course from: | |
| Art 1301, 1302, 2301, 2302, Drama 1311, 1321, 1351, 2331 2334, Music 1310, 1341, 1342, 1351, 1361, 1375, 1376 | .3 |
| MINOR | |
| Minor | .18 |
| ELECTIVES | |
| Electives | .14-16 |

The above plan meets all core curriculum and general BS requirements.

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- * At least two of the science courses completed for this degree must include a lab component.
Options:
Chemistry: 1301/1101, 1302/1102, 1411, 1412, 2353/2153
Physical Science: 1301/1101, 1302/1102
Physics: 1301/1101, 1302/1102, 1421, 1422, 1441, 2442

Bachelor of Science

(Computer Science major with teacher certification)

Students must have been admitted into the Teacher Education Program and must be currently satisfying admission standards before being allowed to enroll in either Education 4322 or 4323.

| | <u>Semester Hours</u> | |
|---|---------------------------|----|
| ACADEMIC MAJOR | | |
| Computer Science 1361, 1362, 2305, 2311, 3311, 3331, 3344, 4301, 4302 and 4306 | .30 | |
| OTHER REQUIREMENTS | | |
| Biology or geology*: | | |
| Bio 1410, 1411, 1480, 2401, 2402, 2403, 2411, 2423, 2424 | | |
| Geol 1401, 1402 | .8 | |
| Chemistry, physical science, or physics (including Physics 3444)* | .8 | |
| Communication 2301 or 2331 | .3 | |
| English 1301, 1302, sophomore literature, and 3351 | .12 | |
| Government 2301 and 2302 | .6 | |
| History 1301 and 1302 | .6 | |
| Mathematics 2332 and two courses from 1302, 1303, 1321, 1361, 1362 or 2331** | .9 | |
| Physical Activity - one course from: | | |
| 1111, 1112, 1113, 1114, 1115, 1116, 1117, 1118, 1119, 1120, 1125, 2101, 2102 | .1 | |
| Social Science: Economics, 2300, 2301, 2302, Geography 2301, Psychology 1303, 2301, 2304, 2305, Sociology 2301, 1303, 2305, 2307 | | .3 |
| Visual and Performing Arts - one course from: | | |
| Art 1301, 1302, 2301, 2302, Drama 1311, 1321, 1351, 2331 2334, Music 1310, 1341, 1342, 1351, 1361, 1375, 1376 | .3 | |
| PROFESSIONAL EDUCATION | | |
| Education 4321, 4322, 4323, 4973 | .18 | |
| Educational Psychology 3311 | .3 | |
| Reading 4320 | .3 | |
| MINOR | | |
| Minor | .18 | |
| ELECTIVES | | |
| Electives | .3 | |

The above plan meets all core curriculum and general BS requirements.

Minimum Course Requirements for Teacher Certification in Computer Science: 1361, 1362, 2305, 2311, 3311, 3331, 3344, 4301, 4302 and 4306.

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- * At least two of the science courses completed for this degree must include a lab component.
Options:
Chemistry 1301/1101, 1302/1102, 1411, 1412, 2353/2153
Physical Science: 1301/1101, 1302/1102
Physics: 1301/1101, 1302/1102, 1421, 1422, 1441, 2442
- ** If a minor other than mathematics is chosen, nine hours of mathematics including Mathematics 2332 must be completed and more than 130 semester hours may be required for the degree.

COURSES IN COMPUTER SCIENCE (CS)

1331 Principles of Data Processing (3-0). Basic data processing techniques, data representation schemes, computer concepts, computer components, problem solving techniques, programs and languages designed to familiarize the student with broad concepts and applications of data processing.

1341 Fundamentals of Programming (3-0). For non-majors, introductory computer programming techniques using a modern, object-oriented programming language.

1351 Java Programming (3-0). Programming concepts and development in the Java language.

1361 Computer Science I (3-0). The concepts and properties of algorithms for solving numerical and non-numerical problems. Introduction to computer and programming systems, including the development, debugging, and verification of programs, representation of data, computer characteristics and organization.

1362 Computer Science II (3-0). Continuation of CS 1361. Problem solving and program development techniques emphasizing modular design. Includes advanced programming topics such as class design, records, strings, pointers, and bit manipulation.

Prerequisite: Computer Science 1361.

2305 Data Structures (3-0). Study of basic data structures and their applications such as: linear structures (arrays, lists, stacks, queues) and non-linear structures (trees, graphs); sequential and linked storage representation methods; sorting and searching algorithms; and techniques of algorithmic analysis.

Prerequisite: Computer Science 1362.

2311 Computer Organization and Programming (3-0). Basic computer organization with emphasis on machine representation of data and instructions; programming in assembly and machine-oriented languages for real and simulated computers.

Prerequisite: Computer Science 1362.

3302 Introduction to Systems Programming (3-0). Advanced assembly language techniques, including macros, conditional assembly, levels of I/O, and file structures. Evolution of systems programming, assemblers, and the assembly process. Linkers, loaders, and program translation by interpretation and generation.

Prerequisites: Computer Science 2305, 2311.

3311 Data Base Management (3-0). Basic data base concepts, organization, and definitions; data description languages; relational data base concepts and examples; comparison of data base systems.

Prerequisite: Computer Science 1362.

3324 File Structures (3-0). File organization methods and processing techniques in a high level programming language. Concepts of creating, merging, sorting, and updating sequential, random, and indexed files.

Prerequisite: Computer Science 1362.

3331 Programming Languages (3-0). An introduction to the syntax and semantics of programming languages. Actual programming languages may be used to illustrate the language concepts.

Prerequisite: Computer Science 2305.

3344 Computer Architecture (3-0). Study of the hardware components of a computer system and survey of various computer architectures. Topics may include instruction set design, computer arithmetic, and microprogramming.

Prerequisite: Computer Science 2311.

4091 Research: 1 to 6. A specialized course providing research opportunities for superior students majoring in computer science.

Prerequisite: Senior standing and consent of the department head is required.

4171 Internship. The student will participate in a part-time computing position with a cooperating business or government agency whose program has been approved by the CS Department. The internship requires a minimum of ten hours per week. The course may be repeated twice for credit. Grading will be on a pass/fail basis.

Prerequisite: Junior or senior CS major with at least 18 semester hours in CS, 12 of which must be in residence. Additionally, consent of the department head is required.

4301 Algorithmic Languages and Compilers (3-0). Formal description of algorithmic languages, compilation techniques, syntactic analysis, code generation, storage allocation, syntax-directed compilers, compiler-building systems.

Prerequisites: Computer Science 2305, 2311.

4302 Operating Systems (3-0). A study of the design and implementation of operating systems; analysis of system resource management, including the memory, processor, device, and information management functions.

Prerequisites: Computer Science 2305, 2311.

4306 Software Engineering (3-0). Introduction to the fundamental concepts of computer software development; programming methodology; software reliability; performance and design evaluations, software project management; program development languages, tools and standards.

Prerequisite: Senior standing and Computer Science 2305.

4308 Computer Graphics (3-0). Study of hardware and software found in graphics systems. Topics such as line and curve drawing, text generation, transformation methods for two and three dimensional systems, fill algorithms, fractal curves and hiddenline algorithms.

Prerequisites: Computer Science 2305, Mathematics 1321 or 1362.

4312 Internet Technologies (3-0). Technologies that make up the Internet including servers, clients, protocols, browsers and mechanisms for executable content.

Prerequisite: Computer Science 2305.

4314 Client/Server Programming (3-0). Developing client and server applications that work together. A project oriented course in which each student will be expected to design and program both the server and client of at least one application.

Prerequisite: Computer Science 2305.

4316 Visual Programming (3-0). Programming in and for a visual or GUI environment. Event-driven objects including mouse and window events.

Prerequisite: Computer Science 1341 or 1361.

4318 Artificial Intelligence (3-0). Fundamental concepts and techniques of intelligent systems; representation and interpretation of knowledge on a computer; search strategies and control.

Prerequisite: Senior standing and Computer Science 2305.

4381 Special Topics in Computer Science (3-0). Contemporary applications and theory in computer science. (May be repeated once for credit when the topics vary.)

Prerequisite: Computer Science 2305.