B.S. Required Courses

The following outline is for students declaring their major Fall 2016 or later. All other CTEC majors should review the course catalog from the year they started their program, or visit with their adviser.

I. CORE COMPUTER TECHNOLOGY COURSES (33-37 Semester Hours)  

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Sem. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTEC 114</td>
<td>Computing Tools and Environments</td>
<td>3</td>
</tr>
<tr>
<td>COSC 112</td>
<td>Computer Science I</td>
<td>4</td>
</tr>
<tr>
<td>COSC 113</td>
<td>Computer Science II</td>
<td>4</td>
</tr>
<tr>
<td>COSC 208</td>
<td>Discrete Structures</td>
<td>3</td>
</tr>
<tr>
<td>COSC 214</td>
<td>Data Structures and Algorithms</td>
<td>4</td>
</tr>
<tr>
<td>CTEC 214</td>
<td>Client Operating Systems</td>
<td>4</td>
</tr>
<tr>
<td>CTEC 222</td>
<td>UNIX Operating SYSTEM</td>
<td>3</td>
</tr>
<tr>
<td>CTEC 226</td>
<td>Introduction to Database Development</td>
<td>3</td>
</tr>
<tr>
<td>CTEC 294</td>
<td>PC Architecture</td>
<td>3</td>
</tr>
<tr>
<td>CTEC 302</td>
<td>Computer Networking</td>
<td>3</td>
</tr>
<tr>
<td>CTEC 305</td>
<td>Server Administration I</td>
<td>3</td>
</tr>
</tbody>
</table>

(Note: COSC 190 Intermediate Computer Programming may be used to satisfy the COSC 112 and COSC 113 requirement for students with transfer credit for COSC 190, or entering students with a strong programming background and consent of the instructor.)

II. CTEC PROGRAM TRACKS (12-19 semester hours)

COMPUTER NETWORKING AND SYSTEM ADMINISTRATION TRACK

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Sem. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTEC 335</td>
<td>Network Protocols (TCP/IP)</td>
<td>3</td>
</tr>
<tr>
<td>CTEC 405</td>
<td>Server Administration II</td>
<td>3</td>
</tr>
<tr>
<td>CTEC 410</td>
<td>Internet Technology</td>
<td>3</td>
</tr>
<tr>
<td>CTEC 435</td>
<td>UNIX System Administration</td>
<td>3</td>
</tr>
</tbody>
</table>

Note: Total number of required CTEC Program electives: 15 semester hours

DATABASE DEVELOPMENT AND ADMINISTRATION TRACK

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Sem. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTEC 300</td>
<td>Database Architecture</td>
<td>3</td>
</tr>
<tr>
<td>CTEC 324</td>
<td>Database Application Development</td>
<td>3</td>
</tr>
<tr>
<td>COSC 420</td>
<td>Database Management</td>
<td>3</td>
</tr>
<tr>
<td>CTEC 424</td>
<td>Database Administration</td>
<td>3</td>
</tr>
</tbody>
</table>
Note: Total number of required CTEC Program electives: 15 semester hours

COMPUTER AND NETWORK SECURITY TRACK

CTEC 335 Network Protocols (TCP/IP) 3
CTEC 345 Foundations of Computer and Network Security 3
CTEC 350 Principles and Methods of Intrusion Detection & Prevention 3
CTEC 402 Software and Operating System Security 3
CTEC 435 UNIX System Administration 3
CTEC 445 Fundamentals of Cryptography and Applications 3

Note: Total number of required CTEC Program electives: 15 semester hours

INTERNET TECHNOLOGY AND MULTIMEDIA TRACK

CTEC 293 Internet Programming I 3
CTEC 335 Network Protocols (TCP/IP) 3
CTEC 393 Internet Programming II 3
CTEC 415 Internet Applications I 3

Choose one of the following two courses:
CTEC 225 Graphical User Interface App. Develop 3
CTEC 340 Multimedia Application Development 4

Choose one of the following two courses:
CTEC 440 Human Factors 3
CTEC 477 Virtual Reality 3

Note: Total number of required CTEC Program electives: 8 or 9 semester hours

III. CTEC PROGRAM ELECTIVES (8-15 semester hours)

Note: The CTEC Program Track courses together with the CTEC Program Electives must total at least 27 semester hours.

A student in one track may take a CTEC OR COSC course not required by their track as an elective, provided the student satisfies the prerequisite(s) for the selected course. Technical courses from other disciplines may be allowed with prior approval by the department chairperson.

IV: REQUIRED MATHEMATICS COURSES (7 semester hours)

Math 215 Elements of Calculus 4
Math 155 Probability and Statistics 3
V. COURSES IN NATURAL LABORATORY SCIENCES (7-8 semester hours)

Two courses from two different natural sciences: At least one course must have an associated laboratory experience. For example:

BIOL  Biology
CHEM  Chemistry
PHSC  Physical Science
PHYS  Physics

VI. REQUIRED ENGLISH COURSE (3 semester hours)

ENGL  362  Technical Writing for Computer Science  3

NOTE: Computer Technology majors must earn a grade of “C” or better in each course in areas I through VI above.

VII. GENERAL EDUCATION REQUIREMENTS (18 semester hours)

English Composition (6 semester hours)

ENGL  101  Expository Writing  3
ENGL  102  Argument and Research  3

Arts and Humanities (6 semester hours)

COMM 101  Oral Communications  3
_____  ____  Arts and Humanities Elective  3

Choose from designated General Education courses in art, literature, modern languages, music, philosophy, and theater. (The Arts and Humanities Elective must be in a discipline other than COMM.)

Social Sciences (6 semester hours)

HIST  114  African American History to 1865 or
HIST  115  African American History since 1865  3

_________________  Social Sciences Elective  3

Choose from designated General Education courses in anthropology, economics, geography, political science, psychology, social work, sociology, or interdisciplinary social science. (The Social Sciences Elective must be in a discipline other than HIST).

NOTE: Science (7-8 semester hours), Mathematics (3 semester hours), and Technology (3 semester hours) General Education Requirements are satisfied by required courses in areas I through V. Free General Education Electives (9 semester hours) are usually satisfied by courses in area I (Technology category) and a prerequisite course in area IV (Mathematics category). Additional Free General Education Electives, if needed, are chosen, with Departmental advisement, from designated General Education courses in any category.
VIII. INSTITUTIONAL REQUIREMENTS (6 semester hours)

**Freshman Seminar (3 semester hours)**
FRSE 101 Freshman Seminar

Freshman Seminar (FRSE 101) is required for all entering freshmen and for all transfer students with fewer than 12 credits.

**Health and Wellness (3 semester hours)**
Choose one of the General Education courses designated for this category.
HEED 102 Life and Health 3
HEED 200 Fundamentals of Sex Education 3
IDIS 210 Contemporary Issues in Women’s Health 3

**General Electives**
The remaining credits needed to make the total at least 120 should be chosen by the student in consultation with his/her advisor.

**MINOR IN COMPUTER TECHNOLOGY**
A minor in Computer Technology can be obtained by completing the 33-37 semester hours listed as CORE COMPUTER TECHNOLOGY COURSES (with a grade of “C” or better in each course). Students are required to satisfy the prerequisites for each course.

**GRADUATION REQUIREMENTS**
1. Completion of at least 120 semester credit hours of which at least 60 credit hours must be completed at Bowie State University.
2. Completion of at least 24 semester credit hours of computer science technology requirements at Bowie State University.
3. Completion of the general education and institutional requirement of Bowie State University.
4. Successful completion of the English Proficiency Examination. Meeting all other relevant graduation requirements as specified in the University catalog.