# Computer Science (CMPBD) Recommended Academic Plan

## FIRST SEMESTER (1)

| **COURSE DETAILS** | **CREDITS** |
| --- | --- |
| MATH 140 (GQ) - Calculus with Analytic Geometry I [Notes for: MATH 140 (GQ)](http://rap.psu.edu/computer-science-cmpbd?width=500&height=auto&inline=true#34410) | 4 |
| Science Sequence Course (GN) [Notes for: Science Sequence Course (GN)](http://rap.psu.edu/computer-science-cmpbd?width=500&height=auto&inline=true#34413) | 4 |
| ENGL 015 (GWS) - Rhetoric and Composition [Notes for: ENGL 015 (GWS)](http://rap.psu.edu/computer-science-cmpbd?width=500&height=auto&inline=true#34416)  or ENGL 030 (GWS) - Honors Freshman Composition [Notes for: ENGL 030 (GWS)](http://rap.psu.edu/computer-science-cmpbd?width=500&height=auto&inline=true#34571) | 3 |
| CMPSC 121 (GQ) - Introduction to Programming Techniques [Notes for: CMPSC 121 (GQ)](http://rap.psu.edu/computer-science-cmpbd?width=500&height=auto&inline=true#34419) | 3 |
| First-Year Seminar | 1 |
| Total credits | 15 |

## SECOND SEMESTER (2)

| **COURSE DETAILS** | **CREDITS** |
| --- | --- |
| MATH 141 (GQ) - Calculus with Analytic Geometry II [Notes for: MATH 141 (GQ)](http://rap.psu.edu/computer-science-cmpbd?width=500&height=auto&inline=true#34429) | 4 |
| Science Sequence Course (GN)[Notes for: Science Sequence Course (GN)](http://rap.psu.edu/computer-science-cmpbd?width=500&height=auto&inline=true#34432) | 4 |
| CMPSC 122 - Intermediate Programming [Notes for: CMPSC 122](http://rap.psu.edu/computer-science-cmpbd?width=500&height=auto&inline=true#34435) | 3 |
| Arts (GA)  or Humanities (GH)  or Social and Behavioral Science (GS) | 3 |
| Health and Physical Activity (GHA) | 1.5 |
| Total credits | 15.5 |

## THIRD SEMESTER (3)

| **COURSE DETAILS** | **CREDITS** |
| --- | --- |
| CMPSC 221 - Object Oriented Programming with Web-Based Applications | 3 |
| MATH 220 (GQ) - Matrices | 2 |
| Science Sequence Course (GN)[Notes for: Science Sequence Course (GN)](http://rap.psu.edu/computer-science-cmpbd?width=500&height=auto&inline=true#34461) | 2-3 |
| Arts (GA)  or Humanities (GH)  or Social and Behavioral Science (GS) | 3 |
| CAS 100 (GWS) - Effective Speech [Notes for: CAS 100 (GWS)](http://rap.psu.edu/computer-science-cmpbd?width=500&height=auto&inline=true#34469) | 3 |
| Health and Physical Activity (GHA) | 1.5 |
| Total credits | 14.5-15.5 |

## FOURTH SEMESTER (4)

| **COURSE DETAILS** | **CREDITS** |
| --- | --- |
| CMPSC 360 - Discrete Mathematics for Computer Science [Notes for: CMPSC 360](http://rap.psu.edu/computer-science-cmpbd?width=500&height=auto&inline=true#34473) | 3 |
| STAT 301 - Statistical Analysis I [Notes for: STAT 301](http://rap.psu.edu/computer-science-cmpbd?width=500&height=auto&inline=true#76538) | 3 |
| Science Elective | 3 |
| ENGL 202C (GWS) - Effective Writing: Technical Writing [Notes for: ENGL 202C (GWS)](http://rap.psu.edu/computer-science-cmpbd?width=500&height=auto&inline=true#34479) | 3 |
| Arts (GA)  or Humanities (GH)  or Social and Behavioral Sciences (GS) | 3 |
| Total credits | 15 |

## FIFTH SEMESTER (5)

| **COURSE DETAILS** | **CREDITS** |
| --- | --- |
| CMPSC 335 - Fundamentals of Communication Networks [Notes for: CMPSC 335](http://rap.psu.edu/computer-science-cmpbd?width=500&height=auto&inline=true#34491) | 3 |
| CMPSC 312 - Computer Organization and Architecture [Notes for: CMPSC 312](http://rap.psu.edu/computer-science-cmpbd?width=500&height=auto&inline=true#34494) | 3 |
| CMPSC 465 - Data Structures and Algorithms [Notes for: CMPSC 465](http://rap.psu.edu/computer-science-cmpbd?width=500&height=auto&inline=true#34499) | 3 |
| CMPSC 431 - Database Management Systems [Notes for: CMPSC 431](http://rap.psu.edu/computer-science-cmpbd?width=500&height=auto&inline=true#76540) | 3 |
| Science Elective | 3 |
| Total credits | 15 |

## SIXTH SEMESTER (6)

| **COURSE DETAILS** | **CREDITS** |
| --- | --- |
| CMPSC 421 - Net-centric Computing [Notes for: CMPSC 421](http://rap.psu.edu/computer-science-cmpbd?width=500&height=auto&inline=true#34509) | 3 |
| CMPSC 474 - Operating System and Systems Programming [Notes for: CMPSC 474](http://rap.psu.edu/computer-science-cmpbd?width=500&height=auto&inline=true#76542) | 3 |
| Computing Elective | 3 |
| Supporting and Related Area | 3 |
| Science Elective | 3 |
| Total credits | 15 |

## SEVENTH SEMESTER (7)

| **COURSE DETAILS** | **CREDITS** |
| --- | --- |
| CMPSC 461 - Programming Language Concepts [Notes for: CMPSC 461](http://rap.psu.edu/computer-science-cmpbd?width=500&height=auto&inline=true#34537) | 3 |
| CMPSC 484 - Computer Science Senior Project I [Notes for: CMPSC 484](http://rap.psu.edu/computer-science-cmpbd?width=500&height=auto&inline=true#34540) | 2 |
| SWENG 411 - Software Engineering (Computing Elective) [Notes for: SWENG 411](http://rap.psu.edu/computer-science-cmpbd?width=500&height=auto&inline=true#34543) | 3 |
| Supporting and Related Area | 3 |
| Arts (GA)  or Humanities (GH)  or Social and Behavioral Sciences (GS) | 3 |
| Science Elective | 3 |
| Total credits | 17 |

## EIGHTH SEMESTER (8)

| **COURSE DETAILS** | **CREDITS** |
| --- | --- |
| CMPSC 485 - Computer Science Senior Project II [Notes for: CMPSC 485](http://rap.psu.edu/computer-science-cmpbd?width=500&height=auto&inline=true#34556) | 3 |
| Computing Elective | 3 |
| Science Elective | 3 |
| Arts (GA)  or Humanities (GH)  or Social and Behavioral Sciences (GS) | 3 |
| Arts (GA)  or Humanities (GH)  or Social and Behavioral Sciences (GS) | 3 |
| Total credits | 15 |

## ADDITIONAL NOTES

* GWS, GHA, GQ, GN, GA, GH, and GS are codes used to identify General Education requirements.
* US, IL and US;IL are codes used to designate courses that satisfy University United States/International Cultures requirements. All students are required to take one IL and one US course before graduation. A course designated as US;IL may be used as a US or an IL, not both.
* Students who have not met the admission requirement of two unites of a high school foreign language must complete a college level-one foreign language within their first 60 credits.

**Scheduling Patterns for Courses Not Taught Each Semester:**

Some major requirements will be offered only once a year. Some upper level courses are offered in an alternate year pattern. Consult an adviser for suggestions on scheduling them.

* **Fall ONLY Courses:**CMPEN 312, CMPSC 335, CMPSC 461, CMPSC 431, CMPSC 484
* **Spring ONLY Courses**: CMPSC 421, CMPSC 485

**Program Notes:**

Students need to complete one of the following two semester science (GN) course sequences, which will also count toward their general education.

* Biology: CHEM 110(3), BIOL 110S(4), and BIOL 220W(4) or BIOL 230W(4) or BIOL 240W(4)
* Chemistry:   CHEM 110(3), CHEM 111(1), CHEM 112(3), CHEM 113(1), and CHEM 210(3)
* Physics:       PHYS 211(4), PHYS 212(4), and PHYS 213(2) or PHYS 214(2)

**Academic Advising Notes:**

**Science Elective:**

It is strongly suggested (but not required) that students follow one of the natural science, math, or stat minors in selecting their science electives.

Students may choose from the following courses:

* ASTRO 291 or higher; BIOL 110 or higher; CHEM 110 or higher; CMPSC 311 or higher
* GEOG 160 or higher; MATH 200 level or higher; METEO 101 or higher
* PHYS 211 or higher except PHYS 250 or PHYS 251
* STAT 300 level or higher

**Computing Elective:**

Students may select courses from CMPSC 312 or higher, CMPEN, or SWENG courses.

**Supporting and Related Areas:**

All 300 and 400-level courses in CMPSC (including CMPSC 494 – Research, CMPSC 495 – Internship, and/or CMPSC 496 - Independent Study), GAME, MIS, MATH, STAT, BIOL, CHEM, PHYS, ACCTG, ECON, FIN, PSYCH, and ROTC.

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