

COMPUTER SCIENCE (BS) - GAMES PROGRAMMING TRACK

Program Overview

The BS in Computer Science - Games Programming Track provides students with a thorough understanding of the theory, design and programming techniques required for producing games software. This track equips students with the theoretical and practical knowledge for careers in the games and simulation industries. Topics covered include games theory, design and programming; graphics techniques including virtual environments; artificial intelligence techniques; multi-player and Internet games programming; and games specific software tools.

Career Opportunities

Computer Programmers, Game & Simulation Programmers, Web Developers, Network & Security Specialists

Program of Study

| Code | Title | Credit Hours |
|--|---------------------------------------|--------------|
| Core IMPACTS Area : Institutional Priorities ¹ | | 4-5 |
| COMM 1110 | Public Speaking | 3 |
| ITDS 1779 | Scholarship Across the Disciplines | 2 |
| LEAD 1705 | Introduction to Servant Leadership | 2 |
| PERS 1506 | Perspectives 1-hour | 1 |
| PERS 1507 | Perspectives 2-hour | 2 |
| Foreign Language Course Options | | |
| ARAB, CHIN, FREN, GERM, GREK, ITAL, JAPN, KREN, LATIN, PORT, SPAN - 1001, 1002, 2001, 2002 | | |
| SWAH 1001 | Elementary Swahili I | |
| SWAH 1002 | Elementary Swahili II | |
| Core IMPACTS Area : Mathematics & Quantitative Skills ¹ | | 3-7 |
| DATA 1501 | Introduction to Data Science | 3 |
| MATH 1001 | Quantitative Skills and Reasoning | 3 |
| MATH 1101 | Introduction to Mathematical Modeling | 3 |
| MATH 1111 | College Algebra | 3 |
| MATH 1113 | Pre-Calculus | 4 |
| MATH 1125 | Applied Calculus | 3 |
| MATH 1131 | Calculus with Analytic Geometry I | 4 |
| MATH 1132 | Calculus with Analytic Geometry II | 4 |
| MATH 1165 | Computer-Assisted Problem Solving | 3 |
| MATH 1401 | Introduction to Statistics | 3 |
| MATH 1501 | Calculus I | 4 |
| MATH 2125 | Introduction to Discrete Mathematics | 3 |
| STAT 1401 | Elementary Statistics | 3 |
| Core IMPACTS Area : Political Science and U.S. History | | 6 |
| HIST 2111 | U. S. History to 1865 | 3 |
| or HIST 2112 | U. S. History since 1865 | |
| POLS 1101 | American Government | 3 |
| Core IMPACTS Area : Arts, Humanities, and Ethics | | 6 |

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|---|---|-------------|
| Select one Fine Arts course | | 3 |
| ARTH 1100 | Art Appreciation | |
| ARTH 2125 | Introduction to the History of Art I– Prehistoric through Gothic | |
| ARTH 2126 | Introduction to the History of Art II– Renaissance through Modern | |
| MUSC 1100 | Music Appreciation | |
| THEA 1100 | Theatre Appreciation | |
| ITDS 1145 | Comparative Arts ² | |
| Select one Humanities course | | 3 |
| ENGL 2111 | World Literature I | |
| ENGL 2112 | World Literature II | |
| ITDS 1774 | Introduction to Digital Humanities | |
| PHIL 2010 | Introduction to Philosophy | |
| ITDS 1145 | Comparative Arts ² | |
| Core IMPACTS Area : Communicating in Writing | | 6 |
| ENGL 1101 | English Composition I | 3 |
| ENGL 1102 | English Composition II | 3 |
| Core IMPACTS Area : Technology, Mathematics, and Sciences ¹ | | 7-11 |
| ANTH 1145 | Human Origins | 3 |
| ASTR 1105 | Descriptive Astronomy: The Solar System | 3 |
| ASTR 1106 | Descriptive Astronomy: Stars and Galaxies | 3 |
| ASTR 1305 | Descriptive Astronomy Lab | 1 |
| ATSC 1112 | Understanding the Weather | 3 |
| ATSC 1112L | Understanding the Weather Lab | 1 |
| BIOL 1125 | Contemporary Issues in Biology Non-Lab | 3 |
| BIOL 1215K | Introductory Biology | 4 |
| BIOL 1225K | Contemporary Issues in Biology with Lab | 4 |
| CHEM 1151 & 1151L | Survey of Chemistry I and Survey of Chemistry I Lab | 4 |
| CHEM 1152 & 1152L | Survey of Chemistry II and Survey of Chemistry II Lab | 4 |
| CHEM 1211 & 1211L | Principles of Chemistry I and Principles of Chemistry I Lab | 4 |
| CHEM 1212 & 1212L | Principles of Chemistry II and Principles of Chemistry II Lab | 4 |
| CPSC 1105 | Introduction to Computing Principles and Technology | 3 |
| CPSC 1301K | Computer Science I | 4 |
| ENVS 1105 | Environmental Studies | 3 |
| ENVS 1105L | Environmental Studies Laboratory | 1 |
| ENVS 1205K | Sustainability and the Environment | 4 |
| GEOG 2215 | Introduction to the Geographic Information Systems | 3 |
| GEO 1110 | Natural Disasters: Our Hazardous Environment | 3 |
| GEO 1121 | Introductory Geoscience I: Physical Geology | 3 |
| GEO 1121L | Introductory Geoscience I: Physical Geology Lab | 1 |
| GEO 1122 | Introductory Geo-sciences II: Historical Geology | 3 |
| GEO 1322 | Introductory Geo-sciences II: Historical Geology Lab | 1 |
| GEO 2225 | The Fossil Record | 4 |
| PHYS 1111 & PHYS 1311 | Introductory Physics I and Introductory Physics I Lab | 4 |

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| PHYS 1112 & PHYS 1312 | Introductory Physics II and Introductory Physics II Lab | 4 |
| PHYS 1125 | Physics of Color and Sound | 3 |
| PHYS 1325 | Physics of Color and Sound Lab | 1 |
| PHYS 2211 & PHYS 2311 | Principles of Physics I and Principles of Physics I Lab | 4 |
| PHYS 2212 & PHYS 2312 | Principles of Physics II and Principles of Physics II Lab | 4 |
| Core IMPACTS Area : Social Sciences | | 6 |
| Select one Behavioral Science course | | |
| ECON 2105 | Principles of Macroeconomics | |
| ECON 2106 | Principles of Microeconomics | |
| PHIL 2030 | Moral Philosophy | |
| PSYC 1101 | Introduction to General Psychology | |
| SOCI 1101 | Introduction to Sociology | |
| Select one World Cultures course | | 3 |
| ANTH 1107 | Discovering Archaeology | |
| ANTH 1105 | Cultural Anthropology | |
| ANTH 2105 | Ancient World Civilizations | |
| ANTH 2136 | Language and Culture | |
| ENGL 2136 | Language and Culture | |
| GEOG 1101 | World Regional Geography | |
| HIST 1111 | World History to 1500 | |
| HIST 1112 | World History since 1500 | |
| ITDS 1155 | The Western Intellectual Tradition | |
| ITDS 1156 | Understanding Non-Western Cultures | |
| Core IMPACTS Total Hours | | 42 |
| Health and Wellness | | 3 |
| KINS 1106 | Lifetime Wellness | 2 |
| | or PHED 1205 Concepts of Fitness | |
| Select one PEDS course (https://catalog.columbusstate.edu/course-descriptions/peds/#peds) | | |

¹ The hours applied in the Institutional Priorities; Mathematics & Quantitative Skills; and Technology, Mathematics, and Sciences areas must add to 18 credit hours.

² ITDS 1145 Comparative Arts, though listed under both Fine Arts and Humanities, may be taken only once.

Major Requirements

| Code | Title | Credit Hours |
|---|---|--------------|
| Core Requirements | | |
| Complete the core requirements for this program | | 45 |
| Core Total | | 45 |
| Field of Study Requirements | | |
| Minimum grade of C is required in each course | | |
| CPSC 1301K | Computer Science I | 4 |
| CPSC 1302K | Computer Science II (1 Credit Hour to Area G) | 4 |
| CPSC 2105 | Computer Organization | 3 |
| CYBR 2159 | Fundamentals of Computer Networks | 3 |
| CYBR 2160 | Intro to Information Security | 3 |

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|---|--|------------|
| MATH 2125 | Introduction to Discrete Mathematics (1 Credit Hour to Area G) | 3 |
| Field of Study Requirements Total | | 18 |
| Required for the Major | | |
| Minimum grade of C is required in each CPSC course | | |
| CPSC 2108 | Data Structures | 3 |
| CPSC 3125 | Operating Systems | 3 |
| CPSC 3131 | Database Systems I | 3 |
| CPSC 3165 | Professionalism in Computing | 2 |
| CPSC 3175 | Object-Oriented Design | 3 |
| CPSC 4000 | Baccalaureate Survey | 0 |
| MATH 5125U | Discrete Mathematics | 3 |
| Math from Area A | | 1 |
| 1 Credit Hour from Area F CPSC 1302K | | 1 |
| 1 Credit Hour from Area F MATH 2125 | | 1 |
| Required for the Major Total | | 20 |
| Major Electives | | |
| Minimum grade of C is required in each course | | |
| CPSC 3118 | Graphical User Interface Development | 3 |
| CPSC 4111 | Game and Simulation Programming I | 3 |
| CPSC 4112 | Game and Simulation Programming II | 3 |
| CPSC 4113 | Game Jam | 1 |
| CPSC 4145 | Computer Graphics | 3 |
| CPSC 4175 | Software Engineering | 3 |
| CPSC 4176 | Senior Software Engineering Project | 3 |
| CPSC 4185 | Artificial Intelligence and Machine Learning | 3 |
| MATH 1131 | Calculus with Analytic Geometry I | 4 |
| Select 6 credits from CPSC/CYBR 3000 level or above | | 6 |
| Major Electives Total | | 32 |
| General Electives | | |
| Select 8 credits of General Electives | | 8 |
| General Electives Total | | 8 |
| Total Credit Hours | | 123 |

Program Map

| Course | Title | Credit Hours |
|---------------------------|--|--------------|
| First Year | | |
| Fall | | |
| ENGL 1101 | English Composition I (minimum grade of C) | 3 |
| MATH 1113 | Pre-Calculus (minimum grade of C) | 4 |
| Area B1 | COMM 1110 Public Speaking or foreign language 1001, 1002, 2001, 2002 | 3 |
| CPSC 1301K | Computer Science I (minimum grade of C) | 4 |
| KINS 1106 or PHED 1205 | Lifetime Wellness or Concepts of Fitness | 2 |
| Credit Hours | | 16 |
| Spring | | |
| ENGL 1102 | English Composition II (minimum grade of C) | 3 |
| MATH 2125 | Introduction to Discrete Mathematics (minimum grade of C) | 3 |

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| CPSC 2105 | Computer Organization (minimum grade of C) | 3 |
| CPSC 1302K | Computer Science II (minimum grade of C) | 4 |
| AREA C | Fine Arts Elective | 3 |
| Area B2 | ITDS 1779 (2), LEAD 1705 (2), PERS 1506 (1; may be repeated with different topic), PERS 1507 (2) | 1 |

Credit Hours 17

Second Year

Fall

| | | |
|------------|--|---|
| MATH 5125U | Discrete Mathematics | 3 |
| CPSC 2108 | Data Structures (minimum grade of C) | 3 |
| CYBR 2159 | Fundamentals of Computer Networks (minimum grade of C) | 3 |
| AREA C | Humanities Elective | 3 |
| AREA D | Science Elective with Lab | 4 |

Credit Hours 16

Spring

| | | |
|---------------------------|---|---|
| CPSC 3175 | Object-Oriented Design (minimum grade of C) | 3 |
| CPSC 3118 | Graphical User Interface Development (minimum grade of C) | 3 |
| STAT 1401 | Elementary Statistics | 3 |
| HIST 2111 or HIST 2112 | U. S. History to 1865 or U. S. History since 1865 | 3 |
| CYBR 2160 | Intro to Information Security (minimum grade of C) | 3 |

Credit Hours 15

Third Year

Fall

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|-----------|--|---|
| CPSC 3125 | Operating Systems (minimum grade of C) | 3 |
| CPSC 4111 | Game and Simulation Programming I (minimum grade of C) | 3 |
| POLS 1101 | American Government | 3 |
| AREA E | Social Sciences Elective (Behavioral Science) | 3 |
| MATH 1131 | Calculus with Analytic Geometry I | 4 |

Credit Hours 16

Spring

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|---------------|---|---|
| CPSC 3165 | Professionalism in Computing (minimum grade of C) | 2 |
| CPSC 4112 | Game and Simulation Programming II (minimum grade of C) | 3 |
| CPSC 3131 | Database Systems I (minimum grade of C) | 3 |
| AREA E | Social Science Elective (World Culture) | 3 |
| PEDS Elective | | 1 |
| CPSC 4113 | Game Jam (minimum grade of C) | 1 |

Credit Hours 13

Fourth Year

Fall

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|-----------|---|---|
| CPSC 4175 | Software Engineering (minimum grade of C) | 3 |
| CPSC 4145 | Computer Graphics (minimum grade of C) | 3 |

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| Area H | CPSC Upper-division Elective (minimum grade of C) | 3 |
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| Area D | Science Elective with Lab | 4 |
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| AREA I | General Electives | 3 |
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Credit Hours 16

Spring

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|-----------|--|---|
| CPSC 4176 | Senior Software Engineering Project (minimum grade of C) | 3 |
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| CPSC 4185 | Artificial Intelligence and Machine Learning (minimum grade of C) | 3 |
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| CPSC 4000 | Baccalaureate Survey | 0 |
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| AREA H | CPSC Upper-Division Elective (minimum grade of C) | 3 |
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| AREA I | General Electives | 5 |
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Credit Hours 14

Total Credit Hours 123

Admission Requirements

There are no program specific admission requirements.

Additional Program Requirements

Students must earn a C or better in all CPSC courses in Areas F, G, and H.