

CLARION UNIVERSITY OF PENNSYLVANIA
COLLEGE OF BUSINESS ADMINISTRATION AND INFORMATION SCIENCES
B.S. COMPUTER SCIENCE WITH A CONCENTRATION IN GAME PROGRAMMING
REQUIREMENT SHEET

GENERAL EDUCATION REQUIREMENTS - 48 CREDITS

Please refer to the approved list of Gen. Ed. courses that appears in the newspaper schedule.

- | | <u>CR.</u> | <u>GR.</u> |
|--|------------|------------|
| I. LIBERAL EDUCATION SKILLS - 15 CREDITS | | |
| A. English Composition (3-credits) | | |
| <u>Engl 111: Writing II</u> | <u>3</u> | ___ |
| B. Mathematics Requirement (3 credits) | | |
| <u>Math 270: Calculus</u> | <u>3</u> | ___ |
| C. Freshman Inquiry Seminar (3credits) | | |
| <u>INQ</u> | <u>3</u> | ___ |
| D. Credits to total 15 in Category I, selected from at least two of the following: COM 140 or 340, Computer Information Science, CSD 465, Elementary Foreign Language, English Composition, HON 128, Logic, Mathematics, & Communication Phil 311, Logic II – Symbolic Logic | <u>3</u> | ___ |
| _____ | ___ | ___ |
| _____ | ___ | ___ |
| II. LIBERAL KNOWLEDGE - 27 CREDITS | | |
| A. Physical and Biological Sciences (9 credits) selected from at least two of the following: Biology, Chemistry, Earth Sci., ENVR275, GS411, HON230, Mathematics, Phys. Sci. & Physics. | | |
| <u>Math 221</u> | <u>3</u> | ___ |
| _____ | ___ | ___ |
| _____ | ___ | ___ |
| B. Social & Behavioral Science (9 credits) selected from at least two of the following: Anthropology, CSD 125, CSD 257, Economics, Geography, GS140, History, HON 240, NURS 320, Pol. Sci. Psychology, Social Work, Sociology, & Women & Gender Studies | | |
| _____ | ___ | ___ |
| _____ | ___ | ___ |
| _____ | ___ | ___ |
| C. Arts & Humanities (9 credits) selected from at least two of the following: Art, English, HON 130, Humanities, Intermediate Foreign Language and Cultures, Music, Philosophy, Communication, and Theater. | | |
| _____ | ___ | ___ |
| _____ | ___ | ___ |
| _____ | ___ | ___ |
| III. HEALTH AND PERSONAL PERFORMANCE - 3 CREDITS | | |
| A. Health and Wellness (2 credits) | | |
| _____ | <u>2</u> | ___ |
| B. Personal Performance (1 course and 1 credit) | | |
| _____ | <u>1</u> | ___ |
| IV. GEN. ED. ELECTIVES - CREDITS TO TOTAL 48 FROM GEN. ED. excluding credits in Computer Science major. Up to one credit of Personal Performance may be placed here. | | |
| _____ | ___ | ___ |
| _____ | ___ | ___ |
| _____ | ___ | ___ |

FLAGS - Record below courses used to meet Gen. Ed. requirements:

- _____ First Year Values (V)
 _____ Quantitative Reasoning (Q)
 _____ Second Values (S)
 _____ Writing Intensive (W)
 _____ Writing Intensive (W)

V. REQUIREMENTS IN MAJOR: 60 CREDITS

- | | <u>CR.</u> | <u>GR.</u> |
|---|------------|------------|
| A. Required courses in Computer Science (57 credits) | | |
| CIS 140: Ess. Topics in Dis. Math for CS | <u>3</u> | ___ |
| CIS 202: Intro. to Program. & Algorithms I | <u>3</u> | ___ |
| CIS 244: Intro. to Program. & Algorithms II | <u>3</u> | ___ |
| CIS 253: Comp. Organiz. & Assembly Lang. | <u>3</u> | ___ |
| CIS 254: Data Structures | <u>3</u> | ___ |
| CIS 270: Client Side Web Programming | <u>3</u> | ___ |
| CIS 301: Computer Systems Analysis | <u>3</u> | ___ |
| CIS 305: Artificial Intelligence in Dec. Making | <u>3</u> | ___ |
| CIS 306: Object-Oriented Programming | <u>3</u> | ___ |
| CIS 355: Operating Systems I | <u>3</u> | ___ |
| CIS 356: Analysis of Algorithms | <u>3</u> | ___ |
| CIS 362: Programming for Two-Dimensional Games | <u>3</u> | ___ |
| CIS 363: Programming for Three-Dimensional Games | <u>3</u> | ___ |
| CIS 375: Software Engineering | <u>3</u> | ___ |
| CIS 377: Computer Graphics | <u>3</u> | ___ |
| CIS 402: Database Design and Implementation | <u>3</u> | ___ |
| CIS 411: Systems Development Project | <u>3</u> | ___ |
| CIS 412: Parallel Processing | <u>3</u> | ___ |
| CIS 460: Prog Langs & Computation Theory | <u>3</u> | ___ |
| B. Electives in Major (3 credits) | | |
| CIS 208: Introduction to Robotics Programming | <u>3</u> | ___ |
| CIS 210: Intro to Cybersecurity | <u>3</u> | ___ |
| CIS 303: Local Area Networks | <u>3</u> | ___ |
| CIS 318: Autonomous Robotics Programming Alg. | <u>3</u> | ___ |
| CIS 312: Special Topics in Computing | <u>3</u> | ___ |
| CIS 330: Information Systems Programming | <u>3</u> | ___ |
| CIS 333: Info. Systems Auditing & Security | <u>3</u> | ___ |
| CIS 370: Server Side Web Programming | <u>3</u> | ___ |
| CIS 403: Data Communications | <u>3</u> | ___ |
| CIS 406: Mobile Application Development | <u>3</u> | ___ |
| CIS 422 ¹ : Internship (1-6) | ___ | ___ |
| CIS 435: Machine Learning | <u>3</u> | ___ |
| CIS/MGMT 470: Project Management | <u>3</u> | ___ |
| DA 412: Special Topics in Data Analytics | <u>3</u> | ___ |
| *MATH 271: Calc. w/Analytic Geometry II | <u>4</u> | ___ |
| MATH 272: Calc w/Analytic Geometry III | <u>3</u> | ___ |
| *MATH 300: An Intro to Advanced Mathematics | <u>3</u> | ___ |
| *MATH/CIS 340: Discrete Math. Structures | <u>3</u> | ___ |
| MATH 360: Numerical Methods in Math I | <u>3</u> | ___ |
| *MATH 370: Linear Algebra | <u>3</u> | ___ |
| MGMT 420: Operations Research | <u>3</u> | ___ |
| VI. FREE ELECTIVES | <u>CR.</u> | <u>GR.</u> |
| Credits to total 120 credits for graduation. | | |
| _____ | ___ | ___ |
| _____ | ___ | ___ |
| _____ | ___ | ___ |
| _____ | ___ | ___ |

* Recommended choices for students planning to pursue graduate work in computer science.

NOTES:

- 1-6 credits of CIS 422 may be applied to Electives in Major.
- Student must present a quality point average of 2.00 on a 4.00 scale in the game programming concentration courses CIS 305, CIS 362, CIS 363 and CIS 377.

University Policies Relating to Academic Requirements

- A student is obligated by those requirements which are in effect at the time of his/her matriculation, but if he/she changes majors he/she is obligated by the requirements in effect at the time of the change. If a student has been out of school for more than two years and is readmitted, he/she is treated as a new student for requirement purposes.
- A minimum of 120 credits must be presented for graduation, of which at least 30 of the last 60 credits must have been earned in residence.
- No more than 2 credits of Personal Performance (III.B) may be counted for graduation.
- Upon presentation of DD 214, the university grants a maximum of 4 credits in Health and Physical Education for active military service of 6 months or more. Credit is normally given for NFSS 111 (2 credits) and 2 activity hours of 1 credit each.
- Maximum loads: Students with a GPA of 3.0, 21 hours; students in good standing*, 18 hours; students on probation, 15 hours.
 - * To be in good standing, undergraduate students must maintain a minimum cumulative grade point average of 2.0.
- After a student has earned a minimum of 30 semester hours of credit and if he/she is in good academic standing, he/she may schedule a maximum of six courses of 18 credit hours for Credit-No Record. One such course may be taken each semester. Courses in the student's major may not be taken on a Credit/No Record basis.
- Course credits not to exceed 18 semester hours may be earned by departmental examination at Clarion.
- All candidates for an undergraduate degree must be in good academic standing (i.e., have a cumulative GPA of 2.0).
- Students may earn two degrees (B.A., B.S., BSED, BSBA), simultaneously or in sequence, by completion of 30 approved credits hours beyond those taken for one degree.
- Students may take a double major by satisfying the major requirements of two programs within a single degree. Ordinarily a double major (two majors within one degree) can be effected in 120 hours, but it is not possible to take two majors in different degree programs (e.g., B.S. in Biology and BSED in Biology) unless the 30 hour requirement for a second degree, referred to in the preceding statement, is satisfied.
- Students may obtain teacher certification in conjunction with many degrees by completing the required course work in professional education. For more information, contact the Dean of the College of Arts, Education and Sciences, or the Director of Education. With careful course selection, ordinarily no more than 120 credits will be required.

Academic Policy information can be found on the Registrar's web page at the following link:

<http://www.clarion.edu/academics/registrars-office/academic-policies/index.html>

No changes since Fall 2019

B.S. Computer Science