

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.

- I. LIBERAL EDUCATION SKILLS - 15 CREDITS CR. GR.
- A. English Composition (3-credits) 3 ___
Engl 111: Writing II
- B. Mathematics Requirement (3 credits) 3 ___
Math 270: Calculus
- C. 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, INQ 100, Logic, Mathematics, & Communication
Phil 311: Logic II – Symbolic Logic 3 ___
 _____: _____ ___ ___
 _____: _____ ___ ___
- 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.
Math 221: _____ 3 ___
 _____: _____ ___ ___
 _____: _____ ___ ___
- 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, INQ 100, Music, Philosophy, Communication, and Theater.
 _____: _____ ___ ___
 _____: _____ ___ ___
 _____: _____ ___ ___
- III. HEALTH AND PERSONAL PERFORMANCE - 3 CREDITS
- A. Health and Wellness (2 credits) 2 ___
 _____: _____
- B. Personal Performance (1 course and 1 credit) 1 ___
 _____: _____
- 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

- A. Required courses in Computer Science (54 credits) CR. GR.
- CIS 202: Intro. to Program. & Algorithms I 3 ___
 CIS 244: Intro. to Program. & Algorithms II 3 ___
 CIS 253: Comp. Organiz. & Assembly Lang. 3 ___
 CIS 254: Data Structures 3 ___
 CIS 270: Client Side Web Programming 3 ___
 CIS 301: Computer Systems Analysis 3 ___
 CIS 305: Artificial Intelligence in Dec. Making 3 ___
 CIS 306: Object-Oriented Programming 3 ___
 CIS 355: Operating Systems I 3 ___
 CIS 356: Analysis of Algorithms 3 ___
 CIS 362: Programming for Two-Dimensional Games 3 ___
 CIS 363: Programming for Three-Dimensional Games 3 ___
 CIS 375: Software Engineering 3 ___
 CIS 377: Computer Graphics 3 ___
 CIS 402: Database Design and Implementation 3 ___
 CIS 411: Systems Development Project 3 ___
 CIS 412: Parallel Processing 3 ___
 CIS 460: Prog Langs & Computation Theory 3 ___
- B. Electives in Major (6 credits)
- CIS 208: Introduction to Robotics Programming 3 ___
 CIS 210: Intro to Cybersecurity 3 ___
 CIS 220: Cybersecurity Concepts 3 ___
 CIS 303: Local Area Networks 3 ___
 CIS 310: Natural Language Processing 3 ___
 CIS 312: Special Topics in Computing 3 ___
 CIS 318: Autonomous Robotics Programming Alg. 3 ___
 CIS 323: Cyber Forensics and Incident Response 3 ___
 CIS 330: Information Systems Programming 3 ___
 CIS 333: Info. Systems Auditing & Security 3 ___
 CIS 370: Server Side Web Programming 3 ___
 CIS 403: Data Communications 3 ___
 CIS 406: Mobile Application Development 3 ___
 CIS 422¹: Internship (1-6) ___ ___
 CIS 433 Security Management 3 ___
 CIS 435: Machine Learning 3 ___
 CIS/MGMT 470: Project Management 3 ___
 DA 412: Special Topics in Data Analytics 3 ___
 *MATH 271: Calc. w/Analytic Geometry II 4 ___
 MATH 272: Calc w/Analytic Geometry III 3 ___
 *MATH 300: An Intro to Advanced Mathematics 3 ___
 *MATH/CIS 340: Discrete Math. Structures 3 ___
 MATH 360: Numerical Methods in Math I 3 ___
 *MATH 370: Linear Algebra 3 ___
 MGMT 420: Operations Research 3 ___

VI. FREE ELECTIVES CR. GR.

- Credits to total 120 credits for graduation.
 _____: _____ ___ ___
 _____: _____ ___ ___
 _____: _____ ___ ___
 _____: _____ ___ ___

* Recommended choice 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 for 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>