CS 112: Computer Science II

Syllabus

Lecture Hours/Credits: 3/4

Catalog Description

Prerequisites: CS 111 or permission of instructor

This course introduces students to programming and problem solving using an object-oriented programming language. Algorithm development and basic problem solving techniques are introduced. Fundamental topics of computer programming including sequence, selection, repetition, input/output, functions, parameter passing, classes, scope, lifetime, and arrays are introduced and explored through discussion and lab experiences. The course emphasizes good software engineering principles and fostering fundamental programming skills in the context of a language that supports the object-oriented paradigm.

Textbook and Course Materials

It is the responsibility of the student to confirm with the bookstore and/or their instructor the textbook, handbook, and any other materials required for their specific course and section.

Click here to see current textbook prices at cccnj.bncollege.com.

Evaluation Assessment

Online Proctoring

All courses offered at RCSJ, whether they are web-enhanced, hybrid, or fully online, may include assessments that make use of Online Proctoring. To find out more about Online Proctoring, and to learn about the minimum technical requirements, visit rcsj.edu/elearning/online-proctoring.

Grading Distribution

Grading to be determined by individual instructors.

Individual instructors may include the following assessment(s):

- Projects
- Portfolios
- Exams
- Presentations
- Papers

Grading

The grading scale for each course and section will be determined by the instructor and distributed the first day of class.
Rowan College of South Jersey Core Competencies

(Based on the NJCCC General Education Foundation - August 15, 2007; Revised 2011; Adopted 2014)

This comprehensive list reflects the core competencies that are essential for all RCSJ graduates; however, each program varies regarding competencies required for a specific degree. Critical thinking is embedded in all courses, while teamwork and personal skills are embedded in many courses.

1. **Written and Oral Communication**: Students will communicate effectively in both speech and writing.
2. **Quantitative Knowledge and Skills**: Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.
3. **Scientific Knowledge and Reasoning**: Students will use the scientific method of inquiry, through the acquisition of scientific knowledge.
4. **Technological Competency**: Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.
5. **Society and Human Behavior**: Students will use social science theories and concepts to analyze human behavior and social and political institutions and to act as responsible citizens.
6. **Humanistic Perspective**: Students will analyze works in the fields of art, history, music, or theater; literature; philosophy and/or religious studies; and/or will gain competence in the use of a foreign language.
7. **Historical Perspective**: Students will understand historical events and movements in World, Western, non-Western or American societies and assess their subsequent significance.
8. **Global and Cultural Awareness**: Students will understand the importance of a global perspective and culturally diverse peoples.
9. **Ethical Reasoning and Action**: Students will understand ethical issues and situations.
10. **Information Literacy**: Students will address an information need by locating, evaluating, and effectively using information.

**CS 112 Core Competencies**

This course focuses on three of RCSJ's Core Competencies:

- Please add core competencies
<table>
<thead>
<tr>
<th>Successful completion of CS 112 will help students:</th>
<th>RCSJ Core Competencies</th>
<th>Evaluation / Assessment (Additional means of evaluation may be included by individual instructors)</th>
</tr>
</thead>
</table>
| Design, code, edit, debug, and run computer programs | | • Projects  
• Portfolios  
• Exams  
• Presentations  
• Papers |
| Develop programs using classes and object-oriented design | | • Projects  
• Portfolios  
• Exams  
• Presentations  
• Papers |
| Develop algorithms through the process of top-down, stepwise refinement | | • Projects  
• Portfolios  
• Exams  
• Presentations  
• Papers |
| Develop programs using sequence, selection and repetition to control program logic | | • Projects  
• Portfolios  
• Exams  
• Presentations  
• Papers |
| Model and encapsulate data in programs using arrays and other data structures | | • Projects  
• Portfolios  
• Exams  
• Presentations  
• Papers |
| Identify and apply principles and techniques for object-oriented software design and development | | • Projects  
• Portfolios  
• Exams  
• Presentations  
• Papers |
Topical Outline

Objects & Classes
  • Defining Classes
  • Methods, Parameters, Data Types

Class Definition
  • Fields, Constructors
  • Accessors, Mutators
  • Assignment, Conditionals
  • Scope: Fields, Parameters, Local Variables

Object Interaction
  • Class Diagrams
  • Primitive vs Reference types
  • String concatenation, Number formatting
  • Modulus operator
  • Method calls... the this keyword
  • Using a debugger: step, breakpoints

Collections topics
  • ArrayList, Iterator
  • Looping

Documentation topics
  • Api
  • Javadoc

Using Lists and Maps

Designing classes
  • responsibility
  • coupling and cohesion
  • code duplication [reduce it!]
  • refactoring

Unit Testing
  • junit testing

Inheritance
  • superclass, subclass, extends, is-a relationship, inheritance hierarchy, abstract class, subtyping, substitution, polymorphic variables, super constructor, cast, Object class, wrapper classes
Affirmative Action Statement
The Board of Trustees is committed to providing a work and academic environment that maintains and promotes affirmative action and equal opportunity for all employees and students without discrimination on the basis of certain enumerated and protected categories. These categories are race, creed (religion), color, national origin, nationality, ancestry, age, sex (including pregnancy and sexual harassment), marital status, domestic partnership or civil union status, affectional or sexual orientation, gender identity or expression, atypical hereditary cellular or blood trait, genetic information, liability for military service, or mental or physical disability, including AIDS and HIV related illnesses.

For questions concerning discrimination, contact Almarie J. Jones, Special Assistant to the President, Diversity and Equity/Title IX and Compliance, 856-415-2154 or ajones@rcsj.edu or (Cumberland) Nathaniel Alridge, Jr., JD, Director, Diversity and Equity/Title IX and Judicial Affairs, 856-691-8600, ext. 1414 or nalridge@rcsj.edu. For disability issues or any barriers in the learning or physical environment related to a document condition/disability please contact: Gloucester campus – Dennis M. Cook, Director, Department of Special Services, ADAAA/504 Officer at 856-415-2265 or dcook@rcsj.edu; or Cumberland Campus – Meredith Vicente, Senior Director, Physical & Learning Disabilities, Center for Academic & Student Success (CASS) at 856-691-6900 ext. 1282 or mvicent1@rcsj.edu

Department of Special Services
The Department of Special Services, located in the Enrollment and Student Services building, within the Testing Center, welcomes students of all abilities. The staff members in Special Services are committed to providing support services and ensuring equal access to eligible students with documented conditions/disabilities as outlined by the Americans with Disabilities Act (ADA) and the Americans with Disabilities Act with Amendments Act (ADAAA). For more information, please visit our website-Department of Special Services or call 856-691-8600 x1445 or x1487.
Reporting Allegations of Sexual Assault Resource Referrals (8/2020)
Cumberland Campus

There are multiple safe places for students to report allegations of sexual assault, both on and off campus. Reports of sexual assault can be made to any of the following offices listed in the chart below.

All students are encouraged to report alleged crimes on campus. Employees must report crimes that pose an immediate threat to the campus to the Security Office, the local Police Department or the Sheriff’s Office.

<table>
<thead>
<tr>
<th>Service</th>
<th>Resource</th>
<th>Phone Number/Location/Website</th>
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<tbody>
<tr>
<td>Non-Confidential Reporting Law Enforcement</td>
<td></td>
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<tr>
<td></td>
<td>Vineland Police Dept.</td>
<td>856-691-4111</td>
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<tr>
<td></td>
<td>Millville Police Department</td>
<td>856-825-7010</td>
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<tr>
<td></td>
<td>Cumberland Co. Sheriff’s Office</td>
<td>856-451-4449</td>
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<td></td>
<td>Cumberland County Emergency Services</td>
<td>9-1-1</td>
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<td></td>
<td>Cumberland Campus Security</td>
<td>Andres Lopez, Director Safety and Security 856-691-8600, ext. 1777</td>
</tr>
<tr>
<td>Non-Confidential On-Campus Reporting Support Services</td>
<td>Almarie J. Jones Special Assistant to the President Diversity and Equity, Title IX and Compliance</td>
<td>856-415-2154 College Center, room116 <a href="mailto:ajones@rcsj.edu">ajones@rcsj.edu</a></td>
</tr>
<tr>
<td></td>
<td>Nathaniel Alridge, Jr., JD, Director Diversity and Equity, Title IX and Judicial Affairs</td>
<td>856-200-4712 <a href="mailto:nalridge@rcsj.edu">nalridge@rcsj.edu</a> Academic Building, 2nd floor</td>
</tr>
<tr>
<td></td>
<td>Kellie W. Slade Executive Director Student Services, Student Life</td>
<td>856-200-4615 <a href="mailto:kslade@rcsj.edu">kslade@rcsj.edu</a> Student Life Building (near gym)</td>
</tr>
<tr>
<td>Confidential On-Campus Counseling and Support Services</td>
<td>Heather Bense, LCSW, ACS Director</td>
<td>856-200-4759 <a href="mailto:hbense@rcsj.edu">hbense@rcsj.edu</a> Academic Building downstairs</td>
</tr>
<tr>
<td></td>
<td>John Wojtowicz, LSW, VACW Mental Health Counselor</td>
<td>856-200-4760 <a href="mailto:jwojtowicz@rcsj.edu">jwojtowicz@rcsj.edu</a> Academic Building – 1st floor</td>
</tr>
<tr>
<td>Confidential Off-Campus Full-Service Support</td>
<td></td>
<td>24/7 Hotlines Cumberland Co. – 1-800-225-0196</td>
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<tr>
<td></td>
<td>Center for Family Services – Services Empowering Rights of Victims (SERV)</td>
<td>Camden &amp; Glo. Co. 1-866-295-7378 centerffs.org/serv</td>
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<tr>
<td>Sexual Assault Nurse Examiner on Site</td>
<td></td>
<td>1505 W. Sherman Ave., Vineland, NJ 856-641-8000</td>
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