

# Course Syllabus

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## Summary

<b>Course Title</b>	HONORS Object Oriented Programming and Data Abstraction
<b>Course No.</b>	CS 04114
<b>CRN</b>	
<b>Start/End Dates</b>	
<b>Term/Module</b>	

<b>Delivery Method</b>	<b>Number of Face-to-Face Meetings</b>
Face-to-Face	30

## Course Description

Objects and data abstraction continues from Introduction to Object-Oriented Programming to the methodology of programming from an object-oriented perspective. Through the study of object design, this course also introduces the basics of human-computer interfaces, graphics, with an emphasis on software engineering.

<p><b>I reserve the right to amend, alter or change the information in this course guide at my discretion. All terms and interpretations will be defined by me and are final.</b></p>
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## Instructor

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<b>Name</b>	Jack F. Myers
<b>Email</b>	myersjac@rowan.edu
<b>Phone</b>	856-256-4500 x3278
<b>Office Hours</b>	Maintained in Rowan Starfish Network. Please use Starfish to book time with me.

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## Objectives

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### Course Objectives

- **abstraction techniques.** Students have successfully utilized abstraction techniques to design abstract data models (e.g., abstract classes / interfaces and decoupling strategies) that model real world behavior in highly extensible ways.
- **advanced Java programming.** Students have demonstrated mastery of advanced Java programming (e.g., GUI development, exceptions and error handling, File I/O, lambda expressions) through coding assignments and tests on such concepts.
- **uml diagramming.** Students have created UML class diagrams and sequence diagrams to document the design of their applications. o ABET (i) An ability to use current techniques, skills, and tools necessary for computing practice

### List of topics to be covered

- Abstract classes and interfaces
- Decoupling strategies
- GUI development
- Exception handling and use of related APIs
- File access, buffered I/O, and use of related APIs
- Lambda expressions, streams (sequential and parallel execution), and use of related APIs
- UML Class and Sequence diagrams
- Introduction to information management (e.g., graph database)

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## Prerequisites

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- **Introduction to Object-Oriented Programmings:** CS 04113 with Minimum Grades of C-

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## Materials and Texts

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- Required book: "Objects First with Java", David Barnes and Michael Kölling
- IDE: Eclipse
- Modeling tool: StarUML
- Database: Neo4j

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## Schedule

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Class schedule is maintained at <http://jackmyers.info/oopda>

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## Assignment Outline

Assignments are maintained at <http://jackmyers.info/oopda>

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## Grading

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### Final Grade Breakdown

Grading Criteria/Assignment	Percentage
• Assignments / Labs	20%
• Quiz average	30%
• Class project	20%
• Attendance / Class Participation	5%
• Final exam	25%
<b>Total</b>	<b>100%</b>

## Grading Scale

<b>A</b>	90 and Up	<b>C</b>	70 – 74
<b>A-</b>	87 – 90	<b>C-</b>	67 – 70
<b>B+</b>	84 – 87	<b>D+</b>	64 – 67
<b>B</b>	80 – 84	<b>D</b>	60 – 64
<b>B-</b>	77 – 80	<b>D-</b>	57 – 60
<b>C+</b>	74 - 77	<b>F</b>	Below 57

Assignments and tests are meant to reinforce lecture materials and may be graded according to one of two models:

- **Traditional:** A numeric grade based on the scale from 0 to 100. Assignments not turned in on time receive a grade of zero.
- **General Suitability:** Either “Complete”, “Incomplete”, or “Not Turned In”
  - **Complete** assignments will have no mathematical effect on the Assignment grade (will be set to the average of Traditional assignments);
  - **incomplete** assignments will receive a grade of 10% lower than the average of Traditional assignments;
  - assignments **Not Turned In** will receive a zero.

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## Honors Aspects to the Course

The Honors section will rely on closer interaction with the faculty instructor and the Learning Assistant to stimulate out of the box thinking. As much of the content is expected to be absorbed through textbook reading and outside-the-classroom practice, more time in the class will be spend on discussion of alternatives. For example, you will be expected to describe their problem solving approach to the class and conduct a critical review discussion where other students will be encouraged to question design choices and propose novel approaches. Through such interactions, you should be exposed to a wide variety of implementation strategies which should broaden your thinking. Potentially, essay assignments could be given to you where you would explain your understanding of concepts like encapsulation, coupling, and abstraction – rather than just relying on tests and labs to assess your knowledge.

**For these reasons, it is IMPERATIVE that you complete the assigned readings before class time.**

The semester project: You will have to create a fully function application that not only utilizes every design paradigm taught in class, but whose domain is a socially relevant one. To accomplish this goal, you will work in teams throughout the semester incrementally building an application of your choosing.

As a reminder, these are the goals of the Honors College. Also described below is how honors OOPDA fits into these goals. The Student Learning Outcomes in red indicate the major ones for this course and

may be assessed according to Rowan University standards.

Honors Program Goals	Student Learning Goals	Student Learning Outcomes	Correlation to Honors OOPDA
<p><b>1:</b> Graduates will be both contributing members and leaders in their communities, who appreciate and engage diverse perspectives and promote collaboration.</p>	<p><b>1.1:</b> Students will be contributing members and leaders who promote collaboration both inside and outside of the classroom.</p>	<p><b>1.1.1</b> Students work well in teams, through both individual contributions and engagement with team members to facilitate others' contribution</p>	<p>The team structures will be created during the first week of class and students will be expected to work with their teammates both inside and outside the classroom. This is a key component of Honors OOPDA.</p>
		<p><b>1.1.2:</b> Students address team conflict directly and constructively</p>	<p>There will be peer evaluations of team members, and team members will meet with the professor in class to help promote honest and constructive team interactions</p>
	<p><b>1.2:</b> Students will appreciate and engage diverse perspectives both inside and outside of the classroom.</p>	<p><b>1.2.1:</b> Students articulate complex understandings of diverse communities and cultures</p>	<p>Not a major focus of Honors OOPDA, but students will have to select a problem domain to solve which is socially relevant.</p>
		<p><b>1.2.2:</b> Students consider and evaluate their own cultural rules and biases</p>	<p>Cultural biases not a major focus, but students will have solution engineering biases which critical discussion with peers should begin to break down.</p>
<p><b>2:</b> Graduates will be effective communicators both within and beyond their immediate communities.</p>	<p><b>2.1:</b> Students will be effective communicators who can write and speak for varied purposes and audiences</p>	<p><b>2.1.1:</b> Students communicate clearly, effectively, and ethically in speech to varied audiences</p>	<p>Students will have to clearly and effectively communicate the results of their project and assignments orally in class.</p>
		<p><b>2.1.2:</b> Students communicate clearly, effectively, and ethically in writing to varied audiences.</p>	<p>There will be some potential essays in the course that need to be clear and effective.</p>
<p><b>3:</b> Graduates will be able to address complex, nuanced, and novel problems drawing from a variety of perspectives.</p>	<p><b>3.1:</b> Students will be able to clearly define problems and recognize the complexity of issues and contexts</p>	<p><b>3.1.1:</b> Students clearly define problems, including relevant contexts</p>	<p>Major focus of the course, as students will have to solve difficult technical problems in the context of a socially relevant semester project</p>
		<p><b>3.1.2:</b> Students seek out and evaluate multiple and divergent approaches to solutions</p>	<p>Major focus of the course is for students to discuss their design approaches to common problem areas.</p>

		<b>3.1.3:</b> Students recognize ethical challenges and multiple perspectives when presented with complex issues and contexts	Multiple perspectives will be taken into account as students compare and contrast their solutions with those of their peers.
<b>3.2:</b> Students will be able to marshal appropriate evidence to advance an argument.	<b>3.2.1:</b> Students understand that all evidence comes from particular socio-historical contexts	N/A	
	<b>3.2.2:</b> Students understand that all evidence has consequences	N/A	
	<b>3.2.3:</b> Students understand that all evidence has an argument	N/A	
	<b>3.2.4:</b> Students evaluate evidence to determine strengths and limitations	This is a fundamental expectation of a design heavy course such as Honors OOPDA .	
	<b>3.2.5:</b> Students marshal appropriate evidence to advance effective arguments	N/A	
<b>3.3:</b> Students will be able to extend ideas, through the application of interdisciplinary perspectives in order to produce knowledge	<b>3.3.1:</b> Students extend novel or unique ideas, questions, or formats to produce knowledge	In developing their own API, students will do exactly this – furthering the utility of the Java language.	
	<b>3.3.2:</b> Students can articulate the value of interdisciplinary work	N/A	
	<b>3.3.3:</b> Students produce work that integrates multiple disciplinary perspectives accurately and effectively	N/A	
	<b>3.3.4:</b> Students exhibit awareness of the limitations and possibilities of contributing disciplines in interdisciplinary work	N/A	

<p><b>4:</b> Graduates will be curious, engaged, life-long learners who independently seek knowledge, culture, and community</p>	<p><b>4.1:</b> Students will be curious, engaged, learners who seek experiences beyond the classroom and who make connections between these experiences and their intellectual work.</p>	<p><b>4.1.1:</b> Students meaningfully synthesize connections among experiences outside the formal classroom (including academic and life experiences such as internships or travel abroad) to deepen understanding of fields of study and broaden their own points of view.</p>	<p>Only inasmuch as students will apply their own outside experience in society to select a socially relevant problem domain and attempt to provide a solution.</p>
		<p><b>4.1.2:</b> Students pursue educational and civic interests outside the classroom and beyond the university</p>	
	<p><b>4.2:</b> Students will be able to independently transfer knowledge from one context to another.</p>	<p><b>4.2.1:</b> Students adapt and apply skills gained in one situation to new situations to solve difficult problems or explore complex issues in original ways.</p>	<p>Not emphasized.</p>

## Rowan Policies

### 1. Attendance

Attendance is mandatory. The attendance/class participation portion of the course grade will be computed based on the number of missed classes and student's contribution to class discussion. See the official [Rowan University Attendance policy](#). Please inform the instructor in advance, preferably by email, if you will be absent from a class or lab session. **As this is a team-based course, 5 points are removed from final grade from each unexcused absence.**

### 2. Academic Integrity

Plagiarism is a form of academic dishonesty which includes submitting someone else's work as your own. It is college policy that students who commit an act of academic dishonesty may be subject to failure in the course, suspension from the College, or both. See the official [Rowan University Academic Integrity policy](#)

If you use materials that you've obtained on the Internet, from a book, etc., for example as part of a programming assignment, you must include an appropriate reference. To use such materials without proper attribution is a form of plagiarism. Students who copy homework, cheat on tests, or plagiarize material for any test or assignment in this course will receive a **failing grade for the test or assignment.**

### 3. Late Assignment Submissions

Assignments not submitted on time will receive zero as a grade.

- Team assignments (i.e., product increments) **cannot be late.**

- Individual assignments **should not be late.** However, most professors are reasonable people. If for some reason, you believe you will not be able to turn in homework on time, let me KNOW AHEAD OF TIME and I MAY give you an extension.

### 4. Classroom Decorum

When meeting in a classroom, in order to show proper respect for the instructor and for your fellow students, please observe the following:

- a. Be on time! Class will begin promptly at the scheduled time. Allow yourself enough time to park and get to class, ready to learn, before the period begins. Quizzes will be given at the start of the class so if you are late you may miss a quiz.
- b. Do not eat in class.
- c. Do your best to remain in the room during the period. Exiting and entering during the period breaks the concentration of your fellow students, and makes it hard for you to get the full value of the class.
- d. Turn off all cell phones, pagers, and anything else that would cause a distraction to yourself or others around you.
- e. Students are permitted to use computers/laptops during class for note-taking and other class-related work only. Those using computers/laptops during class for work not related to that class (like e-mailing, instant messaging, game playing or internet surfing) will be asked to leave the classroom for the remainder of the class period.

5. **Section 504 Accommodations**

Please be aware that Rowan University is committed to providing Section 504 accommodations for all persons with disabilities. If you have specific physical, emotional, or learning disabilities and require accommodations, please contact the Office of Equity and Diversity at 856-256-4294 as soon as possible to ensure that such accommodations can be implemented in a timely fashion.

6. **Academic Issue**

If at any time a student has an academic problem in any course with a grade or any other issue, the student's first course of action to resolve the matter should be to make an appointment with the instructor to discuss the issue.

7. **Dropping or Withdrawing from this Class**

Please visit the [Registrar page](#) for a list of key dates for the semester. These dates include the full academic calendar as well as the last days to withdraw from this class with and without a refund.

[If anyone needs to drop or withdraw from an Honors course, you must speak with your instructor as well as relevant personnel in the Honors College.](#)

8. **Illness**

It is important to get a note from student health services, or your personal doctor, or other form of documentation if you miss a class or a lab meeting. If you are not feeling well on a given day, please email or call me ahead of time. In this case, if you miss a quiz, I may let you make up that quiz.. If you have to miss an exam (and I hope you will not), re-tests will be given only in cases of extreme hardship as defined by the rules of Rowan University, and I require documentation of the reasons for your absence.

9. **Time Commitment**

This is a 4 semester-hour class, which means that for success in this class you should expect to be spending about 12 hours a week outside of class on project activities and material review.

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