

***SYLLABUS***

**CODE:** COMP 271      **TITLE:** PROGRAMMING II

**DIVISION:** Business and Computer Science  
Science

**DEPARTMENT:** Computer

**COURSE DESCRIPTION:** This course continues the development of problem solving, logical thinking and object oriented programming techniques using JAVA. Topics and techniques covered include design features from objects, classes and objects as encapsulation tools, inheritance and hierarchies among classes, polymorphism, exception handling and GUI/event driven programming. Assignments give students hands-on experience to design, write, test, debug and edit their program code using an integrated development environment.

**PREREQUISITES:** COMP 126 – Computer Logic and Design  
COMP 171 – Programming I

**COREQUISITES:**

**CREDITS:** 3    **LECTURE CREDITS:** 3    **LAB CREDITS:**    **LAB HOURS:**

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**REQUIRED MATERIALS:**

**Text:** Introduction to JAVA™ Programming, Sixth, Seventh or Eighth Edition, Y. Daniel Liang  
Pearson Prentice Hall

**Storage:** A portable secondary storage media (i.e., floppy disk, memory stick, zip disk)

**Software:** Java™ available as a free download from <http://java.sun.com>

**ADDITIONAL TIME REQUIREMENTS:** The student should expect to spend at least 2 hours of time outside class for each hour in class. The Computer Science Main Lab is open Mon.-Sat. Hours are posted on the outside door and on the Computer Science Website (<http://www2.brookdale.cc.nj.us/cos>).

**INTENDED COURSE LEARNING OUTCOMES:** The student will be able to analyze, develop, code, execute and test solutions for a variety of problems using the JAVA programming language. The student will assimilate problem solving and logical thinking techniques. (Core Competencies: Critical Thinking, Technological Literacy)

**COURSE OUTLINE:** The 7 units comprising the course is:

**UNIT**

**TITLE**

- |    |   |
|----|---|
| 1. | Classes, Objects and Object Oriented Concepts |
| 2. | Inheritance and Polymorphism                  |
| 3. | GUI and Event Programming                     |
| 4. | User Interfaces                               |
| 5. | Exception Handling and I/O                    |
| 6. | Threads                                       |
| 7. | Menus and Toolbars                            |

**UNITS: Each unit is comprised of objectives; specifically:**

**Unit Objective:** Tells you what you will be able to do after successfully completing the unit.

**Method of Evaluation:** Tells you the tools you should use for self-evaluation as well as those that will enable your instructor to evaluate your progress.

**Estimated Time to Achieve:** Gives you the approximate length of class time that you should allocate for completion of the unit.

**Learning Objectives:** Give you the details of each unit objective.

**Recommended Learning Experiences:** Tell you by what means you can complete the unit objective. These include – Class Meetings; your primary source of learning – Text Assignments; read material carefully – Programming Assignments (labs); your implementation of material learned.

**GRADING STANDARD:**

To be considered acceptable, a lab must be free of all syntax and logic errors and must meet all of the requirements outlined by the problem statement. Labs must also meet documentation and style requirements as outlined by the instructor. The final grade requirements for the course will be:

<b><u>GRADE</u></b>	<b><u>REQUIREMENTS</u></b>
<b>A</b>	<b>Complete Lab Assignments 1-15 Earn an average test grade of 94 thru 100</b>
<b>A-</b>	<b>Complete Lab Assignments 1-15 Earn an average test grade of 90 thru 93</b>
<b>B+</b>	Complete Lab Assignments 1-14 Earn an average test grade of 87 thru 89
<b>B</b>	<b>Complete Lab Assignments 1-13 Earn an average test grade of 84 thru 86</b>
<b>B-</b>	<b>Complete Lab Assignments 1-13 Earn an average test grade of 80 thru 83</b>
<b>C+</b>	Complete Lab Assignments 1-12 Earn an average test grade of 75 thru 79
<b>C</b>	Complete Lab Assignments 1-12 Earn an average test grade of 70 thru 74
<b>D</b>	Complete Lab Assignments 1-12 Earn an average test grade of 60 thru 69 A "C" grade is required to advance to the next course.
<b>F</b>	Earn an average test grade below 60 or fail to successfully complete labs 1-12.

**DEPARTMENT POLICIES:**

**Testing:** Students will be allowed to take each test only one time. There are no retests. If a student has a valid excused absence on the day of the test, the test may be taken in the Testing Center with the permission of the instructor. The exam must be taken within 10 days and will be graded for full credit. Saturdays and Sundays count as days when calculating the 10 day limit. If not taken within the 10 days, a grade of zero will be assigned to the test. A valid Brookdale ID is required to take the test at the testing center. Only one in class test may be missed. Any other test taken in the testing center will receive a maximum grade of 70.

**Resubmitted assignments:** In the case that an assignment needs to be corrected, the assignment must be corrected and resubmitted for grading no later than 2 weeks from the original due date.

**Late assignments:** Labs are to be submitted on a timely basis. The instructor will assign due dates. No more than 25 percent of the total labs may be submitted during the last two weeks of the semester.

**Attendance:** Attendance is required every week. More than three unexcused absences will result in a failing grade.

**Addendums:** Individual Instructors may add additional requirements to this syllabus in written form (such as assignment due dates, cover sheets, class behavior, etc.).

**Independent study:** This option is available for students who think they may satisfy the course requirements without the benefit of the classroom experience. All course requirements apply with the exception of attendance. The student may begin a course of independent study after attending class for the first 4 meetings and signing an Independent Study Contract with the instructor. Granting independent study is at the complete discretion of the instructor, and may also be revoked at any time by the instructor.

<p><b>ACADEMIC VIOLATION:</b> The instructor of the course has the authority to give a course grade of <b>F</b> if the student submits the work of another person in a manner that represents the work as one's own, or knowingly permits one's work to be submitted by another person without the instructor's authorization. All computer work must be on your own portable storage device.</p>
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**COLLEGE POLICIES:**

For information regarding:

- Brookdale's Academic Integrity Code
- Student Conduct Code
- Student Grade Appeal Process

**Please refer to the Student Handbook and BCC Catalog**

**Notification for students with disabilities:**

Brookdale Community College offers reasonable accommodations and/or services to persons with disabilities. Students with disabilities who wish to self-identify, must contact the Disabilities Services Office at 732-224-2730 or 732-842-4211 (TTY), provide appropriate documentation of the disability, and request specific accommodations or services. If a student qualifies, reasonable accommodations and/or services, which are appropriate for the college level and are recommended in the documentation, can be approved.

**UNIT#:**                      1

**NAME OF UNIT:** Classes, Objects, and Object Oriented Concepts

**UNIT OBJECTIVE:** To study the design and implementation of classes and objects as the foundation of object oriented software systems.

**METHOD OF EVALUATION:** Completion of Programming Assignment 1 and 2

**ESTIMATED TIME TO ACHIEVE:** 1 ½ weeks

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**LEARNING OBJECTIVES:** The student will:

1. Understand object oriented concepts, terminology and the object oriented approach to program development.
  2. Review UML notation to describe classes and objects.
  3. Learn how to specify classes, members and objects in JAVA.
  4. Understand the difference between instance and static variables/methods.
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**RECOMMENDED LEARNING EXPERIENCES:**

1. Attend class meetings.
2. Read Chapter 7 (6<sup>th</sup> edition) or Chapter 9 (7<sup>th</sup> edition) or Chapter 10 (8<sup>th</sup> edition) in text.
3. Do review questions at end of Chapter 7 (6<sup>th</sup> edition) or Chapter 9 (7<sup>th</sup> edition) or Chapter 10 (8<sup>th</sup> edition).
4. Participate in the computer workshop.
5. Complete Programming Assignment 1
6. Complete Programming Assignment 2

**UNIT#:**                **2**

**NAME OF UNIT:** Inheritance and Polymorphism

**UNIT OBJECTIVE:** To examine and use inheritance, superclasses and polymorphism.

**METHOD OF EVALUATION:** Completion of Programming Assignments 3 and 4

**ESTIMATED TIME TO ACHIEVE:** 3 weeks

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**LEARNING OBJECTIVES:** The student will:

1. Design and use subclass from a superclass.
  2. Understand the distinction between overriding and overloading.
  3. Understand polymorphism, dynamic binding, and generic programming.
  4. Use inheritance in GUI.
  5. Design and use abstract classes.
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**RECOMMENDED LEARNING EXPERIENCES:**

1. Attend class meetings.
2. Read Chapters 9, 10 and 11 (6<sup>th</sup> edition) or Chapters 10, 11 and 12 (7<sup>th</sup> edition) or Chapters 11 and 14 (8<sup>th</sup> edition) in text.
3. Do review questions at end of Chapters 9, 10 and 11 (edition 6) or Chapters 10, 11 and 12 (edition 7) or Chapters 11 and 14 (8<sup>th</sup> edition).
4. Complete Programming Assignment 3:
5. Complete Programming Assignment 4:

**UNIT#:**                **3**

**NAME OF UNIT:** GUI and Event Programming

**UNIT OBJECTIVE:** To introduce the basics of JAVA GUI and event driven programming.

**METHOD OF EVALUATION:** Completion of Programming Assignments 5 and 6  
Satisfactory Completion of Test 1

**ESTIMATED TIME TO ACHIEVE:** 3 weeks

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**LEARNING OBJECTIVES:** The student will:

1. Create user interfaces using frames, panels and simple GUI components.
  2. Differentiate between various layout managers.
  3. Use the drawing methods of the *Graphics* class.
  4. Explain the concept of event-driven programming.
  5. Understand how an event is handled.
  6. Declare and register listener classes to handle events.
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**RECOMMENDED LEARNING EXPERIENCES:**

1. Attend class meetings.
2. Read Chapters 12, 13 and 14 (6<sup>th</sup> edition) or Chapters 13, 14 and 15 (7<sup>th</sup> edition) or Chapters 12, 15 and 16 (8<sup>th</sup> edition) in text.
3. Do review questions at the end of Chapters 12, 13 and 14 (6<sup>th</sup> edition) or Chapters 13, 14 and 15 (7<sup>th</sup> edition) or Chapters 12, 15 and 16 (8<sup>th</sup> edition).
4. Complete Programming Assignment 5:
5. Complete Programming Assignment 6:

**UNIT#:** 4

**NAME OF UNIT:** User Interfaces

**UNIT OBJECTIVE:** To study some of the widgets used to create user interfaces and how to design and code applets.

**METHOD OF EVALUATION:** Completion of Programming Assignment 7 **AND** Assignment 8 **AND** Assignment 9

**ESTIMATED TIME TO ACHIEVE:** 2 weeks

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**LEARNING OBJECTIVES:** The student will:

1. Create graphical user interfaces using various components – buttons, check boxes, radio buttons, labels, text fields, list boxes and scrollbars.
  2. Display multiple windows in an application.
  3. Explain how the browser controls and executes applets.
  4. Develop swing applets.
  5. Design and write programs that can run as applications and applets.
  6. Display images and use animation.
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**RECOMMENDED LEARNING EXPERIENCES:**

1. Attend class meetings.
2. Read Chapters 15 and 16 (6<sup>th</sup> edition) or Chapters 16 and 17 (7<sup>th</sup> edition) or Chapters 17 and 18 (8<sup>th</sup> edition) in text.
3. Do review questions at end of Chapters 15 and 16 (6<sup>th</sup> edition) or Chapters 16 and 17 (7<sup>th</sup> edition) or Chapters 17 and 18 (8<sup>th</sup> edition).
4. Complete Programming Assignment 7:
  5. Complete Programming Assignment 8:
  6. Complete Programming Assignment 9:

Assignment 15

Create a user friendly interface to order a pizza. Use appropriate controls (radio buttons, list boxes, check boxes) to obtain the type of pizza (e.g. small, medium, large) and the toppings. Calculate the cost of the pizza based upon the size, number of toppings and delivery charge. Display a summary of the order in a text area along with the total cost. Provide buttons which place the order and clear the order. One option is to reuse the pizza object that was created in class during unit 1 and 2.

**UNIT#:**                **5**

**NAME OF UNIT:** Exception Handling and I/O

**UNIT OBJECTIVE:** To introduce the use of exception handling and assertions to write more fault-tolerant programs.

**METHOD OF EVALUATION:** Completion of Programming Assignment 10 **AND**  
Completion of Programming Assignment 11 **AND**  
Satisfactory Completion of Test 2

**ESTIMATED TIME TO ACHIEVE:** 2 weeks

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**LEARNING OBJECTIVES:** The student will:

1. Understand the concept of error handling and its implementation in object oriented systems.
  2. Learn about tools for exception handling, i.e. *try*, *throw* and *catch*.
  3. Understand the Java exception hierarchy.
    4. Discover file properties.
    5. Distinguish between text, binary and object I/O.
    6. Read and write primitive values and strings using various classes.
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**RECOMMENDED LEARNING EXPERIENCES:**

1. Attend class meetings.
2. Read Chapters 17 and 18 (6<sup>th</sup> edition) or Chapters 18 and 19 (7<sup>th</sup> edition) or Chapters 13 and 19 (8<sup>th</sup> edition) in text.
3. Do review questions at end of Chapters 17 and 18 (6<sup>th</sup> edition) or Chapters 18 and 19 (7<sup>th</sup> edition) or Chapters 13 and 19 (8<sup>th</sup> edition)
4. Complete Programming Assignment 10:
5. Complete Programming Assignment 11:



**UNIT#:**                **6**

**NAME OF UNIT:** Threads

**UNIT OBJECTIVE:** To introduce the student to using threads to make programs more responsive and interactive.

**METHOD OF EVALUATION:** Completion of Programming Assignment 12

**ESTIMATED TIME TO ACHIEVE:** 1 ½ weeks

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**LEARNING OBJECTIVES:** The student will:

1. Understand the concept of multithreading and apply it to develop concurrent programs.
  2. Understand how to create, manage and destroy threads.
  3. Study several examples of thread synchronization.
  4. Control animation using threads.
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**RECOMMENDED LEARNING EXPERIENCES:**

1. Attend class meetings.
2. Read Chapter 24 (6<sup>th</sup> edition) or Chapter 29 (7<sup>th</sup> or 8<sup>th</sup> edition) in text.
3. Do review questions at end of Chapter 24 (6<sup>th</sup> edition 6) or Chapter 29 (7<sup>th</sup> or 8<sup>th</sup> edition).
4. Complete Programming Assignment 12:

**UNIT#:**            **7**

**NAME OF UNIT:** Layout Managers, Menus and Toolbars

**UNIT OBJECTIVE:** To introduce the student to layout managers, menus, popup menus, tool bars, and dialogs.

**METHOD OF EVALUATION:** Satisfactory Completion of Test 3

**ESTIMATED TIME TO ACHIEVE:** 2 weeks

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**LEARNING OBJECTIVES:** The student will:

1. Understand how layout managers work.
  2. Explore and use some of the layout managers within the same user interface.
  3. Create and manipulate menus, popup menus and windows.
  4. Create standard dialog (*JOptionPane*) and custom dialog (*JDialog*).
  5. Use *JFileChooser* for opening and saving files.
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**RECOMMENDED LEARNING EXPERIENCES:**

1. Attend class meetings.
2. Read Chapters 28 and 29 (6<sup>th</sup> edition) or Chapters 33 and 34 (7<sup>th</sup> or 8<sup>th</sup> edition) in text.
3. Do review questions at end of Chapters 28 and 29 (6<sup>th</sup> edition) or Chapters 33 and 34 (7<sup>th</sup> or 8<sup>th</sup> edition).
4. Complete Programming Assignment 13

# COMP 271

## PROGRAMMING PROBLEMS

### LAB SUMMARY PAGE

Lab Assignments for either the 6<sup>th</sup>, 7<sup>th</sup> or 8<sup>th</sup> edition of the text book.

Lab	Edition 6 Page/Exercise	Edition 7 Page/Exercise	Edition 8 Page/Exercise	Topic	Due Date
1	pg 258, #7.9	pg 323, #9.3	pg 366, #10.3	Integer	
2	pg 258, #7.11	pg 323, #9.4	pg 367, #10.4	Point	
3	pg 338, #9.1 and #9.3	pg 358, #10.1 and #10.3	pg 403, #11.1 and #11.3	Triangle and Account	
4	pg 369, #10.5 or #10.9	pg 391, #11.5 or #11.9	pg 492, #14.5 or #14.9	Circle or Compare	
5	pg 423, #12.1, #12.2, #12.3 and #12.4	pg 442, #13.1, #13.2, #13.3 and #13.4	pg 427, #12.1, #12.2, #12.3 and #12.4	Layout Managers	
6	pg 488, #14.3	pg 509, #15.1	pg 562, #16.1	Events	
7	pg 527 #15.5	pg 549 #16.5	pg 608, #17.6	Miles/Kilometers Converter	
8	pg 531, #15.15	pg 553, #16.15	pg 611, #17.16	Colors	
9	pg 567, #16.1 and #16.3	pg 587, #17.1 and #17.3	Pg 640, #18.1 and #18.3	Applets and Applications	
10	pg 602, # 17.3	pg 621, # 18.3	pg 456, #13.3	Exception Handling	
11	pg 633, #18.3	pg 652, #19.3	pg 672, #19.3	Binary I/O	
12	pg 812, #24.3	pg 972, #29.3	pg 1014, #29.3	Threads	
13	pg 1003, #29.1	pg 1141, #34.1	pg 1183, #34.1	Menus	
14	pg 571, #16.15	pg 591, #17.15	pg 642, #18.15	Displaying images	
15	See Unit 4 in syllabus	See Unit 4 in syllabus	See Unit 4 in syllabus	Pizza	

### GENERAL REQUIREMENTS

The student must print out and submit the following for each programming problem:

1. A listing of the program code

The first three lines in the program must have the following comments at a minimum:

Student name, COMP 271 and section no., Program problem no. (Lab 1, etc.)

2. A print out of the program results or output

The output must include the student's name and the lab number at the bottom or top.