Prince Sultan University
College of Computer and Info Sciences / Department of Computer Science
1st Semester 2026-2027 (261)

COURSE SYLLABUS

Mission Statement of the Bachelor of Computer Science Program(s): Provide high quality, computer science education to prepare top graduates through an environment that promotes innovative thinking, ethical behavior, lifelong learning, research, and service to the community.

1. Course number and name: CS102: Computer Programming II
2. Credits and contact hours: 3 (3,1,0)
3. Instructor's or course coordinator's name: **Prof. Basit Qureshi**
   a. Scheduled Office Hours: Sun, Mon and Wed (11AM-1 PM), or by appointment.
   b. Office Location: 2B20, Building 105
   c. Email: qureshi@psu.edu.sa
   d. Website: www.ieeepsu.org/basit/

4. Text book, title, author, and year
   a. Primary Text: Introduction to Java Programming and Data Structures, Comprehensive Version, Global Edition, 11/E, by Y. Daniel Liang, Publisher: Pearson
   b. Other References:
   Java How to Program, 9th Edition by Deitel and Deitel, Publisher: Prentice Hall; 9th edition Java: An Introduction to Problem Solving and Programming 6th edition, Walter Savitch, Pearson International
   c. Online Teaching Materials:
   https://media.pearsoncmg.com/ph/esm/ecs_liang_ijp_12/cw/#videonotes
   d. Electronic Materials
      - https://www.udemy.com/course/oo-se-java/
      - Laboratory: Netbeans 8.2 IDE
        https://www.oracle.com/technetwork/java/javase/downloads/jdk-netbeans-jsp-3413139-esa.html
   e. Learning Management System: Moodle available at https://lms.psu.edu.sa

5. Specific course information
   a. Brief description of the content of the course (catalog description):
   The purpose of this course is to develop an intermediate understanding of object-oriented programming concepts. Some sophisticated uses of object-oriented concepts (inheritance, polymorphism, encapsulation, multiple inheritance of interfaces and Java Collection and Frameworks) and techniques for building systems of multiple interacting components.

   b. Prerequisites or co-requisites: CS101 Computer Programming I
   c. Indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program:
   Required (R) as a Core course in BSCS and BSSE program.
6. Specific goals for the course
   a. Specific outcomes of instruction. The student will be able to:
   CLO 1: Demonstrate an understanding of processing data using files and 2D arrays (**Knowledge**)

CLO 2: Recognize object-oriented concepts using classes and class hierarchies to promote code reuse in software development (**Knowledge**)
CLO 3: Solve conventional software development problems using object-oriented concepts of inheritance, abstract classes, encapsulation, polymorphism, and interfaces (**Skills**)
CLO 4: Apply Java Collection Frameworks (list, arrays list, maps, sets) efficiently (**Skills**)
CLO 5: Develop and use generic classes to promote software reuse (**Skills**)
CLO 6: Develop recursive programs to solve iterative algorithms (**Skills**)
CLO 7: Evaluate teamwork through the use of effective group methods and techniques to design, develop, and showcase an object-oriented project (**Values**)

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

Course LOs #	Student Outcomes	
	Computer Science	Software Engineering
1	1	1
2	1	1
3	2	2
4	2	2
5	2	2
6	2	2
7	5	5

7. Brief list of topics to be covered

Week No.	Topics	CLO(s) Alignment	Assessments
1	Review of CS101	CLO 1	
2	Two-Dimensional Arrays	CLO 1	Lab Session
3	**Class Design I:** Class definition: fields and methods - Constructors	CLO 2	Lab Session Week3: Quiz 1 (CLO 1)
4	**Class Design II:** Java keyword **this** - Setter and getter methods - Method overriding- Data encapsulation, hiding and privacy - Objects versus classes - Abstract classes - Access modifiers - Instance versus class members	CLO 2	Lab Session
5	**Inheritance I:** Object class - Java keyword extends - Single inheritance - Java keyword **super** - Superclass versus subclass	CLO 2,3	Lab Session Major Exam 1 (week5, Sept 6) CLO 1, 2
6	**Inheritance II:** Superclass references - Java keyword **instanceof** - protected access modifier - Class	CLO 2, 3	Lab Session

	hierarchies - Type checking using **instanceof** keyword		
7-8	**Polymorphism and Interfaces:** Use of superclass references - Reference upcasting/downcasting - Type checking using **getClass()** method - Interface definition - Abstract method - Single abstract method (SAM) interfaces- Comparable & Comparator	CLO 2, 3	Lab Session
9-10	**Java Collection Framework:** Static/Dynamic arrays - **ArrayList** class - Search and sort methods in **Arrays** class - **LinkedList** class - **HashSet** class - **TreeSet** class -**HashMap** class - **PriorityQueue** class - **Uni-directional** and **bi-directional iterators** - Search and sort methods in **Arrays** class	CLO 4	Lab Session Week9: Quiz 2 (CLO 3, 4)
11-12	**Generic Class:** Generic types - Generic methods - Generic classes	CLO 5	Lab Session Major Exam 2 (week12, Oct 29) CLO 2, 3, 4
13-14	**Recursion:** Definition of recursive methods - Use of recursive methods	CLO 6	Lab Session Week13: Quiz 3 (CLO 5)
15	Final Project presentations	CLO 7	Project (CLO 1-7) 60% by Tuesday, Last week

8. Weight of Assessments

- Lab assignments 5%
- Class attendance 5%
- 3 Quizzes (Best 2 out of 3) 10%
- 2 Major exams (unified) 30%
- Project 10%
- Final exam (unified) 40%

All assessments related to this course will be computer-based.

Major Exam 1 (**Unified Exam**) will be on **September 6, 2026** (12:00-13:00).
Major Exam 2 (**Unified Exam**) will be on **October 29, 2026** (12:00-13:00).

Project submission will be by the end of week 14.
Project demo and discussion will be by Week 15.

Final Exam (**Unified Exam**) will be on Nov 22, 2026 (12:30-2:30)

8. Additional Information

Plagiarism and Academic Dishonesty: "Plagiarism can be defined as unintentionally or deliberately using another person's writing or ideas as though they are one's own. Plagiarism includes, but is not limited to, copying another individual's work and taking credit for it, paraphrasing information from a source without proper documentation, and mixing one's own words with those of another author without attribution. In addition, buying a paper or project, or downloading a paper from the Internet, and submitting them as your own are also plagiarism. The penalty for academic dishonesty will bring course expulsion and failure, or even suspension" (Academic Integrity and Syllabus Acknowledgement Form).

Ethical and Responsible Use of Generative AI: are encouraged to use Gen-AI tools to enhance learning, teaching, and innovation, provided that such use:

- Is explicitly disclosed and acknowledged;
- Is subject to critical human review and validation;
- Fully complies with PSU's standards for academic integrity, ethical conduct, and legal requirements.

Unauthorized or unethical use of Gen-AI tools may constitute academic misconduct and will be subject to appropriate disciplinary actions in accordance to PSU's regulations

Attendance Policies: The University attendance policy will be strictly followed. Students are expected to attend all class sessions and be in class on-time. Attendance is taken during the first few minutes of the class. Missing a class session is a student's responsibility. Missed classes will not be repeated. A total of 16 absences will lead to denial grade DN. It is the student's responsibility to periodically check course website for course content, projects assignments, updates and notifications.

	No Deduction	1-mark Deduction	2-mark Deduction	3-mark Deduction	4-mark Deduction	5-mark Deduction	DN
Four Times Weekly	Total of or less than 3 absences	Total of 4 absences	Total of 7 absences	Total of 10 absences	Total of 13 absences	Total of 15 absences	Total of 16 absences

Exam Policies: Major exams are unified among all sections (if applicable) and their dates are announced from the onset of the semester. Arrangements with the Registration Office and the department are made before the beginning of the semester so that all sections will take the same exam and during the same time. It is not possible to reschedule any major exam. No student is allowed to take any assessment with another section unless there is a strong argument and in limited cases, to be approved by the course coordinator at least two days BEFORE the quiz date of the original student section. If any student missed an assessment, the makeup will be at the end of the semester and all the materials are included (comprehensive assessment). Makeup exam will only be approved in limited cases as stipulated in the university bylaws. Generally, the final exam includes all material covered during the semester (comprehensive).

Tuesday sessions / Assignment / Project Policies: Students are expected to actively participate in class discussion and activities during Tuesday Tutorial sessions. Students are expected to solve the assignment(s) and submit the solution during the duration of the concerned session. Late assignments/submissions are not accepted. It is the student's responsibility to check/test/verify/debug the code before submission. It is the student's responsibility to verify that all files have been uploaded to the LMS. After an assignment/project has been graded, re-submission with an intention to improve assignments scores will not be allowed. After the assignment/project has been graded, the instructor will post test-cases used for grading on the website. The instructor has the right to share project execution reports that may have been auto-generated on the course website.