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**ALCORN STATE UNIVERSITY**

**School of Arts and Science**

**Department of Math & Computer Science**

**Spring 2020**

1. **COURSE INFORMATION**

**Course Name:**  Advanced Programming in Java

**CRN Number:**  10965

**Course Section:**  CS480-002

**Class Meeting/Schedule:**  10:00-10:50am (MWF)

**Class Location:**  Math and Science Building 113

**Course Offering:** Traditional Classroom Meeting

**Pre-requisites or Co-requisites:**  CS321

1. **INSTRUCTOR INFORMATION**

**Name, Title, Rank:** Sardar Anisul Haque, Ph.D, Assistant Professor

**Office Location:** Math and Science Building 127

**Office/Meeting Hours:** M, W, F: 9 - 10 and 12 - 2

**Office Telephone/Fax Number:** (601) 877-3984

**Email Address:** sahaque@alcorn.edu

1. **COURSE DESCRIPTION**

This course introduces advanced features of the Java programming language. It covers how to use inheritance, interfaces, exception handling, and file operation. The course also teaches how to incorporate graphical user interfaces (GUIs) into their programming applications and how to apply object-oriented design and programming principles to their programs.

Pre-requisite: CS 321 or special permission from the department.

Students should know the following.

OOP: class, object, constructor, destructor, pass by reference, Inheritance, polymorphism, abstraction, encapsulation  
Data Structures: List, Array, Stack, Queue, priority queue, graph and tree representation, binary search tree,  
Algorithm: some search and sort algorithms, hash function, recursive algorithms, algorithm complexity.

Students are strongly recommended to discuss with the instructor if they do not know any of the topic above as soon as possible.

**COURSE RELATION TO PROGRAM AND PROFESSIONAL STANDARDS**

***ABET Student Learning Outcomes:***

***(SLO 6) Apply computer science theory and software development fundamentals to produce computing-based solutions.***

1. **REQUIRED TEXTBOOK**

**Required Texts/Resources/Materials:**

Author: P. J. Deitel, H. M. Dietel; Title: Java: How to Program; Publisher: Dietel & Associates, 9th edition

**ADDITIONAL REQUIRED COURSE READINGS**

Author: Herbert Schildt; Title: Java: the complete reference; Publisher: McGrawhill, 11th edition

1. **LEARNING OUTCOMES/OBJECTIVES**

Upon completion of the course, the students will be able to:

* + 1. Understand OOP using java especially inheritance, and polymorphism.
    2. Understand how java works.
    3. Understand how to write different families of algorithm using java.
    4. Understand some software engineering features that can be implemented in java

1. **CANVAS ACCOUNT**

**Information and course content will be available on Canvas, which may be assessed as follows:**

* On the student menu of the Alcorn website, you will find the Canvas option. Another option to access Canvas is using the web address “Canvas.alcorn.edu.”
* Click on Login and you will be prompted to your username and password. [Your username will be the Alcorn e-mail address that the university assigned to you at registration. The password will be the password to the Alcorn e-mail account.]
* Once you are logged into Canvas, a listing of Canvas courses will appear. When you click on the course, you will first see the announcements. Listed on the left-hand side is a menu of options available for the course. Options such as announcements, syllabus, course documents, discussion, assignments, tests and/or course handouts.
* Specific details on accessing Collaborate may be included. Specific instructions for students in terms of time to log in before class and any other updates will be helpful. This serves as a visual guide for the students as they navigate through Canvas.
* For assistance with Canvas, please contact via phone (855) 671-6898.

1. **COURSE WORK/ASSIGNMENTS**

All the assignments are posted in the Assignment area on Canvas.

All the assignments must be submitted on Canvas. Assignments submitted via email will not be accepted.

1. **GRADING POLICY**

Assignments missing deadlines will receive a grade of up to B. However, work handed in late with a reasonable excuse will be accepted without penalty if this is discussed with the instructor before the due date. Assignments overdue for more than fourteen days are not considered as late assignments and will not be accepted.

1. **EVALUATION/ASSESSMENT**

Grades will be based on the following exams and assignments:

Programming Assignments 50%

Attendance 10%

Midterm Exam: 15%

Final Project: 25%

Course grades are assigned according to the following criteria:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Grading Scale** | **A** | **B** | **C** | **D** | **F** |
| Score | 100-90 | 89-80 | 79-70 | 69-60 | Below 60 |

1. **EXAM MAKE UP POLICY**

Student must take the midterm and final exams following the university schedule. Book the air tickets and arrange rides after the exam is completed. If a student cannot take the exam as scheduled due to an emergency, an in-advance request from the student and the approval of the instructor are required if the situation permits.

1. **CLASS ATTENDANCE**

Class attendance is required. Absences are recorded in the class roll book. No matter how justifiable the circumstances for class absences, students must attend as a minimum three-fourths of the meetings for a given course in order to be eligible to receive credit in this course. Please read Class Attendance Regulations in the catalog for more detailed information.

It is critical that the class starts on time. If one comes to class fifteen minutes after the scheduled class starting time, the student is considered as absent for that class.

1. **EXTRA CREDIT (OPTIONAL)**

No extra credit activity is planned for this course.

1. **ACADEMIC POLICIES**

**I. Class Policy:**

This class follows all the policies as presented in the university catalog.

**II. Academic Integrity/Plagiarism:**

Failure to comply with academic integrity, honesty, and behavior standards may result in course failure or administrative withdrawal from the class.

**III. Americans with Disabilities Statement & Non-Discrimination Statement:**

In accordance with federal legislation, reasonable accommodations will be provided to students with a documented disability. Alcorn State University does not discriminate on the basis of race, sex, age, handicap or disability. If you need special accommodations or would like to have more information on this policy, please contact the Department of Health & Disability Service in Rowan Hall or call (601) 877-6460.

**IV. Student Withdrawal Policy/Drop Date:**

A withdrawal from the course is possible through the date specified in this semester’s catalog. Please review the requirements in ASU’s catalog for withdrawal dates. An incomplete will be given in the course if, for some reason beyond your control (hospitalization, death in the family, natural disaster, etc.) you cannot complete the course. Under no circumstances will you be given an incomplete because you have an undesirable grade in the course.

It is a student’s responsibility to drop the class if a student wants to stop studying this class. All the student needs to do is to email the instructor the desire to drop the class and provide the login pin. The instructor will drop the student from the class. The instructor will also inform the student when the process is done. The student will get a F grade if one stops attending the class without dropping it.

**V. University Resources/Counseling Center, Writing Center, Canvas Support, Tutoring and Math Center, Library, Etc.**

Students must obtain an Alcorn Library ID Number from the Library so that they can access the Alcorn State University online bibliographical data resources to complete class assignments.

1. **COURSE CONTENT/OUTLINE/CURRICULUM SEQUENCE**

Topics from Java in order:

1. How Java works
2. Running a java code
3. Java and internet
4. Java datatypes, variable, array
5. Java class
6. Objects and reference
7. Inheritance
8. Polymorphism
9. Package and Interface
10. Exception Handling
11. Enumeration
12. Log

Algorithms:

1. Backtracking Algorithms
2. Branch and bound algorithms
3. Dynamic Programming

Problems: Power set, subset, permutations

Assignments: Small programming assignments based on java knowledge and some computing theory.

Mid term: Based on your java knowledge.

Final project: Implementation of an algorithm to solve a hard problem.