

IST 4070: Object Oriented Programming

COURSE SYLLABUS

Course Rational

The course aim at introducing to the student the modern way of programming using object oriented theory and practice. Most of the emerging technologies use Object Oriented paradigm hence the need to impart this knowledge to the students.

Course Description

IST 4070 Object Oriented Programming

In-depth study of object-oriented programming: definition of objects and classes and methods. Graphic classes and graphical user interface components. Files and streams

Prerequisites: IST 2040, IST 4010, IST 4020

Credit: 3 Units

Link to University Mission Outcomes

This course is expected to help students develop skills in higher order thinking, global understanding, and multicultural perspective in the students. It is expected to develop proficiency in literacy, preparation for future careers in business management and the ability in the learners to serve the community.

Links To School of Science & Technology Mission Outcomes

This course is designed to

- Develop competence in critical thinking, create skills, use of technology, creativity and good communication skills
- Provide service to the community: Acquire practical working experience through participation and contribution to positive/good community and societal causes
- Demonstrate preparedness for career and lifelong learning in their chosen disciplines as well as understanding of the interdisciplinary nature of knowledge.
- Demonstrate the use of qualitative and quantitative research skills in Biomedical, Communication and Information Technology
- Apply theories, concepts, and principles found in biological and physical sciences, including a thorough grounding in communication skills in multicultural & global perspectives.
- Demonstrate a thorough understanding of effective, efficient professional and ethical leadership

Link to IST Program Learning Outcomes

The course will address the following PLOs

PLO3: Design information system Solutions for Business Organizations

PLO4: Implement information system solutions in Organizations.

Course Learning Outcomes

At the end of the course, the student will be able to :

- (i) Understand basic concepts of Object Oriented Programming
- (ii) Identify, Demonstrate and Provide solution for IT problems in organizations
- (iii) Write computer programs in one of the modern languages like Java,
- (iv) Design and implement programs using OOP analysis and design technique
- (v) Create GUI for programs
- (vi) Manipulate database files using Java

Teaching Methodology

An application –oriented approach will be used. A wide of business case problems and mathematics will be used to illustrate the object oriented concepts. A combination of lectures, class discussions and laboratory exercises will be used in the course.

Course Content and Weekly Schedule

| Wk | Topics | Learning Outcomes | Activities/Assignments | Aids/References | Remarks |
|------|---|---|--|--|---------|
| Wk 1 | Discussion Topics <ul style="list-style-type: none"> • Classes • Methods • Inheritance • Polymorphism • Dynamic binding • Abstractions • Message passing • Constructors • Comparison between procedural programming and object oriented programming | At the end of the week, students will be able to: <ul style="list-style-type: none"> • Differentiate between procedural programming and object oriented programming • Recognize the various object oriented concepts | Blackboard discussion on the various oop concepts | OOP with C++ by E Balagurusamy page 4-15 | |
| Wk 2 | Discussion Topics <ul style="list-style-type: none"> • Memory Concepts • Arithmetic • Java program syntax and semantics • Java Application | At the end of the week, students will be able to: <ul style="list-style-type: none"> • Appreciate the various control structures • Write simple programs | Lab2.1: Simple Java Program1 (Welcome1) Lab 2.2: Simple Java Program 2(Welcome2) Lab2.3: Test Control Structures in Java | Aids:Java How to Program by Deitel 73-76, 138-223 | |

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|-------------|---|--|---|---|--|
| | <ul style="list-style-type: none"> ✚ program layout ✚ Applet program layout ✚ If/else single selection loop structure ✚ While repetitive loop structure ✚ For loop structure ✚ Switch multiple selection loop structure ✚ Do/while repetitive loop structure | using control structures | | | |
| Wk 3 | Discussion Topics <ul style="list-style-type: none"> ✚ Dialog Windows ✚ Simple GUI | At the end of the week, students will be able to: <ul style="list-style-type: none"> • Write simple programs using Dialog windows • Appreciate the importance of creating good user interface | Lab 3.1: Test input and output with Dialog Windows Lab 3.2: Test Control Structures with Dialog Window Assignment 1: | Aids: Java How to Program by Deitel pg129 | |
| Wk 4 | Discussion Topics <ul style="list-style-type: none"> ✚ GUI ✚ Labels ✚ Event handling model ✚ Text-Field ✚ Buttons ✚ CheckBox ✚ RadioButton | At the end of the week, students will be able to: <ul style="list-style-type: none"> • Write program using event handlers • Write program using GUI controls | Lab4: Test GUI | Aids: Java How to Program by Deitel pg 585-654 | |
| Wk 5 | Discussion Topics <ul style="list-style-type: none"> ✚ static methods ✚ techniques of divide and conquer ✚ how the visibility of declarations is limited to specific regions of programs ✚ what method overloading is and how to create overloaded | At the end of the week, students will be able to: <ul style="list-style-type: none"> • appreciate the importance of modulating a program • apply different techniques of modulating program | Lab 5: Testing Classes/Objects/Methods Assignment 2: | Aids: Java How to Program by Deitel 233-263, 107-131 | |

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|-----------------|--|--|---|--|--|
| | methods | | | | |
| Wk 6 | Discussion Topics <ul style="list-style-type: none"> ✚ Array Declaration and memory allocation ✚ Parameter passing ✚ Passing arrays to methods | At the end of the week, students will be able to: <ul style="list-style-type: none"> • Write program using arrays | Lab 6.1: Simple Arrays Lab 6.2 : Passing arrays to Methods | Aids:Java How to Program by Deitel pg276-325 | |
| Wk 7 | Mid Semester Examination | | | | |
| Wk 8 | Discussion Topics <ul style="list-style-type: none"> ✚ Super-class and sub-class ✚ Protected members ✚ Inheritance | At the end of the week, students will be able to: <ul style="list-style-type: none"> • Recognize the importance of reusability in a program • Write programs using inheritance technique | Lab 8: Test Inheritance Assignment 3: | Aids:Java How to Program by Deitel pg395-427 | |
| Wk 9 | Discussion Topics <ul style="list-style-type: none"> ✚ Polymorphism ✚ Dynamic method binding | At the end of the week, students will be able to: <ul style="list-style-type: none"> • Appreciate the need of writing program using polymorphism technique. • Design program using polymorphism technique • Write program using polymorphism technique | Lab 9: Test Polymorphism | Aids:Java How to Program by Deitel pg430-469 | |
| Wk 10-11 | Discussion Topics <ul style="list-style-type: none"> ✚ Database Systems ✚ Relational database model ✚ Adding, Updating, Searching, Deleting & displaying external data using JDBC- | At the end of the week, students will be able to: <ul style="list-style-type: none"> • Design and implement program using oop technique • Manipulate databases using JDBC-ODBC <p style="text-align: center;">Quiz</p> | Lab 10.1: Test Mysql Database using Java Interface | Aids:Java How to Program by Deitel pg1207-1230, Mysql | |

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|--------------|--------------------------------------|--|-------------------------------------|----------------|--|
| | ODBC | | | | |
| Wk 11 | | Theory Quiz and Practical Quiz | | | |
| Wk 12 | Working with Multiple Screens | At the end of the week, students will be able to: <ul style="list-style-type: none"> • Create multiple screens • Appreciate the importance of creating multiple screen | Lab 11: Test Multiple screen | Eclipse | |
| Wk 13 | Group Presentations | | | | |
| Wk 14 | Final Examination | | | | |

Course Evaluation

There will be at least five assignments, three quizzes, project, one mid-semester and one final examination. Assignments are due one week after being activated in the E-Learning platform and late submission will attract 25% for every subsequent lesson.

Distribution of marks

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|------------------------------|-----|
| Attendance and Participation | 5% |
| Lab Exercises | 10% |
| Lab Assignments | 20% |
| Project | 10% |
| Quiz | 5% |
| Mid-Semester Examination | 20% |
| Final Semester Examination | 30% |

Course Text

Java How to Program, by H.M. Deitel, P.J. Deitel, Prentice Hall, 9th Edition 2010

Grading

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|--------|----|-------|----|-------|----|
| 90-100 | A | 74-76 | C+ | 60-61 | D- |
| 87-89 | A- | 70-73 | C | 0-59 | F |
| 84-86 | B+ | 67-69 | C- | | |
| 80-83 | B | 64-66 | D+ | | |
| 77-79 | B- | 62-63 | D | | |