Course Specifications

General Information

Course name	Computer Science (2)
Course number	ITCS1302
Faculty	
Department	
Course type	College Needs
Course level	1
Credit hours (theoretical)	3
Credit hours (practical)	0
Course Prerequisites	

Course Objectives

1 - Upon completing this course the student will have learned, through appropriate classroom and laboratory experiences, the following.
2 - Basics of Java language, i/o, data types, control, loops, methods
3 - Basics of OO programming, classes, attributes, objects, instance.
4 - Identifying the implications of inheritance, overloading, polymorphism.
5 - Access modifiers, abstraction, abstract classes, interfaces, packages.
6 - Designing programs using object-oriented design techniques.
7 - Using advanced Java input/output facilities to store data in text files and indexed binary files, Exceptions.
8 - Writing programs that use application program interfaces and graphical user interfaces (GUI) to interface with users and other systems.

Intended Learning Outcomes

Knowledge and Understanding	* On successful completion of the course, students should be able to: * a1. Identify basic principles of object-oriented program design. * a2. Identify the basic and some advanced issues related to writing classes and methods - such as data, visibility, scope, method parameters and object references * a3. Explain the basic ideas behind class hierarchies, polymorphism, and programming to interfaces. * a4. Describe the differences between basic I/O streams and graphical user interfaces. * a5. Identify and demonstrate usage of tools, practices and methodologies used in the specification, design and implementation. * d3. Demonstrate efficient IT capabilities.
Intellectual Skills	* b1. Define traditional and nontraditional problems, set goals towards solving them, and. observe results. * b2. Identify attributes, components, relationships, patterns, main ideas, and errors. * b3. Describe different classifications of (data, results, methods, techniques, algorithms, etc.). * b4. Identify a range of solutions and critically evaluate and justify proposed design solutions. * b5. Apply the concepts, principles, theories and practices underpinning computing as an academic discipline.
Professional Skills	* c1. Solve a given application problem by going through the basic steps of program specifications, analysis, design, implementation within the context of the object-oriented paradigm. * c2. Demonstrate solid Java programming skills and ability to put in practice the acquired knowledge and understanding of the Java language and object-oriented design in relatively simple case studies. * c3. Develop Java implementations of abstract data types using different approaches, and evaluate their differences. * c4. Apply tools and techniques for the design and development of applications.
General Skill	* d1. Communicate effectively by oral, written and visual means. * d2. Work effectively as an individual and as a member of a team. * d4. Lead and motivate individuals. * d5. Manage tasks and resources. * d6. Work in stressful environment and within constraints.

Course Contents

1 - Basics of the OO language of interest such as Java that include program structure, data types, I/O, control, loops, methods, methods overloading and overriding. Matrices, strings.

2 - Object oriented paradigms , classes, objects, instances, inheritance, abstraction, interfaces, polymorphism, data hiding, visibility scopes, packages.

3 - File i/o and streams, graphical user interface (GUI) designs packages and tools, events and event handling, java applets.

Teaching and Learning Methods

1 - Lectures

2 - Tutorial Exercises

3 - Practical Exercises

4 - Projects

Students Assessment

Assessment Method	TIME	MARKS
Final Exam	Week 16	50%
Practical Exercises		15%
Mid-Term Exam	Week 8	20%
Projects		15%

Books and References

Course note	Short course notes available at doctor's office.
Essential books	Y.Daniel, Liang , Introduction to Java Programming, 7thed, 2008.
Recommended books	C. Thomas Wu, An introduction to OO programming with Java, Second Edition 2001.
	H. M. Deitel and P.J. deitel, Java How to Program, Fourth Edition 2002.

Knowledge and Skills Matrix

Main Course Contents	Study Week	Knowledge and Understanding	Intellectual Skills	Professional Skills	General Skill
Basics of the OO language of interest such as Java that include program structure, data types, I/O, control, loops, methods, methods overloading and overriding. Matrices, strings	1-4	a1	b1, b3, b4, b5	c1	d1-d6
Object oriented paradigms , classes, objects, instances, inheritance, abstraction, interfaces, polymorphism, data hiding, visibility scopes, packages	5-9	a1-a3	b2, b4, b5	c2-c4	d1-d6
File i/o and streams, graphical user interface (GUI) designs packages and tools, events and event handling, java applets	9-14	a4, a5	b5, c2	c4	d1-d6