**Course Specification**

 (**CS 213 Programming Language 2**)

|  |  |
| --- | --- |
| *University:* | Helwan University |
| *Faculty:* | Faculty of Computers & Information |
| *Department:* | ***Computer science*** |

**1. Course Data**

|  |  |
| --- | --- |
| **Code:** | CS 213 |
| **Course title:** | Programming Language 2 |
| **Level:** | 2 |
| **Specialization:** | Computer Science |
| **Credit hours:** | 3 hours |
| **Number of learning units (hours):**  | (3) theoretical 2) practical |

**2. Course Objective**

Object-oriented programming: data abstraction, encapsulation, classes, objects, templates, operator overloading, function overloading, inheritance, polymorphism, exception handling, and streams.

**3. Intended Learning Outcomes:**

**A- Knowledge and Understanding:**

A21. Apply the principles of Object-Oriented Programming.

 **B- Intellectual Skills**

B7. Create computer algorithms to solve different problems.

B20. Design software solutions to real world problems.

 B21. Design and analyze Problems.

 **C- Professional and Practical Skills**

C1. Choose the appropriate Programming Language.

C10. Develop computer-based systems.

 C16. Deploy the tools for software projects documentation.

**D- General and Transferable Skills**

D2. Practice Independent Learning techniques.

D3. Use different Problem Solving techniques.

 D5. Follow Creative Thinking.

 D13. Practice Designing skills in software projects.

 D14. Practice Engineering skills for software development.

**4. Course contents**

|  |  |  |  |
| --- | --- | --- | --- |
| **Topic** | **No. of hours** | **Lecture** | **Tutorial/ Practical** |
| Object-oriented programming concepts and characteristics | 6 | 2 | 2 |
| Types and design of class hierarchies | 3 | 1 | 2 |
| Features of Java Language | 3 | 1 | 2 |
| Class design and construction | 3 | 1 | 2 |
| Java Methods | 3 | 1 | 2 |
| Modifiers in Java  | 3 | 1 | 2 |
| Packages and Interfaces | 3 | 1 | 2 |
| Applications and Applets | 6 | 2 | 4 |
| Case Study | 3 | 1 | 2 |
| Threads | 3 | 1 | 2 |
| Exception Handling | 3 | 1 | 2 |
| Multimedia in Java | 3 | 1 | 2 |
| Event Handling | 3 | 1 | 2 |

**Mapping contents to ILOs**

|  |  |
| --- | --- |
| Topic | Intended Learning Outcomes (ILOs) |
| Knowledge and understanding | Intellectual Skills | Professional and practical skills | General and Transferable skills |
| Object-oriented programming concepts and characteristics | A21 | B7 | C1 | D2 |
| Types and design of class hierarchies | A21 | B7 | C1,C10 | D2 |
| Features of Java Language | A21 | B7 | C1,C16 | D2,D3 |
| Class design and construction | A21 |  | C1 | D3 |
| Java Methods |  |  |  | D5 |
| Modifiers in Java  |  |  |  | D5 |
| Packages and Interfaces |  |  |  | D3,D5 |
| Applications and Applets |  |  |  | D5 |
| Case Study |  |  |  | D2,D3,D5,D13 |
| Threads |  |  |  | D2,D3,D14 |
| Exception Handling |  | B20 |  | D2,D3 |
| Multimedia in Java |  | B20 |  | D2,D3 |
| Event Handling |  | B21 |  | D2,D3 |

**5. Teaching and Learning Methods**

Lectures

 Exercises

 Case Studies

 Lab Work Programming projects

**6. Teaching and Learning Methods for students with limited capability**

 Using data show

 e-learning management tools

**7. Students Evaluation**

**a) Used Methods**

* Written Exams: in order to assess learned topics
* Lab Exam: to tests hands on the computer
* Midterm Exam: in order to assess learned topics
* Micro project: partial reimplementation of a previous project in order to practice Java and compare it with previous experience
* Assignment: practicing Java in small codes

**b) Time**

Assessment 1 Final Exam week officially announced

Assessment 2 Lab Exam week officially announced

Assessment 3 Midterm Exam week officially announced

Assessment 4 Micro project week Last week in semester

Assessment 5 Assignments week 8 assignments overall the

Semester

**c) Grades Distribution**

Mid-term Examination 20 %

Final-Year Examination 50 %

Semester Work 20 %

Practical Exam 10%

 Total 100%

Any formative only assessments

**List of Books and References**

**a) Notes**

Course Notes

- Handouts

**b) Mandatory Books**

6.1- Course Notes

Self-development

6.2- Essential Books (Text Books)

- The Complete Reference Java J2SE 5th Edition by H. Schildt, McGrow-Hill/Osborne, ISBN: 0-07-223073-8

6.3- Recommended Books

- Starting out with Java 5 from control structures to objects by T. Gaddis, Addison Wesley, ISBN: 1-57676-171-1.

- Teach Yourself Java 2 in 21 Days, 1999 by Lemay & Cadenhead, Sams Publishing, ISBN: 0-672-31438-X

6.4- Periodicals, Web Sites, etc

[htHYPERLINK "http://www.dcs.kcl.ac.uk/"tHYPERLINK "http://www.dcs.kcl.ac.uk/"p://www.dcs.HYPERLINK "http://www.dcs.kcl.ac.uk/"kHYPERLINK "http://www.dcs.kcl.ac.uk/"cl.ac.uk/](http://www.dcs.kcl.ac.uk/)DevJava

[hHYPERLINK "http://java.sun.com/"tHYPERLINK "http://java.sun.com/"tp://java.sunHYPERLINK "http://java.sun.com/".HYPERLINK "http://java.sun.com/"com](http://java.sun.com/)

**c) Suggested Books**

**d) Other publications**

**Course Coordinator**: A. Prof. Dr. Mohamed Belal

**Chairman of the Department:** Prof. dr. Iraqy Khalifa