Unit Title: Contemporary Application Development Methods	Unit Code: CADM
Level: 6	Learning Hours: 210

Learning Outcomes and Indicative Content:

Candidates will be able to:

1. Critically compare modern application development methodologies.

1.1 Discuss the principles of software construction using procedural, object oriented and component based programming.
1.2 Appreciate the difference between the functional decomposition and object decomposition approaches to software design.
1.3 Explain what is meant by: Function, Object and Component.

2. Explain the main object oriented concepts and critically evaluate their benefits.

2.1 Describe the concepts of abstract data types, encapsulation, class and object, abstract class and interface.
2.2 Explain the importance of generalisation/specialisation and inheritance, and distinguish between single and multiple inheritance as well as understanding public/private versus protected access.
2.3 Discuss the concepts of associations and aggregation, including association types, aggregation, composition and containment.
2.4 Explain the meaning of polymorphism and the concepts of method overloading and overriding.
2.5 Describe the advantages, particularly in terms of software quality factors, of using the object oriented approach.

3. Analyse and design object oriented applications using case studies.

3.1 Discuss object oriented analysis and object modelling.
3.2 Perform Textual Analysis on a given problem description.
3.3 Identify the different types of classes such problem space classes, user interface classes and data storage classes.

4. Express an object oriented design, using the Unified Modelling Language (UML).

4.1 Use the UML notation for its main diagrams.
4.2 Apply the use case, class, sequence, component and activity diagrams.
4.3 Evaluate the role of object oriented design concepts, using case studies.

5. Consider the relationship between software development and object oriented analysis and design.

5.1 Demonstrate some proficiency in a common object oriented language such as Java.
5.2 Write object classes using Java and give examples of object oriented concepts in program code.
5.3 Employ further skills in programming, particularly object oriented techniques.
5.4 Develop applications in Java, using object oriented concepts.

6. Critically evaluate the rapid software prototyping process.

6.1 Discuss the benefits of rapid prototyping.
6.2 Describe the stages of rapid prototyping.
6.3 Identify the different approaches to rapid prototyping.

7. Discuss and advise on aspects of graphical user interface design.

7.1 Describe the rules governing user interface design.
7.2 Apply the rules to simple case studies.

Assessment Criteria:

- Assessment method: written examination
- Length of examination: three hours
- Candidates should answer four questions from a choice of eight, each question carrying equal marks.

Recommended Reading

Bennett S, Skelton J, Lunn K, *Schaum's Outline of UML* (2004), McGraw-Hill
ISBN: 0077107411

Fowler M, *UML Distilled: A Brief Guide to the Standard Object Modelling Language* (2004), Addison Wesley
ISBN: 0321193687

Reed Doke E, Satzinger J, Rebstock Williams S, *Object Oriented Application Development Using Java* (2002), Thomson Learning
ISBN 061903565X

Johnson R, *An Introduction to Java Programming and Object-Oriented Application Development* (2006), Thomson Course Technology
ISBN: 0619217464

A highly relevant site is http://www.omg.com/