

**DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY**

**M.Sc(Computer Science)**

**CCS 6104: Advanced Software Modeling and Architecture**

**LECTURER: Dr. Gabriel Kamau EMAIL:** [**gabriel.kamau@dkut.ac.ke**](mailto:gabriel.kamau@dkut.ac.ke)

**Prerequisite** None

**Course purpose:** The purpose of this course is to equip the learner with knowledge and skills that will enable him/her design and implement optimized and maintainable software engineering processes and systems.

**Expected Learning outcomes**

By the end of this course, a learner should be able to:

1. Demonstrate knowledge on software system modeling.
2. Design appropriate software systems.
3. Implement an optimized software product.

**Course description**

System/service decomposition; Overview of software modeling; Proof, checking in Event-B; Model structuring/restructuring and refinement; Model decomposition. System modeling: requirements understanding and modeling, software model types. Architectural designs; Software design: user interfaced analysis and design, object oriented design, design patterns; Component-Based Software Engineering (CBSE); Distributed Software Engineering (DSE); definition and functions, DSE architectural patterns, communication and optimization in DSE; Service-oriented architecture.

**Mode of Delivery**

Lectures, Case Studies, Seminars, Presentations and Discussions.

**Instruction materials and equipmen**t

Whiteboard, Projector, Handouts, Computer, Internet and Programming Software.

**Course assessment**

Continuous Assessment Tests – 40%

End of semester Examinations – 60%

**Total –100%**

**Course Material**

**Course Textbook:**

Martin, R. C. (2017). Clean architecture: a craftsman's guide to software structure and design.

Prentice Hall Press.

**Other Reference Texts:**

Sommerville, I. (2011). Software engineering 9th Edition. ISBN-10, 137035152.

Pressman, R. S. (2009). Software Engineering: A Practitioner’s Approach, 7/e.

**Journals:**

Journal of Software & Systems Modeling

Journal of Statistical Software

Journal of Scientific Computing