# STRATHMORE UNIVERSITY

STRATHMORE INSTITURE

Course Outline and Delivery Plan

**Course Code:** DBT 1202 **Course Name:** SOFTWARE ENGINEERING

**Purpose:** To introduce the learner to the concepts of software development and designs**.**

# Objectives:

At the end of the course students should be able to explain the software development processes.

# Course Description:

Introduction to software engineering. Software engineering life cycle. Software specification and conformity with specification. Design techniques. Implementation. Quality assurance: reviews, inspections, formal verifications and validations, testing strategies. Software reliability. Software project management, configuration management, planning, team management, documentation and standards. Software support environments, software engineering models. Case Studies. Software standards and Metrics; Software Testing, Maintenance and Certification.

# Course Content:

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| **Week #** | **Topic** | **Major instructional areas** |
| Week 1 & 2 | **Introduction and Background** | Software and its Evolving Role,  Software Quality, Software Myths |
| Week 3 & 4 | **The Software Process** | Engineering in Software, Process Frameworks and Patterns, Overview of Process Models and Technology,  Overview of SE Practice |
| Week 5 | SE Practice I: **System**  **Engineering** | Reverse Engineering, A Look Ahead  at OO and SOA Techniques |
| Week 6 | SE Practice II: **Requirements**  **Engineering and the Analysis Model** | Formal Methods, Clean-room SE, Component Based Development, Commercial Off-The-Shelf (COTS)  Development |
| Week 7 | SE Practice III: **Design**  **Engineering and the Architectural Artefacts** | Design models, system architectural designs, Database schemas |
| Week 8 | SE Practice IV: **User Interface**  **Design** | General User Interface designs |
| Week 9 | SE Practice V: **Testing** | Unit testing, System testing, black  box testing, white box testing, acceptance testing |
| Week 10 | SE Practice V: **Product Metrics** | Measuring software, software  pricing |
| Week 11 | Sidebar: **Web Engineering** | Specifics of web apps, Web  application development |
| Week 12 | **Managing Software Projects** | Project Management Basics, Estimation, Scheduling, Risk Identification and Management, Quality Management, Change  Management |

**Teaching Methodologies:**

Lectures, demonstrations, group/class discussions and practical exercises.

# Course Assessment:

Student performance

Assignments, tutorials, tests, practical exercises and end of semester examinations.

# Textbooks and Journals for the Course:

1. Ian Sommerville. Software Engineering (2015), 10th Edition. ISBN – 9789332582699
2. Software Engineering: Theory and Practice by Shari Lawrence Pfleeger & Joanne M. Atlee, 4th edition, Pearson Education, 2010.
3. Software Engineering: Principles and Practice by Hans van Vliet, 3rd edition, John Wiley & Sons, 2008.