**GE3791 HUMAN VALUES AND ETHICS 2 Credits**

**UNIT I DEMOCRATIC VALUES**

Understanding Democratic values: Equality, Liberty, Fraternity, Freedom, Justice, Pluralism, Tolerance, Respect for All, Freedom of Expression, Citizen Participation in Governance – World Democracies: French Revolution, American Independence, Indian Freedom Movement.

**Reading Text:** Excerpts from John Stuart Mills’ On Liberty

**UNIT II SECULAR VALUES**

Understanding Secular values – Interpretation of secularism in Indian context - Disassociation of state from religion – Acceptance of all faiths – Encouraging non-discriminatory practices**.**

**Reading Text:** Excerpt from Secularism in India: Concept and Practice by Ram Puniyani

**UNIT III SCIENTIFIC VALUES**

Scientific thinking and method: Inductive and Deductive thinking, Proposing and testing Hypothesis, Validating facts using evidence based approach – Skepticism and Empiricism – Rationalism and Scientific Temper.

**Reading Text:** Excerpt from The Scientific Temper by Antony Michaelis R

**UNIT IV SOCIAL ETHICS**

Application of ethical reasoning to social problems – Gender bias and issues – Gender violence – Social discrimination – Constitutional protection and policies – Inclusive practices.

**Reading Text:** Excerpt from 21 Lessons for the 21st Century by Yuval Noah Harari

**UNIT V SCIENTIFIC ETHICS**

Transparency and Fairness in scientific pursuits – Scientific inventions for the betterment of society - Unfair application of scientific inventions – Role and Responsibility of Scientist in the modern society. **Reading Text:** Excerpt from American Prometheus: The Triumph and Tragedy of J.Robert Oppenheimer by Kai Bird and Martin J. Sherwin.

**REFERENCES:**

1. The Nonreligious: Understanding Secular People and Societies, Luke W. Galen Oxford University Press, 2016.

2. Secularism: A Dictionary of Atheism, Bullivant, Stephen; Lee, Lois, Oxford University Press, 2016.

3. The Oxford Handbook of Secularism, John R. Shook, Oxford University Press, 2017.

4. The Civic Culture: Political Attitudes and Democracy in Five Nations by Gabriel A. Almond and Sidney Verba, Princeton University Press,

5. Research Methodology for Natural Sciences by Soumitro Banerjee, IISc Press, January 2022

**GE3752 TOTAL QUALITY MANAGEMENT 3 Credits**

**UNIT I INTRODUCTION**

Introduction - Need for quality - Evolution of quality - Definition of quality - Dimensions of product and service quality –Definition of TQM-- Basic concepts of TQM - Gurus of TQM (Brief introduction) -- TQM Framework- Barriers to TQM –Benefits of TQM.

**UNIT II TQM PRINCIPLES**

Leadership - Deming Philosophy, Quality Council, Quality statements and Strategic planningCustomer Satisfaction –Customer Perception of Quality, Feedback, Customer complaints, Service Quality, Kano Model and Customer retention – Employee involvement – Motivation, Empowerment, Team and Teamwork, Recognition & Reward and Performance Appraisal-- Continuous process improvement –Juran Trilogy, PDSA cycle, 5S and Kaizen - Supplier partnership – Partnering, Supplier selection, Supplier Rating and Relationship development.

**UNIT III TQM TOOLS & TECHNIQUES I**

The seven traditional tools of quality - New management tools - Six-sigma Process CapabilityBench marking - Reasons to benchmark, Benchmarking process, What to Bench Mark, Understanding Current Performance, Planning, Studying Others, Learning from the data, Using the findings, Pitfalls and Criticisms of Benchmarking - FMEA - Intent , Documentation, Stages: Design FMEA and Process FMEA.

**UNIT IV TQM TOOLS & TECHNIQUES II**

Quality circles – Quality Function Deployment (QFD) - Taguchi quality loss function – TPM – Concepts, improvement needs – Performance measures- Cost of Quality - BPR.

**UNIT V QUALITY MANAGEMENT SYSTEM**

Introduction-Benefits of ISO Registration-ISO 9000 Series of Standards-Sector-Specific Standards - AS 9100, TS16949 and TL 9000-- ISO 9001 Requirements-Implementation-Documentation- Internal Audits-Registration-ENVIRONMENTAL MANAGEMENT SYSTEM: Introduction—ISO 14000 Series Standards—Concepts of ISO 14001—Requirements of ISO 14001-Benefits of EMS

**TEXT BOOK:**

1. Dale H.Besterfiled, Carol B.Michna,Glen H. Bester field,MaryB.Sacre, HemantUrdhwareshe and RashmiUrdhwareshe, “Total Quality Management”, Pearson Education Asia, RevisedThird Edition, Indian Reprint, Sixth Impression,2013.

**REFERENCES:**

1. Joel.E. Ross, “Total Quality Management – Text and Cases”,Routledge.,2017.

2. Kiran.D.R, “Total Quality Management: Key concepts and case studies, Butterworth – Heinemann Ltd, 2016.

3. Oakland, J.S. “TQM – Text with Cases”, Butterworth – Heinemann Ltd., Oxford, Third Edition,2003.

4. Suganthi,L and Anand Samuel, “Total Quality Management”, Prentice Hall (India) Pvt. Ltd., 2006 .

**CCS342 DEVOPS 3 Credits**

**UNIT I INTRODUCTION TO DEVOPS**

Devops Essentials - Introduction To AWS, GCP, Azure - Version control systems: Git and Github.

**UNIT II COMPILE AND BUILD USING MAVEN & GRADLE**

Introduction, Installation of Maven, POM files, Maven Build lifecycle, Build phases(compile build, test, package) Maven Profiles, Maven repositories(local, central, global),Maven plugins, Maven create and build Artificats, Dependency management, Installation of Gradle, Understand build using Gradle

**UNIT III CONTINUOUS INTEGRATION USING JENKINS**

Install & Configure Jenkins, Jenkins Architecture Overview, Creating a Jenkins Job, Configuring a Jenkins job, Introduction to Plugins, Adding Plugins to Jenkins, Commonly used plugins (Git Plugin, Parameter Plugin, HTML Publisher, Copy Artifact and Extended choice parameters). Configuring Jenkins to work with java, Git and Maven, Creating a Jenkins Build and Jenkins workspace.

**UNIT IV CONFIGURATION MANAGEMENT USING ANSIBLE**

Ansible Introduction, Installation, Ansible master/slave configuration, YAML basics, Ansible modules, Ansible Inventory files, Ansible playbooks, Ansible Roles, adhoc commands in ansible

**UNIT V BUILDING DEVOPS PIPELINES USING AZURE**

Create Github Account, Create Repository, Create Azure Organization, Create a new pipeline, Build a sample code, Modify azure-pipelines.yaml file

**TEXT BOOKS**

1. Roberto Vormittag, “A Practical Guide to Git and GitHub for Windows Users: From Beginner to Expert in Easy Step-By-Step Exercises”, Second Edition, Kindle Edition, 2016. 2. Jason Cannon, “Linux for Beginners: An Introduction to the Linux Operating System and Command Line”, Kindle Edition, 2014

**REFERENCES**

1. Hands-On Azure Devops: Cicd Implementation For Mobile, Hybrid, And Web Applications Using Azure Devops And Microsoft Azure: CICD Implementation for ... DevOps and Microsoft Azure (English Edition) Paperback – 1 January 2020 229

2. by Mitesh Soni

3. Jeff Geerling, “Ansible for DevOps: Server and configuration management for humans”, First Edition, 2015.

4. David Johnson, “Ansible for DevOps: Everything You Need to Know to Use Ansible for DevOps”, Second Edition, 2016.

5. Mariot Tsitoara, “Ansible 6. Beginning Git and GitHub: A Comprehensive Guide to Version Control, Project Management, and Teamwork for the New Developer”, Second Edition, 2019.

6. <https://www.jenkins.io/user-handbook.pdf>

7. <https://maven.apache.org/guides/getting-started/>

**PRACTICAL EXERCISES:**

1. Create Maven Build pipeline in Azure

2. Run regression tests using Maven Build pipeline in Azure

3. Install Jenkins in Cloud 4. Create CI pipeline using Jenkins

5. Create a CD pipeline in Jenkins and deploy in Cloud

6. Create an Ansible playbook for a simple web application infrastructure

7. Build a simple application using Gradle

8. Install Ansible and configure ansible roles and to write playbooks

**AU3008 SENSORS AND ACTUATORS 3 Credits**

**UNIT I INTRODUCTION TO MEASUREMENTS AND SENSORS**

Sensors: Functions- Classifications- Main technical requirement and trends Units and standardsCalibration methods- Classification of errors- Error analysis- Limiting error- Probable errorPropagation of error- Odds and uncertainty- principle of transduction-Classification. Static characteristics- mathematical model of transducers- Zero, First and Second order transducersDynamic characteristics of first and second order transducers for standard test inputs.

**UNIT II VARIABLE RESISTANCE AND INDUTANCE SENSORS**

Principle of operation- Construction details- Characteristics and applications of resistive potentiometer- Strain gauges- Resistive thermometers- Thermistors- Piezoresistive sensors Inductive potentiometer- Variable reluctance transducers:- EI pick up and LVDT

**UNIT III VARIABLE AND OTHER SPECIAL SENSORS**

Variable air gap type, variable area type and variable permittivity type- capacitor microphone Piezoelectric, Magnetostrictive, Hall Effect, semiconductor sensor- digital transducers-Humidity Sensor. Rain sensor, climatic condition sensor, solar, light sensor, antiglare sensor.

**UNIT IV AUTOMOTIVE ACTUATORS**

Electromechanical actuators‐ Fluid‐mechanical actuators‐ Electrical machines‐ Direct‐current machines‐ Three‐phase machines‐ Single‐phase alternating‐current Machines ‐ Duty‐type ratings for electrical machines. Working principles, construction and location of actuators viz. Solenoid, relay, stepper motor etc.

**UNIT V AUTOMATIC TEMPERATURE CONTROL ACTUATORS**

Different types of actuators used in automatic temperature control‐ Fixed and variable displacement temperature control‐ Semi Automatic‐ Controller design for Fixed and variable displacement type air conditioning system.

**TEXT BOOKS:**

1. Doebelin's Measurement Systems: 7th Edition (SIE),Ernest O. Doebelin DhaneshN.Manik McGraw Hill Publishers, 2019.

2. Robert Brandy, “ Automotive Electronics and Computer System”, Prentice Hall,2001

3. William Kimberley,” Bosch Automotive Handbook”, 6th Edition, Robert Bosch GmbH, 2004.

4. Bosch Automotive Electrics and Automotive Electronics Systems and Components, Networking and Hybrid Drive, 5th Edition, 2007, ISBN No: 978‐3‐658‐01783‐5. 305

**REFERENCES:**

1. James D Halderman, “ Automotive Electrical and Electronics” , Prentice Hall, USA, 2013

2. Tom Denton, “Automotive Electrical and Electronics Systems,” Third Edition, 2004, SAE International. **3.** Patranabis.D, “ Sensors and Transducers”, 2nd Edition, Prentice Hall India Ltd,2003

**4.** William Ribbens, "Understanding Automotive Electronics ‐An Engineering Perspective," 7th Edition, Elsevier Butterworth‐Heinemann Publishers, 2012