AMSW15 SOFTWARE MEASUREMENTS AND METRICS

UNIT-1 THE HISTORY AND EVOLUTION OF SOFTWARE METRICS
1.1 Evolution of the software industry and evolution of software measurements
1.2 The cost of counting function point metrics
1.3 The paradox of reversed productivity for high-Level languages- The Varieties of functional metrics- Variations in application size and productivity rates
1.4 Future Technical Developments in Functional Metrics- Software measures and metrics not based on function points.

UNIT-2 MEASURING SOFTWARE QUALITY
2.1 Quality control and international competition
2.2 Defining quality for measurement and estimation- Five steps to software quality control
2.3 Measuring software defect removal- Measuring Defect removal efficiency- Measuring the costs of defect removal- Evaluating defect prevention methods
2.4 Measuring customer reported defects- Measuring invalid defects, Duplicate defects and special cases Reliability Models - The Rayleigh Model- Reliability Growth Models.

UNIT-3 PROCESS METRICS
3.1 In-Process Metrics for Software Testing- Test Progress S Curve - Testing Defect Arrivals Over Time- Product Size Over Time- CPU Utilization- Effort/Outcome Model.
3.2 Complexity Metrics and Models- Lines of Code- Halstead's Software Science
3.3 Cyclomatic Complexity. Syntactic Constructs- Structure Metrics.
3.4 Metrics for Object-Oriented Projects- Concepts and Constructs- Design and Complexity Metrics- Lorenz Metrics and Rules of Thumb- CK OO Metrics Suite Productivity Metrics.

UNIT-4 MECHANICS OF MEASUREMENT
4.1 Software Assessments- Software Baselines- Software Benchmarks- What a Baseline analysis covers- Developing or Acquiring a baseline data collection Instrument
4.2 Administering the data collection questionnaire- Analysis and aggregation of the Baseline data.
4.3 Measuring and Analyzing Customer Satisfaction- Surveys
4.4 Data Collection- Sampling Methods- Analyzing Satisfaction Data.
4.5 Conducting In-Process Quality Assessments- Preparatio
4.6 Evaluation Quantitative Data- Qualitative Data- Evaluation Criteria- Overall Assessment.

UNIT-5 MEASUREMENTS, METRICS AND INDUSTRY LEADERSHIP
5.1 Measures and metrics of industry leaders
5.2 Measures, metrics and innovation – Measurements, metrics and outsource litigation
5.3 Measurements, metrics and behavioral changes
5.4 Commercial software measurement tools. Measuring Process Maturity- Process Capability
5.5 Value of Process Improvement- Process Adoption- Process Compliance.
5.6 Function Point Metrics to Measure Software Process Improvement- Software Process Improvement Sequences.

References Books:
1. Mark Lorenz, Jeff Kidd, "Object-Oriented Software Metrics", Prentice Hall, 2000.
2. Naresh Chauhan, "Software Testing Principles and Practices", Oxford University Press, 2010.
3. Ravindranath Pandian C, "Software Metrics a Guide to planning, Analysis, and Application", Auerbach, First Indian Reprint, 2011.