Course code: Course Title	Course Structure			Pre-Requisite
SE303: Software Quality and Metrics	L	T	P	NIL
	3	1	0	

Course Objective: To understand software quality concepts, models and learn basics of metrics, their types and applications.

S. NO	Course Outcomes (CO)
CO1	Understand basic concepts of software quality, the components of SQA, and SQA plan.
CO2	Analyze various software quality models and assess their impact on software quality.
CO3	Demonstrate internal and external product attributes using software metrics, including size, complexity, and modularity.
CO4	Assess software quality at different levels (product, process, and maintenance) using appropriate quality metrics and methodologies, including object-oriented metrics.
CO5	Demonstrate quality estimation tools and evaluate computer aided quality engineering technique for quality assurance.

S. NO	Contents	Contact Hours
UNIT 1	**Software Quality Assurance Framework:** What is Quality? Software Quality Assurance, Components of Software Quality Assurance, Software Quality Assurance Plan. Steps to develop and implement a Software Quality Assurance Plan.	7
UNIT 2	**Quality Standards:** ISO 9000 and Comparison ISO Standards, CMM, CMMI, PCMM, Malcolm Balridge, 3 Sigma, 6 Sigma, Software Quality Models.	8
UNIT 3	**Measurement in Software Engineering:** scope of software metrics, Basics of Measurement: Measuring External Product Attributes: Modeling Software Quality, Measuring aspects of quality, Framework for Software Measurement, Measuring Internal Product Attributes, Size and Structure: Aspects of Software Size, Length, Reuse, Functionality, Complexity, Types of Structural Measures, Modularity and information flow attributes.	8
UNIT 4	**Software Quality Assurance Metrics and Measurement:** Software Quality Metrics, Product Quality metrics, Process Quality Metrics, Metrics for Software Maintenance, Software Quality metrics methodology, Object-Oriented Metrics in quality.	8
UNIT 5	**Software Quality Estimation Tools:** Desirable features in software Quality estimation tools, Study of some existing Tools for quality estimation.	7
UNIT 6	**Computer Aided Quality Engineering (CAQE):** CAQE Concepts, Design Techniques for CAQE.	4
	TOTAL	42

REFERENCES

S.No.	Name of Books/Authors/Publishers	Year of Publication / Reprint
1	Yogesh Singh, Ruchika Malhotra, "Object-Oriented Software Engineering", PHI Learning Private Limited, 1st Edition.	2012

2	Norman Fenton, James Bieman, " Software Metrics", 3rd Edition, CRC Press.	**2020**
3	Alan C. Gillies, "Software Quality: Theory and Management, Cengage Learning, 2nd Edition.	**2003**
4	Stephen H. Kan, "Metrics and Models in Software Engineering", Addison-Wesley, 2nd Edition.	**2014**
5	Anirban Basu, "Software Quality Assurance, Testing and Metrics", PHI Learning Private Limited.	**2015**