



SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)

(Established under section 3 of the UGC Act 1956)

Re - accredited by NAAC with 'A' Grade

Founder: Prof. Dr. S. B. Mujumdar, M.Sc., Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

(Established under section 3 of the UGC Act 1956, by notification No.F.9-12/2001-U3 Government of India)

Sub Committee for Curriculum Development

Course Name: Software Quality Process and Assurance II

Course Code: T3301

(UG/PG): PG

Number of Credits: 3

Level: 4

Learning Objective(s): Knowledge and skills in programming languages are incomplete without a thorough understanding of principles of quality and their application in software development. It is absolutely necessary to understand the importance of aspects like quality factors, software metrics, requirements management, configuration management, documentation, etc, without which good quality software cannot be developed.

Pedagogy:

Lectures
Case Study
Assignments
Group Activity

Pre-learning:

Concepts of software engineering and SDLC
Skills in programming (minimum one programming language, developing user interface, data structures and queries)

Course Outline:

| Sr No. | Topic | Hours |
|--------|--|-------|
| 1 | Basics of Software Quality - Revisited | 2 |
| 2 | Total Quality Management | 2 |

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|----|--|-----------|
| 3 | Software Quality Metrics Objectives of quality measurement Classification of software quality metrics Process metrics Product metrics Setting up of metrics office Limitations of software quality metrics | 6 |
| 4 | Basic Seven QC tools, Tally chart, Histogram, Run Chart, Pareto chart, Cause and effect diagram, control chart, scatter plot | 6 |
| 5 | New Seven QC tools such as Affinity diagram, Interrelation diagram, Tree diagram, Matrix diagram, Arrow diagram, Process Decision Program Charts, Matrix data analysis | 6 |
| 6 | Service quality model for software industry, Gaps and service quality dimensions, Conducting customer satisfaction survey, software quality factors. | 4 |
| 7 | Continuous Process Improvement using statistical approach and various tools like 5Y, Poka-Yoke & Takt-Time. | 6 |
| 8 | Role of software project management in ensuring software quality, Quantitative Project management, CPM, PERT, Crashing, Resource leveling and smoothing, LP applications in project management | 6 |
| 9 | Statistical Process Control, Control charts for continuous data such as X bar-R charts, I- MR charts, X bar – MR charts for discrete data such as p chart, np chart, c chart , u chart. Capability studies with concepts of Cp & Cpk and Pp & Ppk. | 6 |
| 10 | Using Software Quality Management principals in SMAC | 2 |
| | Total | 45 |

Assignments:

Topics for assignments shall be given every week to groups of 2 or 3 students so as to cover all the students during the semester. The students shall submit the assignments and make presentation in the class within one week. This shall be part of internal evaluation.

Books Recommended:

1. Total Quality Management by Poornima Charantimath, Pearson Education
2. Total Quality Management by Dale Besterfield, Michna, Sacre, Pearson Education Asia
3. Quality Software Project Management by Robert Futrell, Donald Shafer & Linda Shafer, Pearson Education Asia
4. Software Quality by Nina Godbole, Narona Publishers
5. Managing the software process by Watts Humphrey, Addison Wesley
6. Introduction to Personal Software Process by Watts Humphrey, Addison Wesley
7. Introduction to Team Software Process by Watts Humphrey, Pearson Education Asia
8. Software Engineering: a practitioner's approach by Roger Pressman, McGraw Hill

9. An integrated approach to Software Engineering by Pankaj Jalote, Narosa Publishing House
10. Metrics and Models in Software Quality Engineering by Stephen Kan, Addison-Wesley
11. Software Metrics by C R Pandian, Quality Improvement Consultants
12. Software Metrics by Norman Fenton, Shari Lawrence Pfleeger, Thomson

Suggested Evaluation Methods:

Role play
 Group exercise
 Concept Presentation
 Written exam

Parallel/Similar courses the existing curriculum:

| S.No. | Name of the course | Institute where it was offered |
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|----------------|------------------|------------------|--|--|
| Name of Member | Arun Marathe | Lucky Narayani | | |
| Designation | Visiting Faculty | Visiting Faculty | | |
| Org. / Inst. | SICSR | | | |
| Signature | | | | |

Name of the Expert:

Signature:

Date:

