

Tulsiramji Gaikwad-Patil College of Engineering and Technology



Wardha Road, Nagpur- 441108 NAAC Accredited (A+ Grade)

An Autonomous Institute affiliated to RTMNU Nagpur

Fourth Year (Semester-IV) B. Tech. (CSE)

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| - | | ourse Code | e: BCS32421 (| Software | Engineering |) (Minor) |

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| - | | g Scheme | | Examina | tion Scheme | | | |
| | ectures | 3 Hrs/week | entire Characteristics | CT-1 | 15 Marks | | | |
| distribution of the latest designation of th | Tutorial | | un balani setassara pelitaria s | CT-2 | 15 Marks | | | |
| To | tal Credi | t 3 | FEEE 15 | CA | 10 Marks | | | |
| | | g I more or | and him Oly 1903 as thus their | ESE | 60 Marks | | | |
| | | | 5 1377 | Total | 100 Marks | | | |
| 1 | | 2 Junionalia | m plement shurmed make | Duration of ESE: 03Hrs 00Min. | | | | |
| Cour | se Object | ive: | of vious (MO22) management roots for | | | | | |
| 1. | To devel | evelop an understanding of software project planning, including estimation, scheduling, and resource | | | | | | |
| 2 | To enab | enable students to use project estimation models such as COCOMO and Function Point | | | | | | |
| 3 | | s effectively. | also and annies atmost and rick man | agement techniqu | es. | | | |
| 4 | To pro- | ride Imagel 1 | sks and apply structured risk man f Software Configuration Manage | ement (SCM) for | version control, ch | | | |
| 7 | manage | ment and project | tracking | ement (SCM) for | VOLUME TOTAL CAS | | | |
| 5 | To intro | ement, and project | ends such as DevOns CI/CD clo | ud-based software | engineering, and | | | |
| | applica | introduce emerging trends such as DevOps, CI/CD, cloud-based software engineering, and A blications in modern software development. | | | | | | |
| | | | Course Contents ature of Software: Software C | | | | | |
| | it II | Objectives, Scope, and Importance, Software Process Models: Waterfall, Incremental Spiral, V-Model, Agile Development, DevOps Overview, Software Life Cycle Phase Software Engineering Ethics, Case Study: Agile Methodology in Real Projects Requirement Engineering Process: Elicitation, Analysis, Specification, Validation, SR (Software Requirement Specification): Structure, Characteristics, and IEEE Standard Functional and Non-Functional Requirements, Use Case Modeling, UML Diagrams (Use Case, Class, Activity, Sequence), Requirement Traceability Matrix (RTM) Software Design Process: Conceptualization, Architectural and Detailed Design, Desig Concepts: Abstraction, Modularity, Coupling, Cohesion, Architectural Design Pattern Layered Architecture, Client-Server, MVC, User Interface Design: Principles and Prototyping, Software Metrics: LOC, Cyclomatic Complexity, Function Point | | | | | | |
| Uni | t III | | | | | | | |
| Uni | t IV F | Software Quality: Factors, Assurance, and Standards (ISO 9001, CMMI), Testin Fundamentals: Verification vs Validation, Levels of Testing: Unit, Integration, System Acceptance, Black Box and White Box Testing Techniques, Test Case Design, Test Automation Tools (Selenium, JUnit), Software Maintenance and Re-engineering | | | | | | |
| Uni | it V Pr | Project Planning, Estimation: (COCOMO, Function Point Analysis), Scheduling, Ris Management, and Resource Allocation, Software Configuration Management (SCM Project Tracking and Metrics, Emerging Trends: DevOps, Continuous Integration/Deployment (CI/CD), Cloud-based Software Engineering, AI in SE | | | | | | |
| Text l | Books | | | | | | | |
| T | | Pressman, R. S., & Maxim, B. R. — Software Engineering: A Practitioner's Approach, McGraw Hill. | | | | | | |
| T | 2 Pa | Pankaj Jalote — Software Engineering, Wiley Eastern. | | | | | | |
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| Reference | Books | | |
|------------|---|--|--|
| R1 | Carlo Ghezzi, Mehdi Jazayeri — Fundamentals of Software Engineering, Pearson. | | |
| R2 | James F. Peters & Witold Pedrycz - Soft Computing in Software Engineering, Wiley. | | |
| Useful Lin | ks | | |
| 1 | https://nptel.ac.in/courses/106105087 | | |
| 2 | https://www.computer.org/education/bodies-of-knowledge/software-engineering | | |

| Sr. no. | Course Outcomes | CL | Class Session |
|---------|---|----|------------------|
| 1 | Understand software project planning concepts, including estimation, scheduling, and resource allocation. | 2 | 9 |
| 2 | Apply project estimation models such as COCOMO and Function Point Analysis for accurate planning. | 2 | 9 |
| 3 | Identify project risks and implement structured risk management techniques. | 5 | 9 |
| 4 | Utilize Software Configuration Management (SCM) tools for version control, change management, and project tracking. | 6 | 9 |
| 5 | Evaluate emerging trends in software engineering, including DevOps, CI/CD, cloud-based development, and AI applications | 6 | 9 |

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Spiral, V-Model, Agile Development, DevOps Overview, Seinvent Life Over Phases,

Froject Tracking and Metrics Emorging Louids OcaCes Commissions

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| Chairman | Dean Academics | (Academics) | remanan | Date of Release Naktode | Version | willog |

applications in modern software development

Links

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of Computer Science & Engineer Vice Principal Principal TGPCET, Nagpur Stramii Gaikwad Patil College of (Academics) TGPCET, Nagpur Engineering & Technology LTGPCET, NAGPUR

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