ST. ALOYSIUS COLLEGE(AUTONOMOUS), JABALPUR

Reaccredited 'A+ 'Grade by NAAC(CGPA:3.68/4.00)
College with Potential for Excellence by UGC
DST-FIST Supported & STAR College Scheme by DBT

Faculty of Science

Bachelor of Science (B.Sc.) V Semester
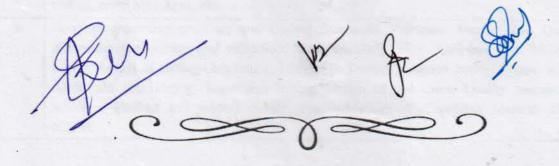### SUBJECT: Computer Science
Paper-DSE I
SOFTWARE ENGINEERING

Course Outcomes

CO. No.	Course Outcomes	Cognitive Level
CO 1	Learn and understand the Concepts of Software Engineering	U
CO 2	Learn and understand the Software Development Life Cycle	U, K, A
CO 3	To Understand and apply the analysis principles to software development.	U, A
CO 4	To apply the design & testing principles to software engineering.	U, A, K

Credit and Marking Scheme

	Credits	Marks		Total Marks
		Internal	External	
Theory	4	40	60	100
Total	4		100	

Evaluation Scheme

	Marks	
	Internal	External
Theory	3 Internal Exams of 20 Marks (During the Semester) (Best 2 will be taken)	1 External Exams (At the End of the Semester)

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Bachelor of Science (B.Sc.)
V Semester

Subject: Computer Science
Paper: DSE-I, Software Engineering System

Content of the Course

No. of Lectures (in hours per week): 3 Hrs. per week

Total No. of Lectures: 60 Hrs.

Maximum Marks: 100

Units	Topics	No. of Lectures
I	**Software**-What is software? Types of software, Characteristics of Software, Attributes of good software, **Software Engineering**-What is software engineering? Software engineering costs, what are the key challenges facing software engineering? Systems engineering & Software Engineering.	12
II	**Software Development Process Models**-What is a software process? What is a software process model? The waterfall model, Evolutionary development, Component-Based Software Engineering (CBSE). **Process Iteration**-Incremental delivery, Spiral development. **Rapid software development**- Agile methods, Extreme programming, Rapid application development (RAD), Software prototyping. **Computer Aided Software Engineering (CASE)**-Overview of CASE approach, Classification of CASE tools.	12
III	**Software Requirement Analysis and Specification**-System and software requirements, Types of software requirements- Functional and non-functional requirements, Domain requirements, User requirements. **Elicitation and analysis of requirements**- Overview of techniques, Viewpoints Interviewing, Scenarios, Use-cases, Process modeling with physical and logical DFDs, Entity Relationship Diagram, Data Dictionary, Requirement validation, Requirement specification, Software requirement Specification (SRS), Structure and contents of SRS, SRS format. **Software Size Estimation and Cost Estimation**-Software Estimation –Size Estimation, Function Point Analysis, LOC Estimation, COCOMO.	12
IV	**Software Design**-Design Concepts-Abstraction, Architecture, Patterns, Modularity, Cohesion Coupling, Information hiding, Functional independence, Refinement. Design of input and Control, Design of User Interface design- Elements of good design, Design issues. Features of modern GUI - Menus, Scroll bars, windows, Buttons, icons, panels, error Messages, etc.	12
V	Good programming practices and Coding Standards. **Software Testing and Quality Assurance**-Verification and validation, Techniques of testing-Black-box and White-box testing, **Levels of testing**-Unit testing, Integration Testing, Interface testing, System testing, Alpha and beta testing, Regression testing. Design of test cases, Quality management activities, Product and process quality, Standards-ISO9000, Capability Maturity Model (CMM).	12

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References

Text Books:

- Software Engineering, A practitioner's Approach- Roger S. Pressman, 6th edition, Mc Graw Hill International Edition.
- An Integrated Approach to Software Engineering by Pankaj Jalote.
- Software Engineering- Sommerville, 7th edition, Pearson Education.
- The unified modeling language user guide Grady Booch, James Rambaugh, Ivar Jacobson, Pearson Education.

Reference Books:

- Software Engineering, an Engineering approach- James F. Peters, Witold Pedrycz, John Wiley.
- Software Engineering principles and practice- Waman S Jawadekar, The McGraw-Hill Companies.
- Fundamentals of object-oriented design using UML Meiler page-Jones: Pearson Education.

Mrs S. J