

MANGALORE UNIVERSITY

DEPARTMENT OF M.Sc. COMPUTER SCIENCE

MASTER OF COMPUTER APPLICATIONS (MCA) PROGRAMME

MCAS406:SOFTWARE ARCHITECTURE		
Hours/Week: 4 Credits : 4		I.A. Marks: 30 Exams. Marks: 70
<u>Course Outcomes:</u> CO1: Students will cite knowledge of various approaches to document a software system (Remembering) CO2: Students will be able to describe functional and non-functional requirements (Understanding) CO3: Students will be able to use proper architecture for software (Applying) CO4: Students will be able to categorize different components used in the software system (Analyzing) CO5: Students will be able to choose from different architectural styles (Evaluating) CO6: Students will be able to improve quality of software by selecting proper architecture (Creating)		
	UNIT-I	12 Hours
Introduction: The Architecture Business Cycle: Where do architectures come from? Software processes and the architecture business cycle; What makes a “good” architecture? What software architecture is and what it is not; Other points of view; Architectural patterns, Reference models and reference architectures; Importance of software architecture; Architectural structures and views. Architectural Styles And Case Studies: Architectural styles; Pipes and filters; Data abstraction and object-oriented organization; Event-based, implicit invocation; Layered systems; Repositories; Interpreters; Process control; Other familiar architectures; Heterogeneous Architectures. Case Studies: Keyword in Context; Instrumentation software; Mobile robotics.		
	UNIT-II	12 Hours
Quality: Functionality and architecture; Architecture and quality attributes; System quality attributes; Quality attribute scenarios in practice; Other system quality attributes; Business qualities; Architecture qualities. Achieving Quality: Introducing tactics; Availability tactics; Modifiability tactics; Performance tactics; Security tactics; Testability tactics; Usability tactics.		

	UNIT-III	12 Hours
Architectural Patterns: Introduction, Distributed Systems: Broker; Interactive Systems: MVC, Presentation-Abstraction-Control. Adaptable Systems: Microkernel; Reflection. Some Design Patterns: Structural decomposition: Whole – Part; Organization of work: Master – Slave; Access Control: Proxy.		
	UNIT-IV	12 Hours
Designing And Documenting Software Architecture: Architecture in the life cycle; designing the architecture; Forming the team structure; Creating a skeletal system. Uses of architectural documentation; Views; choosing the relevant views; Documenting a view; Documentation across views.		
REFERENCE BOOKS 1. Len Bass, Paul Clements, Rick Kazman, Software Architecture in Practice, Pearson Education, 2003, 2nd Edition. 2. Frank Buschmann, RegineMeunier, Hans Rohnert, Peter Sommerlad, Michael Stal, Pattern-Oriented Software Architecture, A System of Patterns -Volume 1, John Wiley and Sons, 2006. 3. Mary Shaw and David Garlan, Software Architecture-Perspectives on an Emerging Discipline, Prentice-Hall of India, 2007. 4. E. Gamma, R. Helm, R. Johnson, J. Vlissides, Design Patterns- Elements of Reusable Object-Oriented Software, Addison- Wesley, 2003.		