



# MANGALORE UNIVERSITY

## DEPARTMENT OF M.Sc. COMPUTER SCIENCE

### MASTER OF COMPUTER APPLICATIONS (MCA) PROGRAMME

<b>MCAH202 :SYSTEM SOFTWARE</b>		
<b>Hours/Week: 4</b> <b>Credits : 4</b>		<b>I.A. Marks: 30</b> <b>Exams. Marks: 70</b>
<b>Course Outcomes:</b>		
CO1: To compare the machine dependent and machine independent assembler features CO2: To implement assembly language programs using MASM CO3: To implement the assembly code using MSDOS linker CO4: To analyze the functions and capabilities of debugging system CO5: To estimate the user interface criteria		
<b>UNIT-I</b>		<b>12 Hours</b>
<b>Introduction</b>		
System software and machine architecture The Simplified Instructional Computer (SIC) – Machine architecture - Data and instruction formats - addressing modes - instruction sets - I/O and programming.		
<b>Assemblers</b>		
Basic assembler functions - A simple SIC assembler – Assembler algorithm and data structures Machine dependent assembler features Instruction formats and addressing modes - Program relocation- Machine independent assembler features - Literals Symbol defining statements - Expressions –One pass assemblers and Multi pass assemblers - Implementation example - MASM assembler.		
<b>UNIT-II</b>		<b>12 Hours</b>
<b>Loaders and linkers</b>		
Basic loader functions - Design of an Absolute Loader – A Simple Bootstrap Loader -Machine dependent loader features - Relocation – Program Linking –Algorithm and Data Structures for Linking Loader -Machine-independent loader features -Automatic Library Search – Loader Options - Loader design options - Linkage Editors –Dynamic Linking – Bootstrap Loaders - Implementation example - MSDOS linker.		
<b>UNIT-III</b>		<b>12 Hours</b>
<b>Macro processors</b>		
Basic macro processor functions - Macro Definition and Expansion Macro Processor Algorithm and data structures, Machine independent macro processor features - Concatenation of Macro Parameters Generation of Unique Labels Conditional Macro Expansion – Keyword Macro Parameters-Macro within Macro-Implementation example - MASM Macro Processor – ANSI C Macro language.		

	<b>UNIT-IV</b>	<b>12 Hours</b>
<b>System software tools</b>		
Text editors - Overview of the Editing Process - User Interface – Editor Structure. -Interactive debugging systems - Debugging functions and capabilities –Relationship with other parts of the system – User-Interface Criteria.		
<b>REFERENCE BOOKS</b>		
<ol style="list-style-type: none"> <li>1. Leland L. Beck, “System Software – An Introduction to Systems Programming”, 3rd Edition, Pearson Education Asia, 2000</li> <li>2. D. M. Dhamdhare, “Systems Programming and Operating Systems”, Second Revised Edition, Tata McGraw-Hill, 1999.</li> <li>3. John J. Donovan “Systems Programming”, Tata McGraw-Hill Edition, 1972.</li> <li>4. John R. Levine, Linkers &amp; Loaders, Harcourt India Pvt. Ltd., Morgan Kaufmann Publishers, 2000.</li> </ol>		

