

R.V. College of Engineering - Bengaluru-560059



R.V.COLLEGE OF ENGINEERING
(Autonomous Institution Affiliated to VTU, Belagavi)
R.V. Vidyaniketan Post, Mysore Road
Bengaluru – 560 059



Scheme and Syllabus of III & IV
Semesters
(Autonomous System of 2018 Scheme)

Master of Technology (M.Tech)
in
INFORMATION TECHNOLOGY

DEPARTMENT OF
INFORMATION SCIENCE &
ENGINEERING

R V COLLEGE OF ENGINEERING, BENGALURU-560 059
 (Autonomous Institution Affiliated to VTU, Belagavi)
**DEPARTMENT OF INFORMATION SCIENCE &
 ENGINEERING**
M.Tech in INFORMATION TECHNOLOGY

THIRD SEMESTER CREDIT SCHEME							
Sl. No.	Course Code	Course Title	BoS	Credit Allocation			
				L	T	P	Total Credits
1	18MIT31	Internet Of Things & Cloud Computing	IS	4	1	0	5
2	18 MIT 3EX	Elective – E	IS	4	0	0	4
3	18 MIT 33	Internship	IS	0	0	5	5
4	18 MIT 34	Dissertation Phase I	IS	0	0	5	5
Total number of Credits				08	01	10	19
Total Number of Hours / Week							

FOURTH SEMESTER CREDIT SCHEME							
Sl. No.	Course Code	Course Title	BoS	Credit Allocation			
				L	T	P	Total Credits
1	18MIT41	Dissertation Phase II	IS	0	0	20	20
2	18MIT42	Technical Seminar	IS	0	0	2	2
Total number of Credits				0	0	22	22
Total Number of Hours / Week							

Semester: III		
IOT and Cloud Computing		
Course Code: 18MIT31		CIE Marks: 100
Credits: L:T:P:S: 4:1:0:0		SEE Marks: 100
Hours: 36L+12T		SEE Duration: 3Hrs
Course Learning Objectives:		
1	Interpret the fundamentals of Internet of Things.	
2	Analyze and design a small low cost embedded system using Arduino / Raspberry Pi or equivalent boards.	
3	Apply the concept of Internet of Things in the real world scenario.	
4	Demonstrate the application of cloud technologies to the world of IoT.	

Unit-I	
Fundamentals of IoT: Introduction-Characteristics-Physical design - Protocols – Logical design – Enabling technologies – IoT Levels – Domain Specific IoTs – IoTvs M2M	10 Hrs
Unit – II	
IoT Design Methodology: IoT systems management – IoT Design Methodology – Specifications Integration and Application Development.	09 Hrs
Unit -III	
IoT Physical Devices & Endpoints: What is an IoTDevice , Basic building blocks of an IoT Device Exemplary Device: Raspberry Pi- About the Board Linux on Raspberry Pi Raspberry Pi Interfaces -Serial SPI , I2C, Programming Raspberry Pi with Python , Controlling LED with Raspberry Pi, Interfacing an LED and Switch with Raspberry Pi , Interfacing a Light Sensor (LDR) with Raspberry Pi Other IoT Devices -BeagleBone Black.	10 Hrs
Unit –IV	
IoT Physical Servers & Cloud Offerings: Designing a RESTful Web API , Amazon Web Services for IoT-Amazon EC2 , Amazon AutoScaling, Amazon S3 , Amazon RDS , Amazon DynamoDB , Amazon Kinesis, Amazon SQS , Amazon EMR, SkyNetIoT Messaging Platform .	10Hrs
Unit –V	
Case Studies- IoT Design and Cloud incorporation: Introduction to IOT Design, Home Automation, Smart Lighting , Home Intrusion Detection, Cities , Smart Parking , Environment , Weather Monitoring System , Weather Reporting Bot , Air Pollution Monitoring , Forest Fire Detection, Agriculture, Smart Irrigation, Productivity Applications , IoT Printer.	09 Hrs

Course Outcomes: After completing the course, the students will be able to	
CO1:	Interpret the essentials of IOT
CO2:	Design a portable IoT using Arduino/ equivalent boards using relevant protocols
CO3:	Describe the concept of web services to access/control IoT devices
CO4:	Identify physical devices required to deploy an IoT application and connect to the cloud for real time scenarios.

Reference Books	
1	“Internet of Things – A hands-on approach”, ArshdeepBahga, Vijay Madiseti, Universities Press, 2015, ISBN: 978-81-7371-954-7.
2	Cloud Computing Principles and Paradigms, RajkumarBuyya, James Broberg, Andrzej Goscinski, Willey 2014.
3	“The Internet of Things in the Cloud: A Middleware Perspective”, Honbo Zhou, CRC Press 2013, ISBN : 978-1-4398-9299-2.
4	“Enabling Real-Time Mobile Cloud Computing through Emerging Technologies”, Soyata, Tolga, IGI Global, 2015, ISBN: 978-1-4666-8662-5.

Scheme of Continuous Internal Evaluation (CIE); Theory (100 Marks):

CIE is executed by way of quizzes (Q), tests (T) and assignments. A minimum of two quizzes are conducted and each quiz is evaluated for 10 marks adding up to 20 marks. Faculty may adopt innovative methods for conducting quizzes effectively. The three tests are conducted for 50 marks each and the sum of the marks scored from three tests is reduced to 50 marks. A minimum of two assignments are given with a combination of two components among 1) Solving innovative problems 2) Seminar/new developments in the related course 3) Laboratory/ field work 4) mini project.

Total CIE is 20+50+30 = 100 marks.

Scheme of Semester End Examination (SEE) for 100 marks:

The question paper will have FIVE questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit.

Semester: III		
Mobile Application Development (Elective)		
Course Code: 8MIT3E1/18MSE3E1		CIE Marks: 100
Credits: L:T:P:S: 4:0:0:0		SEE Marks: 100
Hours: 36L+12T		SEE Duration: 3Hrs
Course Learning Objectives:		
1	Comprehend the knowledge on essentials of mobile application development.	
2	Demonstrate the basic and advanced features of Android technology.	
3	Develop the skills in designing and building mobile applications using Android platform.	
4	Create debug and publish innovative mobile applications using Android platform	

Unit-I	
Essentials For Mobile Application Development Background about mobile technologies, Overview of Android, Android architecture, Android for mobile application development, Android development Framework – Android SDK, Emulators / Android AVD Android Project Framework , Setting up development environment, Running android app, Dalvik Virtual Machine & .apk file extension, android debug bridge. Fundamentals: Basic Building blocks - Activities, Services, Broadcast Receivers & Content providers, UI Components - Views & notifications, Components for communication -Intents & Intent Filters, Android API levels (versions & version names)	10 Hrs
Unit – II	
Android UI Architecture & UI Widgets Application context, Intents, Activity life cycle, Supporting different devices, multiple screen sizes, Fundamental Android UI design – Layouts, Drawable resources, UI widgets, Notification, Toasts, Menu, Dialogs, Lists & Adapters, Building dynamic UI with fragments.	09 Hrs
Unit -III	
Data Storage, Services & Content Providers Saving Data, Interacting with other Applications, Working with system permissions, Applications with content sharing, Shared Preferences, Preferences activity, Files access, SQLite database, Threads, Overview of services in Android, Implementing a Service, Service lifecycle, Inter Process Communication.	10 Hrs
Unit –IV	
Advanced Android Building apps with Multimedia, Building apps with Graphics & Animations, Building apps with Location Based Services and Google maps, Building apps with Connectivity & Cloud, Sensors, Bluetooth, Camera, Telephony Services.	10Hrs
Unit –V	
Testing, Debugging & Deployment of Android Application Role and use of Dalvik Debug Monitor Server (DDMS), adb tool, How to debug Android application, Use of Step Filters, Breakpoints, Suspend and Resume, How to use LogCat, Preparing for publishing – Signing & Versioning of apps, Using Google Play to distribute & Monetize, Best practices for security & privacy.	09 Hrs

Course Outcomes: After completing the course, the students will be able to	
CO1:	Comprehend the basic features of Android Platform and the Application Development Process. Acquire familiarity with basic building blocks of Android Application and its architecture.
CO2:	Apply and explore the basic framework, usage of SDK to build apps incorporating Android features in developing mobile applications.
CO3:	Demonstrate proficiency in coding on a mobile programming platform using advanced Android technologies like multimedia, involving the sensors and hardware features of the

	phone.
CO4:	Demonstrate proficiency in testing, debugging and deployment of Android applications.

Reference Books	
1	Android Programming, Phillips, Stewart, Hardy and Marsicano, 2nd edition, 2015; Big Nerd Ranch Guide; ISBN-13 978-0134171494
2	Professional Android 2 Application Development; Reto Meier; 1st Edition; 2012;Wiley India Pvt.ltd; ISBN-13: 9788126525898
3	Beginning Android 3; Mark Murphy; 1st Edition; 2011; A press Springer India Pvt Ltd. ; ISBN-13: 978-1-4302-3297-1
4	Android Programming – Pushing the limits by Hellman; Eric Hellman; Wiley; 2013; ISBN 13: 978-1118717370

Scheme of Continuous Internal Evaluation (CIE); Theory (100 Marks):

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Total CIE is 20+50+30 = 100 marks.

Scheme of Semester End Examination (SEE) for 100 marks:

The question paper will have FIVE questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit.

Semester: III		
Supply Chain Management		
Course Code: 8MIT3E2		CIE Marks: 100
Credits: L:T:P:S: 4:0:0:0		SEE Marks: 100
Hours: 36L+12T		SEE Duration: 3Hrs
Course Learning Objectives:		
1	Enable students understand the overview of Supply Chain Management	
2	Understand the basic concepts and key elements of Supply Chain Management.	
3	Gain the knowledge of Supply Chain Management performance.	
4	Design models in order to achieve efficiency.	
Unit-I		
Understanding the Supply Chain: What is Supply Chain? Historical perspective; Objective of Supply Chain; The Importance of supply Chain Decisions; Decisions Phases in a Supply Chain; Process Views of a Supply Chain; Examples of Supply Chains. Supply Chain Performance: Achieving Strategic Fit and Scope: Competitive and supply Chain Strategies; Achieving Strategic Fit; Expanding Strategic Scope; Obstacles to Achieving Strategic Fit. Supply Chain Drivers and Metrics: Impellers of Supply Chain; Drivers of Supply chain performance; A framework for structuring Drivers; Facilities; Inventory; Transportation; Information; Sourcing; Pricing; Obstacles to Achieving Strategic Fit.		10 Hrs
Unit – II		
Designing Distribution Networks and Applications to e-Business: The role of Distribution in Supply Chain; Factors influencing Distribution Network Design; Design Options for a Distribution Network; Indian Distribution Channels; Distribution Networks in Practice. Network Design in the Supply Chain: The Role of Network Design in the Supply Chain; Factors Influencing Network design decisions; A framework for Network design decisions; Models for Facility Location and Capacity Allocation; The role of information Technology in Network Design; Jaipur RugsNetworking Tradition with Modernity; Making Network Design Decisions in Practice; The impact of Uncertainty on Network Design.		09 Hrs
Unit -III		
Designing Global Supply Chain Networks: The impact of Globalization on Supply Chain Networks; The Off shoring Decision: Total Cost; Risk Management in Global Supply Chains; the Basic Aspects of Evaluating Global Supply Chain Design; Evaluating Network Design Decisions Using Decision Trees; Making Global Supply Chain Design Decisions Under uncertainty in Practice; Uncertainty in Global Supply Chain operations –An Indian Experience. Demand Forecasting in a Supply Chain: The Role of Demand Forecasting in the Supply Chain; Characteristics of forecasts; Components of Forecast and forecasting methods; Basic approach to demand forecasting; Time-series Forecasting Methods; Measures of Forecast Error; The Role of information Technology in Forecasting; Risk Management in Forecasting; Forecasting in Practice.		10 Hrs
Unit –IV		
Managing Economies of Scale in a Supply Chain: Cycle Inventory: The role of Cycle Inventory in a Supply Chain; Estimating Cycle inventory-Related Costs in Practice; Economies of scale to exploit fixed costs; Economies of scale to exploit Quantity Discounts; Short-Term Discounting: Trade Promotions; Managing Multiechelon Cycle Inventory; Cycle Inventory Optimization in Indian Distribution Channels. Transportation in a Supply Chain: The role of transformation in a supply chain; Modes of transportation and their Performance Characteristics; Design options for a Transportation Network; Trade-offs in		10Hrs

Transportation Design; Tailored Transportation; The Role of information Technology in Transportation; Risk Management in Transportation; Making Transportation Decisions in Practice; Transportation Network in Support of Indian Cooperative Endeavor-Milk Run for Milk.		
Unit –V		
Information Technology in Supply Chain: The role of information Technology in a supply chain; The Supply Chain IT Framework; Customer Relationship Management; Internal Supply Chain Management; Supplier Relationship Management; The Transaction Management Foundation; The Future of IT in the Supply Chain; Risk Management in It; Supply Chain IT in Practice; IT System Selection Processes-Indian Approach and Experiences. Coordination in a Supply Chain: Lack of supply chain coordination and the bullwhip effect; Effect of lack of coordination on performance; Obstacles to coordination in a supply chain; Managerial Levers to achieve coordination; Building strategic partnerships and trust within a supply chain; Continuous Replenishment and Vendor-Managed Inventories; Collaborative Planning, Forecasting, and Replenishment (CPFR); The Role of IT in Coordination; Achieving Coordination in Practice; coordination in Supply Chains-Multiechelon Models.		09 Hrs
Course Outcomes: After completing the course, the students will be able to		
CO1:	Explain the basic principles of supply chain management & apply these concepts to the simple IT applications.	
CO2:	Design the network using the entities involved in supply chain management.	
CO3:	Implement the various inventory models and also third party logistics using current technologies.	
CO4:	Evaluate the proposed economics to build a strategic network in supply chain management with the help of IT .	
Reference Books		
1	Supply Chain Management: Chopra &Meindl:4th Edition 2010: Pearson Education – Addison Wesley Longman,. ISBN-13: 978-0738206677	
2	:Designing and Managing the Supply Chain Concepts, Strategies and Case Studies -: David Simchi Levi, Philip Kaminsky& Edith SimchiLevi :3 rd Edition, 2008:Tata McGraw Hill,. ISBN-13: 978-1935182399	
3	Supply Chain Management Theories and Practices , R P Mohanty, S G Deshmukh, Bizmantra: 2005. ISBN-0957597118	
4	Logistics and Supply Chain Management , M Martin Christopher : 4 th Edition 2011 , Pearson Education.ISBN-13: 978-1493909827	

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Scheme of Semester End Examination (SEE) for 100 marks:

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Semester: III		
Intelligent Computing (Theory)		
(Common to AS, BT, CH, CV, IM, ME)		
Course Code: 8MIT3E3		CIE Marks: 100
Credits: L:T:P:S: 3:0:0:0		SEE Marks: 100
Hours: 36L+12T		SEE Duration: 3Hrs
Course Learning Objectives:		
1	Comprehend the concepts of Artificial Intelligence	
2	Learn the methods of solving problems using Artificial Intelligence.	
3	Identify appropriate AI methods to solve a given problem.	
4	Implement solutions to real world scenarios using AI techniques	

Unit-I	
Introduction To AI And Production Systems Introduction to AI-Problem formulation, Problem Definition -Production systems, Control strategies, Search strategies. Problem characteristics, Production system characteristics - Specialized production system- Problem solving methods – Problem graphs, Matching, Indexing and Heuristic functions -Hill Climbing-Depth first and Breath first, Constraints satisfaction – Related algorithms, Measure of performance and analysis of search algorithms.	07 Hrs
Unit – II	
Representation Of Knowledge Game playing – Knowledge representation, Knowledge representation using Predicate logic, Introduction to predicate calculus, Resolution, Use of predicate calculus, Knowledge representation using other logic-Structured representation of knowledge..	07 Hrs
Unit -III	
Knowledge Inference Knowledge representation -Production based system, Frame based system. Inference – Backward chaining, Forward chaining, Rule value approach, Fuzzy reasoning – Certainty factors, Bayesian Theory-Bayesian Network-Dempster – Shafer theory..	07 Hrs
Unit –IV	
Planning And Machine Learning Basic plan generation systems – Strips -Advanced plan generation systems – K strips - Strategic explanations -Why, Why not and how explanations. Learning- Machine learning, adaptive Learning.	08 Hrs
Unit –V	
Expert Systems Expert systems – Architecture of expert systems, Roles of expert systems – Knowledge Acquisition – Meta knowledge, Heuristics. Typical expert systems – MYCIN, DART, XOON, Expert systems shells.	07 Hrs

Course Outcomes: After completing the course, the students will be able to	
CO1:	Identify problems that are amenable to solution by AI methods.
CO2:	Formalise a given problem in the language/framework of different AI methods.
CO3:	Design and carry out an empirical evaluation of different algorithms on a problem formalisation, and state the conclusions that the evaluation supports.
CO4:	Implement basic AI algorithms.

Reference Books	
1	Kevin Night and Elaine Rich, Nair B., “Artificial Intelligence (SIE)”, McGraw Hill- 2008.
2	Dan W. Patterson, “Introduction to AI and ES”, Pearson Education, 2007.
3	Peter Jackson, “Introduction to Expert Systems”, 3rd Edition, Pearson Education, 2007.
4	Deepak Khemani “Artificial Intelligence”, Tata McGraw Hill Education 2013.

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