

COIMBATORE INSTITUTE OF TECHNOLOGY

(Government Aided Autonomous Institution Affiliated to Anna University, Chennai)

COIMBATORE - 641 014, TAMILNADU, INDIA



Department of Computing

M.Sc. (Decision and Computing Sciences)

Curriculum and Syllabi

Under Choice Based Credit System

(For the students admitted during 2017 - 2018 and onwards)

COIMBATORE INSTITUTE OF TECHNOLOGY, COIMBATORE

DEPARTMENT OF COMPUTING

M.Sc. DECISION AND COMPUTING SCIENCES

(5-Year Integrated Programme)

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO1 Expertise in Decision Making: Evolve as decision scientists with an in-depth knowledge of multiple business domains across all functional areas.

PEO2 Expertise in Software Development: Be competent to develop software products by strategic blending of computing technology and management expertise that facilitate informed decision making.

PEO3 Leadership and Lifelong Learning: Demonstrate leadership qualities through acquisition of intrapreneurship and entrepreneurship traits and engage in active contribution to society through innovative solutions of global impact.

PROGRAMME OUTCOMES

- PO1** Apply mathematical and statistical modelling for analysis of business problems that aid management to make data driven decisions.
- PO2** Perform quantitative and qualitative data analytics in functional areas of business like marketing, human resource management, finance, etc.
- PO3** Visualize and infer meaningful insights to facilitate strategic and operational decisions.
- PO4** Apply foundations of business management blended with computing science to address issues in decision-making.
- PO5** Develop smart enterprise applications applying software engineering principles and business domain knowledge.
- PO6** Design and develop software products and services for strategic decision making, business analytics and intelligence.
- PO7** Align and utilize information technology infrastructure, analytics and decision-making skills effectively to realize the organization's goals.
- PO8** Contribute and collaborate effectively in any role in multi-disciplinary teams.
- PO9** Recognize professional, social and ethical values imbibed in the business and technical environments.
- PO10** Engage in lifelong learning to be empowered with management expertise and by structured adoption of technological advancements.
- PO11** Aspire to be an intrapreneur/entrepreneur by transforming the idea into successful business venture with due consideration to financial, technical, and management aspects.

Coimbatore Institute of Technology, Coimbatore - 14.
(Government Aided Autonomous Institution Affiliated to Anna University and Accredited by NBA)

Department of Computing
M. Sc. DECISION AND COMPUTING SCIENCES
Five year Integrated Programme
Curriculum from the Academic Year 2017 – 2018 onwards

Semester I

Course Code	Course Name	L	T	P	C	CAT
	THEORY					
16MDS11	Technical English	3	0	0	3	HS
17MDC12	Applied Algebra and Calculus	3	2	0	4	BS
17MDC13	Basic Statistical Methods	3	2	0	4	BS
17MDC14	Human Behavior	3	0	0	3	PC
17MDC15	Programming in C	3	0	0	3	PC
	PRACTICALS					
17MDC16	Computing Lab I(Algebra, Calculus and Statistics in SciLab and Excel)	0	0	4	2	PC
17MDC17	Programming Lab in C	0	0	4	2	PC
17MDC18	English Language Lab	0	0	2	1	EEC / HS
	Total Credits				22	

Semester II

Course Code	Course Name	L	T	P	C	CAT
	THEORY					
	Language Elective	2	2	0	3	HS
17MDC21	Probability and Applications	3	2	0	4	BS
17MDC22	Principles of Management	4	0	0	4	PC
17MDC23	Web Technology	3	0	0	3	PC
17MDC24	Data Structures and Algorithms	3	0	0	3	PC
	PRACTICALS					
17MDC25	Computing Lab II(Probability in Excel and SciLab)	0	0	4	2	PC
17MDC26	Web Technology Lab	0	0	4	2	PC
17MDC27	Data Structures Lab using Python	0	0	4	2	PC
	Total Credits				23	

Semester III

Course Code	Course Name	L	T	P	C	CAT
	THEORY					
17MDC31	Applied Statistics for Business Decisions	3	2	0	4	BS
17MDC32	Financial Analysis and Reporting	4	0	0	4	PC
17MDC33	Computer Systems	3	0	0	3	PC
17MDC34	Database Management Systems	3	0	0	3	PC
17MDC35	Object Oriented Programming	3	0	0	3	PC
	PRACTICALS					
17MDC36	Business Statistics Lab using R	0	0	4	2	PC
17MDC37	Business Database Design Lab	0	0	4	2	PC
17MDC38	Object Oriented Programming Lab using Java	0	0	4	2	PC
	Total Credits				23	

Semester IV

Course Code	Course Name	L	T	P	C	CAT
	THEORY					
17MDC41	Predictive Analytics	3	0	0	3	BS
17MDC42	Operations Research for Business	3	2	0	4	BS
17MDC43	Corporate Finance	3	0	0	3	PC
17MDC44	Production and Operations Management	3	0	0	3	PC
17MDC45	Computer Networks	3	0	0	3	PC
	PRACTICALS					
17MDC46	Predictive Analytics Lab	0	0	4	2	PC
17MDC47	Business Process Optimization Lab (OR & POM)	0	0	4	2	PC
17MDC48	Financial Analysis Lab (Spreadsheets and Python)	0	0	4	2	PC
17MDC49	Managerial Communication Skills*	0	0	0	0	EEC
	Total Credits				22	

Semester V

Course Code	Course Name	L	T	P	C	CAT
17MDC51	Organisational Behavior	3	0	0	3	PC
17MDC52	Digital Marketing	3	0	0	3	PC
17MDC53	Software Engineering	3	0	0	3	PC
17MDC54	Enterprise Resource Planning	3	0	0	3	PC
	Elective I	3	0	0	3	PE
	PRACTICALS					
17MDC55	Human Resources System Development Lab(Python,R studio)	0	0	4	2	PC
17MDC56	Digital Marketing Design Lab (R Studio, Visualisation, Graphical)	0	0	4	2	PC
17MDC57	Enterprise Application Development Lab (J2EE)	0	0	4	2	PC
17MDC58	Personality Development*	0	0	0	0	EEC
	Total Credits				21	

Semester VI

Course Code	Course Name	L	T	P	C	CAT
	THEORY					
17MDC61	Economic Foundations of Business	3	0	0	3	PC
17MDC62	Computational Intelligence	3	0	0	3	PC
17MDC63	Mobile and Cloud Computing	3	0	0	3	PC
17MDC64	Data Warehousing and Mining	3	0	0	3	PC
	Elective- II	3	0	0	3	PE
	PRACTICALS					
17MDC65	Mobile and Cloud Application Development Lab	0	0	4	2	PC
17MDC66	Data Mining Lab	0	0	4	2	PC
	Elective Lab I	0	0	4	2	EEC
	Total Credits				21	

Semester VII

Course Code	Course Name	L	T	P	C	CAT
17MDC71	Project Work and Viva Voce-I	0	0	0	18	EEC
	Total Credits				18	

Semester VIII

Course Code	Course Name	L	T	P	C	CAT
	THEORY					
17MDC81	Modeling and Simulation	3	0	0	3	PC
17MDC82	Decision Support Systems	3	0	0	3	PC
17MDC83	Game Theory and Decision Analysis	3	0	0	3	PC
	Elective – III	3	0	0	3	PE
	Elective – IV	3	0	0	3	PE
	PRACTICALS					
17MDC84	Business Intelligence Lab	0	0	4	2	PC
17MDC85	Decision Analysis Lab (Game Theory)	0	0	4	2	PC
17MDC86	Elective Lab II	0	0	4	2	EEC
17MDC87	Entrepreneurship Development*	0	0	0	0	EEC
	Total Credits				21	

Semester IX

Course Code	Course Name	L	T	P	C	CAT
	THEORY					
17MDC91	Principles of Information Security	3	0	0	3	PC
17MDC92	Project Management	3	0	0	3	PC
17MDC93	Human Computer Interface and Interaction	3	0	0	3	PC
	Elective – V	3	0	0	3	PE
	Elective – VI	3	0	0	3	PE
	PRACTICALS					
17MDC94	Human Computer Interface and Interaction Lab	0	0	4	2	PC
17MDC95	Minor Project - Decision Tool Development	0	0	8	4	EEC
17MDC96	Business Ethics *	0	0	0	0	EEC
	Total Credits				21	

Semester X

Course Code	Course Name	L	T	P	C	CAT
17MDC101	Project Work and Viva Voce- II	0	0	0	18	EEC
	Total Credits				18	
	Grand Total of Credits				210	

Professional Electives- Theory Subjects						
Course Code	Course Name	L	T	P	C	CAT
Management Stream						
Finance						
17MDCE01	Security Analysis and Portfolio Management	3	0	0	3	PE
17MDCE02	Equity Valuation	3	0	0	3	PE
17MDCE03	Derivatives and Risk Management	3	0	0	3	PE
17MDCE04	Credit Risk Analytics and Management	3	0	0	3	PE
Marketing						
17MDCE11	Consumer Behavior	3	0	0	3	PE
17MDCE12	Services Marketing	3	0	0	3	PE
17MDCE13	Customer Relationship Management	3		0	3	PE
17MDCE14	Brand Management	3	0	0	3	PE
Human Resources						
17MDCE21	Strategic Human Resource Management	3	0	0	3	PE
17MDCE22	Organizational Development	3	0	0	3	PE
17MDCE23	Performance Management	3	0	0	3	PE
17MDCE24	Compensation Management	3	0	0	3	PE
Operations & Logistics						
17MDCE31	Total Quality Management	3	0	0	3	PE
17MDCE32	Logistics Strategy and Planning	3	0	0	3	PE
17MDCE33	Supply Chain Management	3	0	0	3	PE
17MDCE34	Warehouse and Distribution Management	3	0	0	3	PE

General Management						
17MDCE41	Business Environment	3	0	0	3	PE
17MDCE42	Legal Aspects of Business	3	0	0	3	PE
17MDCE43	Information Technology for Managers	3	0	0	3	PE
17MDCE44	Direct and Indirect Tax	3	0	0	3	PE
17MDCE45	Technology and Innovation Management	3	0	0	3	PE
17MDCE46	Business Process Management	3	0	0	3	PE

Computer Science Stream						
Data Analytics						
16MSSE34	Machine Learning	3	0	0	3	PE
16MDS53	Big Data Architecture	3	0	0	3	PE
16MDSE2	Web Mining	3	0	0	3	PE
16MDS83	Data Visualization	3	0	0	3	PE
16MDSE6	Information Security Analytics	3	0	0	3	PE
16MDSE20	Data Centric Computing	3	0	0	3	PE
16MDSE8	Bio-Informatics	3	0	0	3	PE
16MDSE3	Social Network Analysis	3	0	0	3	PE
16MDSE4	Geographical Information Analysis	3	0	0	3	PE
16MDSE11	Econometric Analysis	3	0	0	3	PE
16MDS92	Deep Learning	3	0	0	3	PE

Distributed and Network Systems						
15MSSE19	SOA and Web Services	3	0	0	3	PE
15MSSE35	BlockChain Technology	3	0	0	3	PE
15MSSE17	Internetworking Protocols	3	0	0	3	PE
17MDCE51	Distributed Systems	3	0	0	3	PE
Software Systems						
15MSSE09	Graphics and Multimedia Technologies	3	0	0	3	PE
15MSS63	Software Testing and Quality Assurance	3	0	0	3	PE
16MDSE7	Image Processing	3	0	0	3	PE
15MSSE06	Software Requirements Engineering	3	0	0	3	PE
15MSSE07	Software Reliability	3	0	0	3	PE
15MSSE08	Open Source Software Development	3	0	0	3	PE
16MDSE25	Software Architecture and Design Patterns	3	0	0	3	PE
15MSSE24	Real Time Systems	3	0	0	3	PE
15MSSE25	Analysis and Design of Real Time Systems	3	0	0	3	PE
15MSSE27	Computer vision	3	0	0	3	PE
15MSSE14	Design Thinking	3	0	0	3	PE
15MSSE36	Advanced Web Technology	3	0	0	3	PE

Professional Electives- Laboratory Subjects						
17MDCEL1	Minor Project in Business/Data Analytics	0	0	4	2	PE
17MDCEL2	Modeling and Simulation Lab	0	0	4	2	PE
15MSSL08	Image Processing Lab	0	0	4	2	PE
15MSSL03	Graphics and Multimedia Lab	0	0	4	2	PE
15MSSL13	Advanced Web Technology Lab	0	0	4	2	PE
16MDS55	Machine Learning Lab	0	0	4	2	PE
16MDS56	Big Data Modeling Lab	0	0	4	2	PE
16MDS85	Data Visualization Lab	0	0	4	2	PE
16MDS94	Deep Learning Lab	0	0	4	2	PE
15MSS65	Software Testing Lab	0	0	4	2	PE
16MDSEL2	Web Mining Lab	0	0	4	2	PE

Subject code	Subject Name	L	T	P	C	CAT
16MDSLE01	Professional English	3	0	0	3	HS
16FY22F	Basic French	3	0	0	3	HS
16FY22G	Basic German	3	0	0	3	HS

* Pass is required

FC - Foundation Course, PC - Professional Core, PE - Professional Elective, EEC - Employability Enhancement Course.

NOTE:

- Equal weightage for Decision Science and Computer Science is given in the design of the curriculum, which complement each other to address the industry needs.
- Students of this Programme can specialize in Decision Science and/or Computing Science by choosing interested elective courses given under different streams.