Program Code & Name:**P164-NN1::MCA**

System: **Semester**   Year of Admission: **2021**   Duration in Years: **2**

S.No	Course Code	Course Title	L	T	P	Credit	Contact Hours	Type	Nature
		Term 1							P164-NN1-1-2021
1		PATHWAY ELECTIVE 1	2	2	0	4.0	4.0	PW	LCS
2	CAP275	DATA COMMUNICATION AND NETWORKING	3	0	0	3.0	3.0	CR	DSC
3	CAP276	DATA COMMUNICATION AND NETWORKING-LABORATORY	0	0	2	1.0	2.0	CR	DSC
4	CAP437	SOFTWARE ENGINEERING PRACTICES	4	0	0	4.0	4.0	CR	DSC
5	CAP444	OBJECT ORIENTED PROGRAMMING USING C++	3	0	0	3.0	3.0	CR	DSC
6	CAP445	OBJECT ORIENTED PROGRAMMING USING C++ -LABORATORY	0	0	2	1.0	2.0	CR	DSC
7	CAP446	DATA WAREHOUSING AND DATA MINING	3	0	0	3.0	3.0	CR	DSC
8	CAP447	DATA WAREHOUSING AND DATA MINING-LABORATORY	0	0	2	1.0	2.0	CR	DSC
9	CAP448	LINUX AND SHELL SCRIPTING	3	0	0	3.0	3.0	CR	DSC
10	CAP454	LINUX AND SHELL SCRIPTING - LAB	0	0	2	1.0	2.0	CR	DSC
TOTAL			18.0	2.0	8.0	24.0	28.0		

PATHWAY ELECTIVE 1 BASKET

S. No	Course Code	Course Title	L	T	P	Credit	Contact Hours	Elective Area
1	PEA515	ANALYTICAL SKILLS-I	2	2	0	4.0	4.0	GOVERNMENT JOBS
2	PEA515	ANALYTICAL SKILLS-I	2	2	0	4.0	4.0	HIGHER STUDIES
3	PEA515	ANALYTICAL SKILLS-I	2	2	0	4.0	4.0	PRODUCT DEVELOPMENT
4	PEA515	ANALYTICAL SKILLS-I	2	2	0	4.0	4.0	SERVICE MANAGEMENT

S.No	Course Code	Course Title	L	T	P	Credit	Contact Hours	Type	Nature
		Term 2							P164-NN1-2-2021
1		PATHWAY ELECTIVE 2	2	2	0	4.0	4.0	PW	DSE
2	CAP456	INTRODUCTION TO BIG DATA	3	0	0	3.0	3.0	CR	DSC
3	CAP457	INTRODUCTION TO BIG DATA - LABORATORY	0	0	2	1.0	2.0	CR	DSC
4	CAP470	CLOUD COMPUTING	3	0	0	3.0	3.0	CR	DSC
5	CAP471	CLOUD COMPUTING-LABORATORY	0	0	2	1.0	2.0	CR	DSC
6	CAP615	PROGRAMMING IN JAVA	3	0	0	3.0	3.0	CR	DSC
7	CAP680	PROGRAMMING IN JAVA-LABORATORY	0	0	2	1.0	2.0	CR	DSC
8	CAP756	WEB TECHNOLOGIES	3	0	0	3.0	3.0	CR	DSC
9	CAP757	WEB TECHNOLOGIES-LABORATORY	0	0	2	1.0	2.0	CR	DSC
10	CAP770	ADVANCED DATA STRUCTURES	3	0	2	4.0	5.0	CR	DSC
11	MTH403	MATHEMATICAL FOUNDATION FOR COMPUTER SCIENCE	3	1	0	4.0	4.0	CR	BSC
TOTAL			20.0	3.0	10.0	28.0	33.0		

PATHWAY ELECTIVE 2 BASKET

S. No	Course Code	Course Title	L	T	P	Credit	Contact Hours	Elective Area
1	PEA516	ANALYTICAL SKILLS-II	2	2	0	4.0	4.0	GOVERNMENT JOBS
2	PEA516	ANALYTICAL SKILLS-II	2	2	0	4.0	4.0	HIGHER STUDIES
3	PEA516	ANALYTICAL SKILLS-II	2	2	0	4.0	4.0	PRODUCT DEVELOPMENT
4	PEA516	ANALYTICAL SKILLS-II	2	2	0	4.0	4.0	SERVICE MANAGEMENT

S.No	Course Code	Course Title	L	T	P	Credit	Contact Hours	Type	Nature
Term 3 (For those students who opt for course work)								P164-NN1-3-2021	
1		GENERIC ELECTIVE 1	3	0	2	4.0	5.0	GE	OEM
2		GENERIC ELECTIVE 2	3	0	2	4.0	5.0	GE	OEM
3		PATHWAY ELECTIVE 3	3	0	2	4.0	5.0	PW	PWE
4		SPECIALIZATION ELECTIVE 1	0	0	2	1.0	2.0	SP	DSE
5		SPECIALIZATION ELECTIVE 2	0	0	2	1.0	2.0	SP	DSE
6	CAP735	SEMINAR ON SUMMER TRAINING	0	0	8	4.0	8.0	CR3A	SMN
7	CAP776	PROGRAMMING IN PYTHON	3	0	2	4.0	5.0	CR	DSC
TOTAL			12.0	0.0	20.0	22.0	32.0		

GENERIC ELECTIVE 1 BASKET

S. No	Course Code	Course Title	L	T	P	Credit	Contact Hours	Elective Area
1	FIN501	CORPORATE FINANCE	3	1	0	4.0	4.0	FINANCE
2	ECE661	ARDUINO	3	0	2	4.0	5.0	INTERNET OF THINGS
3	MGN502	MANAGEMENT AND ORGANISATIONAL BEHAVIOUR DYNAMICS	4	0	0	4.0	4.0	MANAGEMENT
4	MKT501	MARKETING MANAGEMENT	4	0	0	4.0	4.0	MARKETING

GENERIC ELECTIVE 2 BASKET

S. No	Course Code	Course Title	L	T	P	Credit	Contact Hours	Elective Area
1	FIN623	INTERNATIONAL FINANCIAL MANAGEMENT	4	0	0	4.0	4.0	FINANCE
2	ECE662	IOT WITH NODEMCU	3	0	2	4.0	5.0	INTERNET OF THINGS
3	MKT501	MARKETING MANAGEMENT	4	0	0	4.0	4.0	MANAGEMENT
4	MKT613	CONSUMER BEHAVIOR	3	1	0	4.0	4.0	MARKETING

PATHWAY ELECTIVE 3 BASKET

S. No	Course Code	Course Title	L	T	P	Credit	Contact Hours	Elective Area
1	CAP778	COMBINATORIAL STUDIES-I	3	1	0	4.0	4.0	GOVERNMENT JOBS
2	CAP415	INTRODUCTION TO IOT AND ARDUNIO	3	0	2	4.0	5.0	HIGHER STUDIES
3	PES509	SOFT SKILLS	2	2	0	4.0	4.0	PRODUCT DEVELOPMENT
4	PES509	SOFT SKILLS	2	2	0	4.0	4.0	SERVICE MANAGEMENT

SPECIALIZATION ELECTIVE 1 BASKET

S. No	Course Code	Course Title	L	T	P	Credit	Contact Hours	Elective Area
1	CAP660	NETWORK ADMINISTRATION	3	0	2	4.0	5.0	CYBER SECURITY
2	CAP747	PROBABILITY AND STATISTICS	3	0	0	3.0	3.0	DATA SCIENCE
3	CAP748	PROBABILITY AND STATISTICS-LABORATORY	0	0	2	1.0	2.0	DATA SCIENCE
4	CAP774	STYLING AND SCRIPTING FOR WEB DEVELOPMENT	3	0	2	4.0	5.0	WEB DEVELOPMENT

SPECIALIZATION ELECTIVE 2 BASKET

S. No	Course Code	Course Title	L	T	P	Credit	Contact Hours	Elective Area
1	CAP790	SECURING NETWORK AND IT INFRASTRUCTURE	3	0	0	3.0	3.0	CYBER SECURITY
2	CAP791	SECURING NETWORK AND IT INFRASTRUCTURE-LABORATORY	0	0	2	1.0	2.0	CYBER SECURITY
3	CAP787	DATA SCIENCE TOOLBOX	3	0	0	3.0	3.0	DATA SCIENCE
4	CAP788	DATA SCIENCE TOOLBOX-LABORATORY	0	0	2	1.0	2.0	DATA SCIENCE
5	CAP777	WEB DEVELOPMENT USING PHP	3	0	2	4.0	5.0	WEB DEVELOPMENT

Term 3 (For those students who opt for industrial internship)									P164-NN1A-3-2021
S.No	Course Code	Course Title	L	T	P	Credit	Contact Hours	Type	Nature
1	CAP735	SEMINAR ON SUMMER TRAINING	0	0	8	4.0	8.0	CR3A	SMN

			L	T	P	Credit	Contact Hours	Type	Nature
2	CAP776	PROGRAMMING IN PYTHON	3	0	2	4.0	5.0	CR	DSC
3	CAP831	INDUSTRY CO-OP PROJECT	0	0	32	16.0	32.0	CR3A	TCF
TOTAL			3.0	0.0	42.0	24.0	45.0		

Term 4 (For those students who opt for course work)								P164-NN1-4-2021	
S.No	**Course Code**	**Course Title**	**L**	**T**	**P**	**Credit**	**Contact Hours**	**Type**	**Nature**
1		GENERIC ELECTIVE 3	3	0	2	4.0	5.0	GE	OEM
2		GENERIC ELECTIVE 4	3	0	2	4.0	5.0	GE	OEM
3		PATHWAY ELECTIVE 4	0	0	2	1.0	2.0	PW	PWE
4		SPECIALIZATION ELECTIVE 3	0	0	2	1.0	2.0	SP	DSE
5		SPECIALIZATION ELECTIVE 4	0	0	2	1.0	2.0	SP	DSE
6	CAP769	PROJECT WORK	0	0	8	4.0	8.0	CR3A	PRJ
TOTAL			6.0	0.0	18.0	15.0	24.0		

GENERIC ELECTIVE 3 BASKET

S. No	Course Code	Course Title	L	T	P	Credit	Contact Hours	Elective Area
1	FIN656	INTERNATIONAL BANKING AND FOREX MANAGEMENT	4	0	0	4.0	4.0	FINANCE
2	ECE663	EMBEDDED SYSTEMS WITH PYTHON	3	0	2	4.0	5.0	INTERNET OF THINGS
3	FIN501	CORPORATE FINANCE	3	1	0	4.0	4.0	MANAGEMENT
4	MKT512	DIGITAL AND SOCIAL MEDIA MARKETING	3	1	0	4.0	4.0	MARKETING

GENERIC ELECTIVE 4 BASKET

S. No	Course Code	Course Title	L	T	P	Credit	Contact Hours	Elective Area
1	FIN611	INVESTMENT ANALYSIS AND PORTFOLIO MANAGEMENT	3	1	0	4.0	4.0	FINANCE
2	ECE664	RASPBERRY PI	3	0	2	4.0	5.0	INTERNET OF THINGS
3	OPR602	PRODUCTION AND OPERATIONS MANAGEMENT	3	1	0	4.0	4.0	MANAGEMENT
4	MKT687	CUSTOMER RELATIONSHIP MANAGEMENT	3	1	0	4.0	4.0	MARKETING

PATHWAY ELECTIVE 4 BASKET

S. No	Course Code	Course Title	L	T	P	Credit	Contact Hours	Elective Area
1	CAP779	COMBINATORIAL STUDIES-II	3	1	0	4.0	4.0	GOVERNMENT JOBS
2	CAP416	WORKSHOP ON IOT	2	0	4	4.0	6.0	HIGHER STUDIES
3	CAP538	ALGORITHM DESIGN AND ANALYSIS	3	0	0	3.0	3.0	PRODUCT DEVELOPMENT
4	CAP539	ALGORITHM DESIGN AND ANALYSIS - LABORATORY	0	0	2	1.0	2.0	PRODUCT DEVELOPMENT
5	CAP771	SOFTWARE TESTING AND QUALITY ASSURANCE	3	0	2	4.0	5.0	SERVICE MANAGEMENT

SPECIALIZATION ELECTIVE 3 BASKET

S. No	Course Code	Course Title	L	T	P	Credit	Contact Hours	Elective Area
1	CAP794	VULNERABILITY ASSESSMENT AND PENETRATION TESTING	3	0	0	3.0	3.0	CYBER SECURITY
2	CAP795	VULNERABILITY ASSESSMENT AND PENETRATION TESTING-LABORATORY	0	0	2	1.0	2.0	CYBER SECURITY
3	CAP792	ADVANCE DATA VISUALIZATION	3	0	0	3.0	3.0	DATA SCIENCE
4	CAP793	ADVANCE DATA VISUALIZATION-LABORATORY	0	0	2	1.0	2.0	DATA SCIENCE
5	CAP782	RESPONSIVE WEB DESIGN	3	0	2	4.0	5.0	WEB DEVELOPMENT

SPECIALIZATION ELECTIVE 4 BASKET

S. No	Course Code	Course Title	L	T	P	Credit	Contact Hours	Elective Area
1	CAP796	CYBER FORENSICS	3	0	0	3.0	3.0	CYBER SECURITY
2	CAP797	CYBER FORENSICS-LABORATORY	0	0	2	1.0	2.0	CYBER SECURITY
3	CAP781	MACHINE LEARNING	3	0	2	4.0	5.0	DATA SCIENCE
4	CAP785	WEB PERFORMANCE OPTIMIZATION	3	0	2	4.0	5.0	WEB DEVELOPMENT

S.No	Course Code	Course Title	L	T	P	Credit	Contact Hours	Type	Nature
		Term 4 (For those students who opt for industrial internship)							
1	CAP841	INDUSTRIAL TRAINING	0	0	32	16.0	32.0	CR	DSC
TOTAL			0.0	0.0	32.0	16.0	32.0		

Important Points

• The calculation of Total Contact hours in Lecture (L), Tutorial (T) and Practical (P) for Elective
Course slots reflecting the minimum L, T and P of a course in Elective Basket.
• Every Course has a 'Type' and 'Nature' which defines its character.

Program Structure

Program Code: P164-NN1::MCA
Program Batch: 2021

Category	Category Description	Sub Category	Number of Theory (T)/Practical (P) BYOD (B)	Total Credits
A1	Language & Communication Skills (LCS)	*Language & Communication Skills(LCS)*	*1T*	4
B1	Basic Science(BSC)	*Maths*	*1T*	4
C1	Discipline Core(DSC)	*Discipline Core(DSC)*	*11T 8P 2B*	44
C2	Discipline Elective(DSE)	*Discipline Elective(DSE)*	*1T 4P*	8
D	Open Minor/Open Elective(OEM)	*Open Minor/Open Elective(OEM)*	*4T 4B*	16
E	Project (including Capstone Project and Research Project)(PRJ)	*Project (including Capstone Project and Research Project)(PRJ)*	*1P*	4
F	Pathway Elective(PWE)	*Pathway Elective(PWE)*	*1T 1P 1B*	5
	Seminar(SMN)	*Seminar(SMN)*	*1P*	4
		Total	*19T 15P 7B*	89

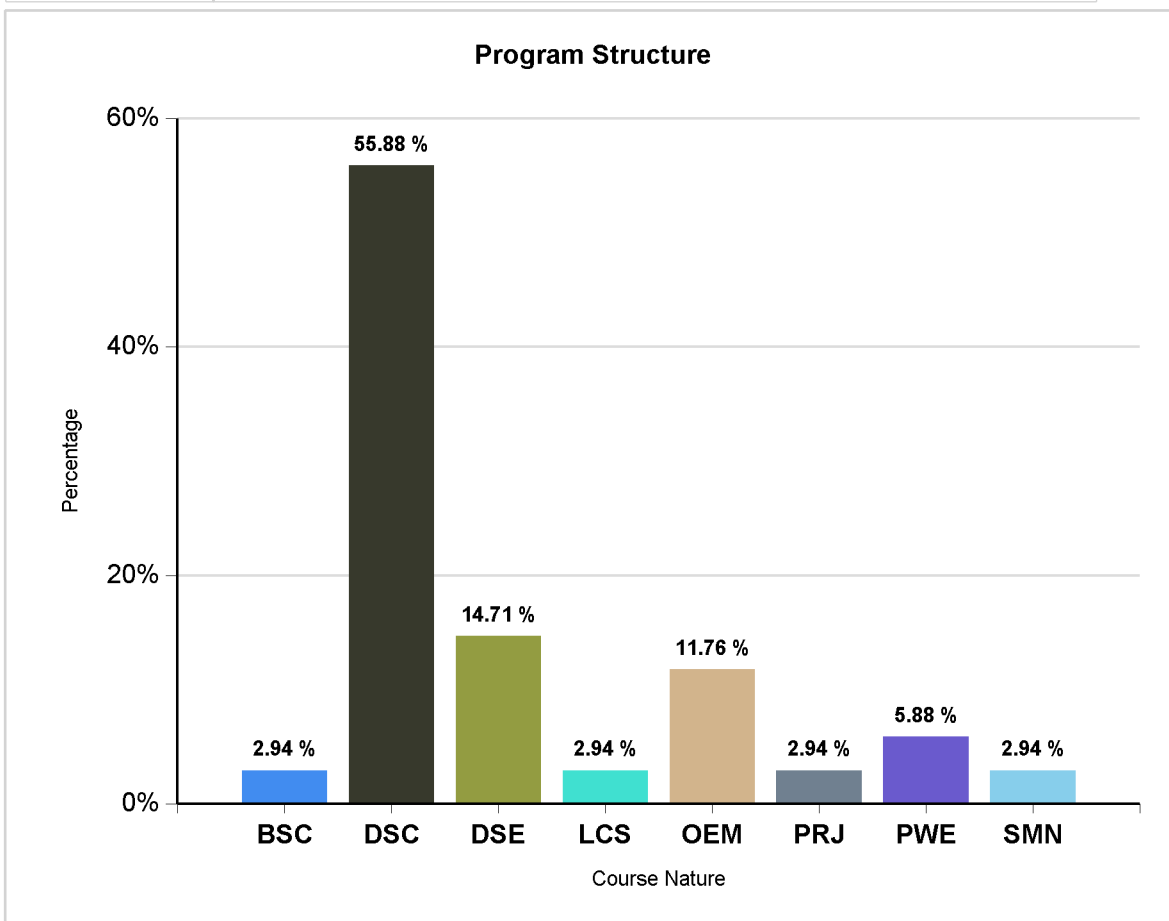| Note	
1	For applicable programs, students can graduate with 2 Minors (1 within discipline and 1 outside discipline and as depicted in the structure under the headings Discipline Minors and Open Elective/Minors respectively).
2	Discipline Core (DSC) are be mapped with GATE/UGCNET/CSIRNET/IES/AMCAT/ICAR as per applicability.

Term-wise Credits

Term	Semester	Path	Credit (without rounding)	Credit(with rounding)
1	Term 1	Common	24	24.0
2	Term 2	Common	28	28.0
3	Term 3 (For students who opt for industrial internship)	A	24	24.0
3	Term 3 (For students who opt for course work)	B	22	22.0
4	Term 4 (For students who opt for industrial internship)	A	16	16.0
4	Term 4 (For students who opt for course work)	B	15	15.0

Term path wise Credits (Including Common Term)

Path	Credit (without rounding)	Credit(with rounding)
A	92	92.0
B	89	89.0

Course Type

CR	Core Course
CR3A	CORE-III(A)
GE	Generic Elective
PW	Pathway Elective
SP	Specialization Elective

Course Nature

BSC	Basic Science
DSC	Discipline Core
DSE	Discipline Elective
LCS	Language & Communication Skills
OEM	Open Minor/Open Elective
PRJ	Project (including Capstone Project and Research Project)
PWE	Pathway Elective
SMN	Seminar
TCF	Training Compulsory – Full term

Program Structure

Bar chart titled "Program Structure" showing Percentage (y-axis) vs Course Nature (x-axis):
- BSC: 2.94 %
- DSC: 55.88 %
- DSE: 14.71 %
- LCS: 2.94 %
- OEM: 11.76 %
- PRJ: 2.94 %
- PWE: 5.88 %
- SMN: 2.94 %

Sr No	NAME	Nature Name	Total
1	BSC	Basic Science	1
2	DSC	Discipline Core	19
3	DSE	Discipline Elective	5
4	LCS	Language & Communication Skills	1
5	OEM	Open Minor/Open Elective	4
6	PRJ	Project (including Capstone Project and Research Project)	1
7	PWE	Pathway Elective	2
8	SMN	Seminar	1