HINDUSTAN
INSTITUTE OF TECHNOLOGY & SCIENCE
(DEEMED TO BE UNIVERSITY)

DEPARTMENT OF COMPUTER APPLICATIONS

REGULATONS,
CURRICULUM AND SYLLABUS

Under CBCS

(Applicable for Students admitted from Academic Year 2019-20)

MCA (MASTER OF COMPUTER APPLICATIONS)
(2 Years)
Regulation 2018

SCHOOL OF COMPUTING SCIENCES

DEPARTMENT OF COMPUTER APPLICATIONS

DEPARTMENT OF COMPUTER APPLICATIONS
VISION AND MISSION

VISION

The department of Computer Applications aims to transform aspiring students into software professionals with a high degree of technical skills and to inculcate a research mind set.

MISSION

M1. To provide strong theoretical foundations complemented with extensive practical training.

M2. To design and deliver curricula to meet the changing needs of industry.

M3. To establish strong collaborations with industry, R&D and academic institutes for training and research.

M4. To promote all-round development of the students through interaction with alumni and industry

MCA (MASTER OF COMPUTER APPLICATIONS)
PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

The program is expected to enable the students to

PEO 1: To prepare graduates to be successful professionals in industry, government, academia, research, entrepreneurial pursuit and consulting firms.

PEO 2: To prepare graduates to achieve peer-recognition, as an individual and as a team player, through demonstration of good analytical, design, implementation and interpersonal skills.

PEO 3: To prepare graduates to contribute to society as broadly educated, expressive, ethical and responsible citizens with proven expertise.

PEO 4: To prepare graduates to pursue life-long learning to fulfill their goals.

PROGRAM OUTCOMES (ALIGNED WITH GRADUATE ATTRIBUTES) (PO)

At the end of this program, graduates will be able to

PO 1 *Computational Knowledge:* Apply knowledge of computing fundamentals, computing specialisation, mathematics, and domain knowledge appropriate for the computing specialisation to the abstraction and conceptualization of computing models from defined problems and requirements.

PO 2 *Problem Analysis*: Identify, formulate, research literature, and solve *complex* computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.

PO 3 *Design /Development of Solutions:* Design and evaluate solutions for *complex* computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

PO 4 *Conduct Investigations of Complex Computing Problems:* Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5 *Modern Tool Usage:* Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to *complex* computing activities, with an understanding of the limitations.

PO 6 *Professional Ethics:* Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practice.

PO 7 *Life-long Learning:* Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.

PO 8 *Project management and finance:* Demonstrate knowledge and understanding of the computing and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 9 *Communication Efficacy:* Communicate effectively with the computing community, and with society, about *complex* computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions.

PO 10 *Societal and Environmental Concern:* Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice.

PO 11 *Individual and Team Work:* Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments.

PO 12 *Innovation and Entrepreneurship:* Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.

PROGRAM SPECIFIC OUTCOMES (PSO)

PSO 1: Enable the students to design suitable data models, appropriate architectures and analytics techniques for efficient implementation of complex systems

PSO 2: Enable the students to design and integrate systems for providing interactive solutions for healthcare applications

M.C.A - COMPUTER APPLICATIONS									
SEMESTER- I									
SL. NO	**COURSE**	**COURSE CODE**	**NAME OF THE COURSE**	**L**	**T**	**P**	**C**	**S**	**TCH**
1	PC	CAA3701	Advanced Data Structures and Algorithms using Python	3	0	2	4	2	5
2	PC	MAA3706	Statistics for Computer Science	4	0	0	4	1	4
3	PC	CAA3702	Database Technology	3	1	0	4	1	4
4	PC	CAA3703	Object Oriented Programming using Java	2	0	2	4	1	4
5	PC	CAA3704	Computer Networks	3	0	0	3	1	3
PRACTICAL									
6	PC	CAA3781	Software Design Project	0	0	6	2	0	6
			Total	15	1	10	21	6	26
SEMESTER -II									
SL. NO	**COURSE**	**COURSE CODE**	**NAME OF THE COURSE**	**L**	**T**	**P**	**C**	**S**	**TCH**
1	PC	CAA3705	Web Design and Development	3	1	0	4	1	4
2	PC	CAA3706	Data Warehousing and Data Mining	2	0	2	4	1	4
3	PC	CAA3707	Machine Learning	3	1	0	4	1	4
4	PC	CAA3708	Software Engineering	3	1	0	4	1	4
5	PE	CA*****	Elective-1(Specialization)	3	0	0	3	1	3
6	PE	CA*****	Elective-2 (Specialization)	3	0	0	3	1	3
PRACTICAL									
7	PC	CAA3782	Software Development Lab	0	0	2	1	0	3
8	PC	CAA3783	Web Programming Lab	0	0	2	1	0	3
			Total	14	3	6	24	5	23
L – Lecture ; T – Tutorial ; P – Practical ; S- Self Study; C – Credit									

M.C.A - COMPUTER APPLICATIONS									
SEMESTER - III									
SL. NO	**COURSE**	**COURSE CODE**	**NAME OF THE COURSE**	**L**	**T**	**P**	**C**	**S**	**TCH**
1	PC	CAA3709	Software Testing and Quality Assurance	2	0	2	4	1	4
2	PC	CAA3710	DevOps	2	0	2	4	1	4
3	PC	CAA3711	MOOC (Specialization)	0	0	0	2	3	3
4	PE	CA*****	Elective -3 (Specialization)	3	0	0	3	0	3
5	PE	CA*****	Elective -4 (Specialization)	3	0	0	3	0	3
6	OE	*******	Open Elective	3	0	0	3	0	3
PRACTICAL									
7	PC	ELA4383	Presentation Skills and Academic writing	0	0	2	1	0	2
8	PC	CAA3784	Project Phase-I	0	0	6	3	0	6
			Total	13	0	12	23	5	28
SEMESTER - IV									
SL. NO	**COURSE**	**COURSE CODE**	**NAME OF THE COURSE**	**L**	**T**	**P**	**C**	**S**	**TCH**
PRACTICAL									
1	PC	CAA3785	Project Work - Phase – II	0	0	24	12	0	24
			Total	0	0	24	12	0	24

LIST OF DEPARTMENTAL ELECTIVES WITH GROUPING - SEMESTER WISE
M.C.A. with Specialization

SEM	COURSE	COURSE CODE	NAME OF THE COURSE	L	T	P	C	S	TCH
Elective I									
4	PE	CAD3721	Software Process and metrics	3	0	0	3	0	3
4	PE	CAD3722	.Net / ASP Programming	3	0	0	3	0	3
4	PE	CAB3721	Web analytics	3	0	0	3	0	3
4	PE	CAB3722	Big Data Analytics	3	0	0	3	0	3
4	PE	CAC3721	Cloud Architecture	3	0	0	3	0	3
4	PE	CAC3722	Virtualization Techniques	3	0	0	3	0	3
Elective II									
4	PE	CAD3723	Agile Methods	3	0	0	3	0	3
4	PE	CAD3724	Internet of things	3	0	0	3	0	3
4	PE	CAB3723	R Programming	3	0	0	3	0	3
4	PE	CAB3724	Big Data Framework	3	0	0	3	0	3
4	PE	CAC3723	Cloud Application Development	3	0	0	3	0	3
4	PE	CAC3724	Cloud Analytics	3	0	0	3	0	3
Elective III									
5	PE	CAD3725	Image processing	3	0	0	3	0	3
5	PE	CAD3726	Block Chain Technology	3	0	0	3	0	3
5	PE	CAB3725	Semantic Web	3	0	0	3	0	3
5	PE	CAB3726	Data Visualization Techniques and Tools	3	0	0	3	0	3
5	PE	CAC3725	Cloud Security	3	0	0	3	0	3
5	PE	CAC3726	Cloud Storage and Security	3	0	0	3	0	3
Elective IV									
5	PE	CAD3727	Natural Language Processing	3	0	0	3	0	3
5	PE	CAD3728	Distributed Computing	3	0	0	3	0	3
5	PE	CAD3729	Augmented and Virtual Reality	3	0	0	3	0	3
5	PE	CAB3727	Data Classification Methods and Evaluation	3	0	0	3	0	3
5	PE	CAB3728	Principles of Deep Learning	3	0	0	3	0	3
5	PE	CAC3727	Private Cloud Deployment and Management	2	0	1	3	0	3
5	PE	CAC3728	Back up and Disaster Recovery	3	0	0	3	0	3