



# **HINDUSTAN**

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

**DEPARTMENT OF COMPUTER APPLICATIONS**

**REGULATIONS,  
CURRICULUM AND SYLLABUS**

**Under CBCS**

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

**MCA (MASTER OF COMPUTER APPLICATIONS)  
SPECIALIZATION IN CLOUD COMPUTING**

**(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 in Cloud Computing**

SEM	COURSE	COURSE CODE	NAME OF THE COURSE	L	T	P	C	S	TCH
Elective I									
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	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	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	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