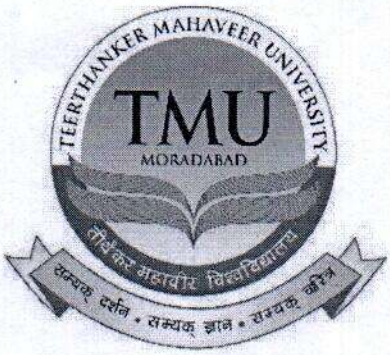
Study & Evaluation Scheme

of

Bachelor of Technology
(Computer Science & Engineering)
Specialization in
Artificial Intelligence, Machine Learning & Deep Learning

[Applicable w.e.f. Academic Session - 2019-20 till revised]

[As per CBCS guidelines given by UGC]



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B.TECH (CSE) Specialization in AI + ML + DL : Four-Year (8-Semester) CBCS Programme				
Basic Structure: Distribution of Courses				
S.No.	**Type of Course**	**Credit Hours**	**Total Maximum Credits**	**Minimum credit required**
1	Professional Core Courses (PCC)	25 Courses of 3 Credit Hrs. each (Total Credit Hrs. 25X3)	75	75
2	Professional Elective Courses (PEC)	3 Courses of 3 Credit Hrs. each (Total Credit Hrs. 3X3)	9	9
3	Mandatory Courses (MC)	1 Courses of 3 Credit Hrs. each (Total Credit Hrs. 1X3)	3	3
4	Laboratory Courses (LC)	4 Courses of 2 Credit Hrs. each (Total Credit Hrs. 4X2) 18 Courses of 1 Credit Hrs. each (Total Credit Hrs. 18X1)	26	26
5	Project / Industrial Training/Seminar (PROJ)	1 Courses of 6 Credit Hrs. each (Total Credit Hrs. 1X6) 1 Courses of 4 Credit Hrs. each (Total Credit Hrs. 1X4) 2 Courses of 2 Credit Hrs. each (Total Credit Hrs. 2X2)	14	14
6	Open Elective Courses (OEC)	2 Courses of 3 Credit Hrs. each (Total Credit Hrs. 2X3)	6	49
7	Basic Science Courses (BSC)	4 Courses of 4 Credit Hrs. each (Total Credit Hrs. 4X4) 1 Courses of 3 Credit Hrs. each (Total Credit Hrs. 1X3)	19	
8	Engineering Science Courses (ESC)	2 Courses of 4 Credit Hrs. each (Total Credit Hrs. 2X4) 1 Courses of 3 Credit Hrs. each (Total Credit Hrs. 1X3)	11	
9	Humanities and Social Sciences including Management courses (HSMC)	1 Courses of 4 Credit Hrs. each (Total Credit Hrs. 1X4) 5 Courses of 3 Credit Hrs. each (Total Credit Hrs. 5X3) 1 Courses of 2 Credit Hrs. each (Total Credit Hrs. 1X2)	21	
10	Value Added Audit Course (VAAC)	6 Courses of 0 Credit Hrs. each (Total Credit Hrs. 6X0)	0	
Total Credits			**184**	**176**

Contact hours include work relatedto Lecture, Tutorial and Practical (LTP), where our institution will have flexibility to decide course wise requirements.

B. Tech (Honours) Programme:

Additionally, A programme B.Tech with Honours is introduced in order to facilitate the students to choose additionally with the specialized courses of their choices and build their competence in a specialized area. The features of the new programme, include:

1. B.Tech Student in regular stream can opt for B.Tech (Hons.), provided he/she passed in all courses with minimum aggregate 75% marks upto the end of second semester.
2. For B. Tech (Hons), Student needs to earn additional 24 credits (over and above the required minimum 184 credits) relevant to her/his discipline as recommended by the faculty advisor.
3. The students opting for this program have to take four additional courses of their specialization of a minimum of 2 credits each from 3rd to 8th semesters.
4. The faculty advisor will suggest the additional courses to be taken by the students based on their choice and level of their academic competence.
5. The list of such additional courses offered by the NPTEL will be approved by the Honourable Vice Chancellor in the beginning of the academic year to facilitate the registration process.
6. The student can also opt for post graduate level courses.
7. The students have to submit the NPTEL course completion certificate to exam division for considering as B.Tech (Hons)

* Student should have to take permission of registration for the B.Tech. (Hons.) degree from Honourable Vice Chancellor in starting of third semester.

B. Choice Based Credit System (CBCS)

Choice Based Credit System (CBCS) is a versatile and flexible option for each student to achieve his target number of credits as specified by the UGC/AICTE and adopted by our University.

The following is the course module designed for the B.TECH (CSE) program:

Professional Core Course (PCC):Professional core courses of B.TECH (CSE)with specialization in AI + ML + DL, will provide a holistic approach to computer education, giving students an overview of the field, a basis to build specialization in the field of artificial intelligence , machine learning and deep learning. These core courses are the strong foundation to establish computer knowledge and provide broadmulti-disciplined knowledge can be studied further in depth during the last phase of engineering for better understanding of building intelligent models for real life applications.

The core courses will provide more practical-based knowledge, case-based lessons andcollaborative learning models. It will train the students to analyze, decide, and lead-rather than merely know-while creating a common student experience that can foster deep understanding, develop decision-making ability and contribute to the society at large.

A wide range of core courses provides groundwork in the basic computer disciplines: programming languages, Database, Web Programming, Mobile Applications, Big data, Data Mining, Machine Learning, Deep Learning etc.

The integrated foundation isimportant for students because it will not only allow them to build upon existing skills, but they can also explorecareer options in a range of industries, and expand their understanding of various computer fields.

We offer twenty fiveprofessional core courses with 3 credit each from semester III onwards during the B.Tech. programme.

Humanities and Social Sciences including Management courses (HSMC): As per the AICTE guidelines of Choice Based Credit System (CBCS) for all Universities, including the private Universities, the ***Humanities and Social Sciences including Management courses*** are actually Ability Enhancement Compulsory Course (AECC) which is designed to develop the ability of students in communication (especially English) and other related courses where they might find it difficult to communicate at a higher level in their prospective job at a later stage due to lack of practice and exposure in the language, etc. Students are motivated to learn the theories, fundamentals and tools of communication which can help them develop and sustain in the corporate environment and culture. We offer one HSMC of 4 credits and five courses of 3 credits and one courses of 2 credits in different semesters of engineering course.

Basic Science Course (BSC):Basic Science Course of B.TECH (CSE) program will provide a basic foundation to build the knowledge in the field of engineering and science. The BSC consists of courses like mathematics, physics and chemistry. These BSC courses has been placed in Semester-I, II and III. Total 19 credits have been assigned to BSC with 4 Courses of 4 Credit, 1 Courses of 3 Credit.

Engineering Science Course (ESC):Engineering Science Course of B.TECH (CSE) program will provide a basic foundation of the various field of engineering like Electrical, Electronics, Mechanical and Civil. These ESC courses has been placed in Semester-I & II and total 11 credits has been assigned with 2 Courses of 4 Credit,1 Courses of 3Credit .

Open Elective Course (OEC): Open Elective is an interdisciplinary additional subject that is compulsory in the seven and eight semester of a program. The score of Generic Elective is counted in your overall aggregate marks under Choice Based Credit System (CBCS). Each Generic Elective paper will be of 3 Credits and students will have the choice of taking 2 OEC: 1 each in Semester VII & VIII. Each student has to take Open Electives from department other than the parent department. Core / Discipline Specific Electives will not be offered as Generic Electives.

Mandatory Course (MC):This is a compulsory course that does not have any choice and will be of 3 credits. Each student of B.TECH(CSE) program has to compulsorily pass the Environment Studies course and acquire 3 credits.

Value Added Course (VAC): A Value Added Course is a non-credit audit course which is basically meant to enhance general ability of students in areas like soft skills, quantitative aptitude and reasoning ability - required for the overall development of a student and at the same time crucial for industry/corporate demands and requirements. The student possessing these skills will definitely develop acumen to perform well during the recruitment process of any premier organization and will have the desired confidence to face the interview. Moreover, these skills are also essential in day-to-day life of the corporate world. The aim is to nurture every student for making effective communication, developing aptitude and a general reasoning ability for a better performance, as desired in corporate world. There shall be four courses of Aptitude in Semester III, IV, V & VI semesters and two courses of Soft Skills in V &VI Semesters and will carry no credit, however, it will be compulsory for every student to pass these courses with minimum 45% marks to be eligible for the certificate. These marks will not be included in the calculation of CGPI. Students have to specifically be registered in the specific course of the respective semesters.

Professional Elective Course (PEC): The discipline specific elective courseis chosen to make students specialist or having specialized knowledge of a specific domain. It will be covered from Vth semester onward

Programme: B. Tech. (Computer Science & Engineering) Specialization in AI+ML+DL
Semester VII

S. N o	*Course Category*	*Course Code*	*Course*	*Periods*			*Credit*	*Evaluation Scheme*		
				L	*T*	*P*		*Internal*	*External*	*Total*
1	PCC-20	ECS716	Digital Image Processing and Computer Vision	3	0	0	3	40	60	100
2	PCC-21	EAI702	Deep Learning –I	3	0	0	3	40	60	100
3	PCC-22	ECS709	Cloud Computing	3	0	0	3	40	60	100
4	PCC-23	EAI704	Intelligent System and Fuzzy Logic	3	0	0	3	40	60	100
5	PEC-2	**Professional Elective Course –II**		3	0	0	3	40	60	100
6	LC-20	ECS756	Digital Image Processing using Sci-Lab (Lab)	0	0	2	1	50	50	100
7	LC-21	EAI752	Deep Learning using python (Lab)	0	0	2	1	50	50	100
8	PROJ-3	EAI753	Project Work Phase-I(**ML**)	0	0	8	4	50	50	100
9	OEC-1		Open Elective Course –I	3	0	0	3	40	60	100
			Total	**18**	**0**	**12**	**24**	**390**	**510**	**900**

Registrar

Programme: B. Tech. (Computer Science & Engineering) Specialization in AI+ML+DL
Semester VIII

S. No	*Course Category*	*Course Code*	*Course*	*Periods*			*Credit*	*Evaluation Scheme*		
				L	*T*	*P*		*Internal*	*External*	*Total*
1	HSMC-7	EHM801	Project Management for Engineers	3	0	0	3	40	60	100
2	PCC-24	EAI802	Deep Learning- II	3	0	0	3	40	60	100
3	PEC-3	**Professional Elective Course –III**		3	0	0	3	40	60	100
4	PCC-25	ECS814	Block Chain Technology	3	0	0	3	40	60	100
5	LC-22	EAI851	Deep Learning- II Lab	0	0	2	1	50	50	100
6	PROJ-4	EAI852	Project Work Phase- II**(DL)**	0	0	12	6	50	50	100
7	**OEC-2**		Open Elective Course–II	3	0	0	3	40	60	100
			Total	**15**	**0**	**14**	**22**	**300**	**400**	**700**