BTech Curriculum - 2020 batch onward

	Semester 1	Credits
MA 1110	Calculus - I	1
MA 1220	Calculus - II	1
CY 1017	Environmental Chemistry	2
EP 1108	Modern Physics	2
ID 1063	Intro to Programming	3
SS xxxx	English Comm	2
CS 1010	Discrete Math	3
AI 1001	Intro to AI	1
	Total	15

	Semester 2	Credits
EE 1203	Vector Calculus	1
MA1150	Differential Equations	1
MA1230	Series of Functions	1
AI1100	Artificial Intelligence	2
AI1103	Probability and Random Variables	3
ID1054	Digital Fabrication	2
BM1030	Bioengineering	1
ID xxxx	Engineering Electives	1
AI 1104	Programming for AI	1
LA xxxx	LA/CA Elective	3
	Total	16

	Semester 3	Credits
ID2230	Data Structures	3
MAxxxx	Introduction to Metric Spaces	1
AI2000	Foundations of Machine Learning	3
EE2100	Matrix Theory	3
CS3550	DBMS - I	1
EE3900	Linear Systems and Signal processing	3
LA1500	AI and Humanity	1
SSxxxx	Personality Development	1
	Total	16

	Semester 4	Credits
AI2101	Convex Optimization	3
CS2443	Algorithms	3
AI2100	Deep Learning	3
MAxxxx	Applied Statistics	3
CS3320	Compilers - 1	1

	Semester 4	Credits
CS3563	DBMS - II	3
SSxxxx	Intro to Entrepreneurship	1
	Total	17

	Semester 5	Credits
MA5060	Numerical Analysis	3
CS2323	Computer Architecture	2
AI3000	Reinforcement Learning	3
CS3530	Computer Networks - I	1
CS3510	OS-1	1
AI3001	Advanced Topics in ML	2
EE2102	Control Systems	3
LA xxxx	LA/CA Elective	1
	Total	16

	Semester 6	Credits
XX xxxx	Free Electives	6
	AI Electives (6 credits can be converted to internship)	9
ID xxxx	Engineering Electives	1
	Total	16

	Semester 7	Credits
	AI Electives (see baskets)	12
LA xxxx	LA/CA Elective	1
AI4000	Robotics	3
	Total	16

	Semester 8	Credits
	AI Electives (see baskets)	9
XX xxxx	Free Electives	6
LAxxxx	Ethics and Values	1
		16

Elective basket “Core AI and ML” (At least 5 credits from the following)	
Course name	Credits
Intro to Statistical Learning theory	1
Kernel Methods	1
Sequence Models	

Elective basket “Core AI and ML” (At least 5 credits from the following)	
Optimization Methods in Machine Learning/Convex Optimization-II	3
Bayesian Data Analysis	2
Nonlinear Control Techniques	3
Information Theory and Coding	3
Introduction to Submodular Functions	1

Elective basket “Language Technologies” (At least 3 credits from the following)	
Course name	Credits
Natural Language Processing	3
Information Retrieval	3
Text Processing	3

Elective basket “Speech and Vision” (At least 3 credits from the following)	
Course name	Credits
Computer Vision	3
Speech Systems	3
Image and Video Processing	3
Surveillance Video Analytics	3

Elective basket “Data Analytics” (At least 3 credits from following)	
Course name	Credits
Predictive Analysis	3
Data Mining	3
Time Series Analysis	1
Graph Analytics for Big Data	3
Distributed Systems	3
Cloud Computing	3
Big Data: Tools and Techniques	1

Elective basket “AI, Neuroscience and Natural Intelligence” (at least 3 credits from the following)	
Course name	Credits
Computational Neuroscience lab	2
Brain Machine Interfaces	3
Movement Sciences lab	2
Movement Science and Disorders	3

Elective basket “AI, Neuroscience and Natural Intelligence” (at least 3 credits from the following)	
Theoretical & Computational Neuroscience	2
Applications of AI in Healthcare	1

- Out of 30 department electives, 17 must be from the baskets (as specified below). The remaining 13 credits can be any of the remaining basket courses or any CS/EE/MA courses.
- At least TWO of these department elective courses must be 3-credit courses.
- Six credits of Department Electives in the sixth semester can optionally be converted to a semester long internship in the sixth semester. The onus is on the student to distribute/complete the remaining 11 credits in the sixth semesters in other semesters.
- Maximum 4 credit of CA courses, and 6 credits of LA courses can be taken
- For most AI courses, the lab component is built into the courses themselves.
- Electives not in the lists below can be considered in a given basket with approval of faculty advisor (e.g. a new AI elective offered by a new faculty).

Last updated on 12 October, 2020