SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

B.Tech Computer Science and Engineering with Specialization in Bioinformatics

CURRICULUM – AY 2015-16 onwards

Bridge Courses [4 Credits]

Course.Code	Course Title	L	T	P	J	C	Category
BIT1001	Introduction to Life Sciences	3	1	0	0	4	For Non-biology Students
	Basic Mathematics	3	1	0	0	4	For Non-Maths Students

Note: Credits of bridge courses are not included for fulfilling the requirements of getting degree but included for calculating CGPA.

University Core [72 Credits]

Course Code	Course Title	L	T	P	J	C	Category
CSE1001	**Problem Solving and Computer Programming**	0	0	6	0	3	E
CSE1002	**Problem Solving and Object Oriented Programming**	0	0	6	0	3	E
CSE3999	**Tech. Answers for Real World Problems (TARP)**	2	0	0	4	3	E
CSE4098	**Comprehensive Exam**	0	0	0	0	2	E
MAT1011	**Calculus for Engineers**	3	0	2	0	4	S
MAT2001	**Statistics for Engineers**	3	0	2	0	4	S
PHY1701	**Engineering Physics**	3	0	2	4	5	S
BIT1003	**Biology for Engineers**	3	0	2	4	5	S
PHY1999	**Introduction to Innovative Projects**	1	0	0	4	2	S
CHY1002	**Environmental Studies**	3	0	0	0	3	S
ENG1011	**English for engineers**	1	0	2	0	2	H
FRE1001	**Foreign Language**	2	0	0	0	2	H
HUM1021	**Ethics and Values**	2	0	0	0	2	H
EXC4097	**Co / Extra Curricular**	0	0	0	0	2	M
MGT1022	**Lean Start-up Management**	1	0	0	4	2	M
	Soft Skills #	1	0	0	4	2	H
	Project Work	0	0	0	0	20	E
CSE3099	**Industrial Internship**	0	0	0	0	2	E

 # Soft Skills – First Semester to Six Semesters – Totally 6 Credits

Engg. [33 Credits]+Sci. [23 Credits]+Humanities [12 Credits]+ Mgt. [4 Credits] = 72 Credits

University Elective [12 Credits]

Course Code	Course Title	Category
	University Elective – I	**S**
	University Elective – II	**S**
	University Elective – III	**M**
	University Elective – IV	**H**

Science [6 Credits] + Humanities [3 Credits] + Management [3 Credits] =   12 Credits

Program Core – [58 Credits]

Course Code	Course Title	L	T	P	J	C	Category
MAT2002	Difference and Differential Equations	3	0	2	0	4	S
MAT1014	Discrete Mathematics	3	0	2	0	4	S
MAT3004	Linear Algebra	3	0	2	0	4	S
EEE1001	Basics of Electrical and Electronics	2	0	2	0	3	E
CSE1003	Digital Logic and Design	3	0	2	0	4	E
CSE2001	Computer Architecture and Organization	3	0	0	0	3	E
BIT1004	Cell Biology and Biochemistry	3	0	2	0	4	E
CSE2003	Data Structures and Algorithms	2	0	2	4	4	E
BIT2001	Analytical Bioinformatics	3	0	2	0	4	E
CSE2004	Database Management System	2	0	2	4	4	E
CSE1005	Software Design and Development	2	0	2	4	4	E
CSE2005	Operating Systems	2	0	2	4	4	E
CSE4001	Parallel and Distributed Computing	2	0	2	4	4	E
CSE3002	Internet and Web Programming	2	0	2	4	4	E
CSE2006	Microprocessor and Interfacing	2	0	2	4	4	E

Science [12 Credits] + Engineering [46 Credits] =   **58 Credits**

Program Elective– [38 Credits]

Course Code	Course Title	Category
	Program Elective – I	**E**
	Program Elective – II	**E**
	Program Elective – III	**E**
	Program Elective – IV	**E**
	Program Elective – V	**E**
	Program Elective – VI	**E**
	Program Elective – VII	**E (Bioinformatics)**
	Program Elective – VIII	**E(Bioinformatics)**
	Program Elective – IX	**M**
	Program Elective – X	**H**

Engineering [32 Credits] + Management [3 Credits] + Humanities [3 Credits] =38 Credits

LIST OF PROGRAM ELECTIVES

Engineering

Code	Title	L	T	P	J	C
CSE4002	Adhoc Wireless Networks	3	0	0	4	4
CSE4003	Cyber Security	3	0	0	4	4
CSE4004	Digital forensics	3	0	0	4	4
CSE4005	Green and energy aware Computing	3	0	0	4	4
CSE4006	Haptic technology	3	0	0	4	4
CSE3003	Micro kernel OS	3	0	0	4	4
CSE4007	Mobile Computing	3	0	0	4	4
CSE4008	Mobile Pervasive Computing	3	0	0	4	4
CSE4009	Network Management System	3	0	0	4	4
CSE4010	Parallel algorithms	3	0	0	4	4
CSE3004	Storage Technologies	2	0	2	4	4
CSE4011	Virtualization	3	0	0	4	4
CSE3005	Advanced Computer Architecture	3	0	0	4	4
CSE4012	Digital Signal Processing	3	0	0	4	4
CSE4013	Embedded Programming	2	0	2	4	4
CSE3006	Embedded System Design	3	0	0	4	4
CSE3007	Foundation skills in product development	3	0	0	4	4
CSE4014	High Performance Computing	3	0	0	4	4
CSE4015	Human Computer Interaction	3	0	0	4	4
CSE3008	Integrated Digital Design	3	0	0	4	4
CSE3009	Internet of Things	3	0	0	4	4

CSE4016	Multi-Core Architecture and Operating System	3	0	0	4	4
CSE3010	Real Time Systems	3	0	0	4	4
CSE3011	Robotics and its Applications	3	0	0	4	4
CSE4017	Software Hardware Co-Design	3	0	0	4	4
CSE4018	Advanced Analytics	2	0	2	4	4
CSE3012	Algorithms for Computational Biology	3	0	0	4	4
CSE3013	Artificial Intelligence	3	0	0	4	4
CSE3014	Bio Inspired Computing	3	0	0	4	4
CSE3015	Business Intelligence	3	0	0	4	4
CSE3016	Computer Graphics and Multimedia	2	0	2	4	4
CSE3017	Computer Vision	3	0	0	4	4
CSE3018	Content Based Image and Video retrieval	2	0	2	4	4
CSE3019	Data Mining	2	0	2	4	4
CSE3020	Data Visualization	2	0	2	4	4
CSE4019	Image Processing	3	0	0	4	4
EEE5020	Machine Learning	2	0	2	4	4
CSE4021	Modelling and Simulation	3	0	0	4	4
CSE4022	Natural language processing	3	0	0	4	4
CSE4023	Pattern Recognition	3	0	0	4	4
CSE3021	Social and Information Networks	3	0	0	4	4
CSE3022	Soft computing	3	0	0	4	4
CSE3023	Speech Technology	3	0	0	4	4
CSE3024	Web Mining	3	0	0	4	4
CSE3025	Large Scale Data Processing	2	0	2	4	4
CSE4024	Advanced Java Programming	2	0	2	4	4

CSE4025	Design Patterns	3	0	0	4	4
CSE3026	E-Learning Technologies	3	0	0	4	4
CSE3027	Electronic and Mobile Commerce	3	0	0	4	4
CSE3028	Functional Programming	2	0	2	4	4
CSE3029	Game Programming	2	0	2	4	4
CSE4026	Intelligent Tutoring Systems	3	0	0	4	4
CSE4027	Mobile Programming	2	0	2	4	4
CSE4028	Object oriented software development	2	0	2	4	4
CSE3030	Open Source Software	2	0	2	4	4
CSE4029	Quantum computing	3	0	0	4	4
CSE3031	Software Testing	2	0	2	4	4
CSE3032	Software Project Management	3	0	0	4	4
CSE4030	Abstraction and its applications	3	0	0	4	4
CSE4031	Game theory	3	0	0	4	4
CSE4032	Search Technologies	3	0	0	4	4

Bioinformatics

Course Code	Course Title	L	T	P	J	C	Prerequisite
BIT 2002	Biological database	3	0	0	4	4	Cell Biology and Biochemistry
BIT 3001	Computational Biology	3	0	0	4	4	Analytical Bioinformatics
BIT2003	Genomics and Proteomics	3	0	0	4	4	Cell Biology and Biochemistry
BIT 3002	Molecular Modelling and drug design	3	0	0	4	4	Cell Biology and Biochemistry + Analytical Bioinformatics
BIT 3003	Molecular Evolution and Phylogeny	3	0	0	4	4	Analytical Bioinformatics
	Total					08	

Management

Course Code	Course Title	L	T	P	J	C
	Design, Systems, and Society	2	0	0	4	3
	Economics for Engineers	2	0	0	4	3
	Environmental and Sustainability Assessment	2	0	0	4	3
	Gender, Culture and Technology	2	0	0	4	3
	Impact of Information Systems on Society	2	0	0	4	3
	Principles of Management	2	0	0	4	3
	Resource Management	2	0	0	4	3
	Technological Change and Entrepreneurship	2	0	0	4	3
	Total Quality Management	2	0	0	4	3
	Accounting for Engineers	2	0	0	4	3

Humanities

Course Code	Course Title	L	T	P	J	C
	Failure Management	2	0	0	4	3
	Cyber laws	2	0	0	4	3
	Intellectual Property	2	0	0	4	3
	Privacy and Civil Liberties	2	0	0	4	3
	Impact of Information Systems on Society	2	0	0	4	3

	Ethics of Computer Engineers	2	0	0	4	3
	Social issues and professional Practices	2	0	0	4	3

Final Summary

Sl.No.	Category	Courses	No. of Credits	Share (%)
1.	Science	11	41	22.78
2.	Engineering	26	111	61.67
3.	Humanities	06	18	10.00
4.	Management	04	10	05.55
	Total	*47*	*180*	*100*

Total Number of Project Based Courses :**23 (3 PBCs in UC, 09 PBCs in PC, 10 PBCs in PE)**