



VIT[®]

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

School of Computer Science and Engineering

CURRICULUM AND SYLLABI

(2019-2020)

B. Tech. Computer Science and Engineering and Business Systems
(in collaboration with TCS)



VISION STATEMENT OF VELLORE INSTITUTE OF TECHNOLOGY

Transforming life through excellence in education and research.

MISSION STATEMENT OF VELLORE INSTITUTE OF TECHNOLOGY

World class Education: Excellence in education, grounded in ethics and critical thinking, for improvement of life.

Cutting edge Research: An innovation ecosystem to extend knowledge and solve critical problems.

Impactful People: Happy, accountable, caring and effective workforce and students.

Rewarding Co-creations: Active collaboration with national & international industries & universities for productivity and economic development.

Service to Society: Service to the region and world through knowledge and compassion.

VISION STATEMENT OF THE SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

To be a world-renowned centre of education, research and service in computing and allied domains.

MISSION STATEMENT OF THE SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

- To offer computing education programs with the goal that the students become technically competent and develop lifelong learning skill.
- To undertake path-breaking research that creates new computing technologies and solutions for industry and society at large.
- To foster vibrant outreach programs for industry, research organizations, academia and society.



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PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

1. Graduates will be engineering practitioners and leaders, who would help solve industry's technological problems.
2. Graduates will be engineering professionals, innovators or entrepreneurs engaged in technology development, technology deployment, or engineering system implementation in industry.
3. Graduates will function in their profession with social awareness and responsibility.
4. Graduates will interact with their peers in other disciplines in industry and society and contribute to the economic growth of the country.
5. Graduates will be successful in pursuing higher studies in engineering or management.
6. Graduates will pursue career paths in teaching or research.



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PROGRAMME OUTCOMES (POs)

PO_01: Having an ability to apply mathematics and science in engineering applications.

PO_02: Having a clear understanding of the subject related concepts and of contemporary issues and apply them to identify, formulate and analyze complex engineering problems.

PO_03: Having an ability to design a component or a product applying all the relevant standards and with realistic constraints, including public health, safety, culture, society and environment

PO_04: Having an ability to design and conduct experiments, as well as to analyze and interpret data, and synthesis of information

PO_05: Having an ability to use techniques, skills, resources and modern engineering and IT tools necessary for engineering practice

PO_06: Having problem solving ability- to assess social issues (societal, health, safety, legal and cultural) and engineering problems

PO_07: Having adaptive thinking and adaptability in relation to environmental context and sustainable development

PO_08: Having a clear understanding of professional and ethical responsibility

PO_09: Having cross cultural competency exhibited by working as a member or in teams

PO_10: Having a good working knowledge of communicating in English – communication with engineering community and society

PO_11: Having a good cognitive load management skills related to project management and finance

PO_12: Having interest and recognize the need for independent and lifelong learning



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ADDITIONAL PROGRAMME OUTCOMES (APOs)

APO_01: Having an ability to be socially intelligent with good SIQ (Social Intelligence Quotient) and EQ (Emotional Quotient)

APO_02: Having Sense-Making Skills of creating unique insights in what is being seen or observed (Higher level thinking skills which cannot be codified)

APO_03: Having design thinking capability

APO_04: Having computational thinking (Ability to translate vast data in to abstract concepts and to understand database reasoning)

APO_05: Having Virtual Collaborating ability

APO_06: Having an ability to use the social media effectively for productive use

APO_07: Having critical thinking and innovative skills

APO_08: Having a good digital footprint



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PROGRAMME SPECIFIC OUTCOMES (PSOs)

1. The ability to apply theoretical foundations of Computer Science and problem solving skills through programming techniques for complex real time problems using appropriate data structures and algorithms.
2. The ability to design/develop hardware and software interfaces along with database management to meet the needs of industry.
3. The ability to demonstrate personal, organizational and entrepreneurship skills through critical thinking, engage themselves in life-long learning by following innovations in business, science & technology.



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CREDIT STRUCTURE

Category-wise Credit distribution

Category	Credits
University Core (UC)	55
ProgrammeCore (PC)	72
ProgrammeElective (PE)	27
University Elective (UE)	06
Bridge Course (BC)	-
Total Credits	160



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Proposed Curriculum – 2019 Batch

Sl.NO	Category	Total No. of Credits (2019 Batch)
1	University Core (UC)	55
2	Programme Core (PC)	72
3	University Elective (UE)	6
4	Programme Elective (PE)	27
	Total	160

University Core (55 Credits)

Course Code	Course Title	L	T	P	J	C	Pre-req.
ENG1002	Effective English (Bridge Course)	0	0	4	0	0	-
ENG1901/ 1902 /1903	English	0	0	4	0	2	A Pass in VIT EPT or ENG1002
CHY1002	Environmental Sciences	3	0	0	0	3	-
CHY1701	Engineering Chemistry	3	0	2	0	4	-
HUM1021	Ethics and Values	2	0	0	0	2	-
FLC4097	Foreign Language	0	0	0	0	2	-
MAT1017	Probability and Statistics	3	0	0	0	3	-
PHY1005	Modern Physics	3	0	2	0	4	-
ENG1013	Business Communication & Value Science – I	1	0	2	0	2	-
ENG1014	Business Communication & Value Science – II	1	0	2	0	2	-
CSE1008	Programming in C	3	0	2	0	4	-
CBS2001	Object Oriented Programming	3	0	2	0	4	-
MGT1070	Introduction to Innovation, IP Management and Entrepreneurship	3	0	0	0	3	-
ENG1016	Business Communication & Value Science – III	1	0	2	0	2	-
CBS1901	Technical Answers to Real World Problems	1	0	0	8	2	-
CBS1902	Industrial Project	0	0	0	0	1	-
ENG1017	Business Communication & Value Science – IV	1	0	2	0	2	-
CBS1903	Comprehensive Examination	0	0	0	0	1	-
CBS1904	Capstone Project	0	0	0	0	12	-

PROGRAM CORE (72 Credits)

Course Code	Course Title	L	T	P	J	C	Pre-Req.
MAT1004	Discrete Mathematics	3	0	0	0	3	-
EEE1001	Basic Electrical and Electronics Engineering	2	0	2	0	3	-
MAT2004	Linear Algebra	3	1	0	0	4	-
MAT2005	Data Science and Statistical Modelling	2	0	2	0	3	MAT1017
CBS1003	Data Structures and Algorithms	2	0	2	0	3	-
CBS2002	Formal Languages and Automata Theory	3	0	0	0	3	-
CBS1004	Computer Organization and Architecture	2	0	2	0	3	-
CBS2003	Computational Statistics	2	0	2	0	3	-
CBS1005	Software Engineering Methodologies	2	0	2	0	3	-
CBS1006	Principles of Operating Systems	2	0	2	0	3	-
CBS1007	Database Systems	2	0	2	0	3	-
CBS2004	Design Thinking	2	0	2	0	3	-
CBS3001	Design and Analysis of Algorithms	2	0	2	0	3	-
CBS3002	Computer Networks	2	0	2	0	3	-
CBS3003	Information Security	2	0	2	0	3	-
CBS3004	Artificial Intelligence	2	0	2	0	3	-
CBS4001	Usability Design of Software Applications	2	0	2	0	3	-
MGT1066	IT Project Management	2	0	2	0	3	-
CBS1008	Operations Research	2	0	2	0	3	
MGT1065	Fundamentals of Management	2	0	0	0	2	
MGT1064	Financial and Cost Accounting	3	0	0	0	3	
MGT1067	Financial Management	3	0	0	0	3	
MGT1068	Services Science & Service Operational Management	2	0	2	0	3	
MGT1069	Marketing Research & Marketing Management	3	0	0	0	3	

Program Elective Courses (27 Credits)

Course Code	Course Title	L	T	P	J	C	Pre-Req.
CBS3005	Conversational Systems	3	0	0	0	3	
CBS3006	Cloud, Microservices & Applications	3	0	2	0	4	
CSE3007	Machine Learning	2	0	2	4	4	
CBS3008	Information Systems Audit and Control	3	0	0	0	3	
CBS3009	Modern Web Applications	3	0	2	0	4	
CBS3010	Data Mining and Analytics	3	0	0	4	4	
CBS3011	Robotics and Embedded Systems	3	0	0	4	4	
CBS4003	Cognitive Science & Analytics	3	0	2	0	3	
CBS4004	Introduction to IoT	3	0	0	4	4	
CBS4005	Cryptology and Analysis	3	0	0	0	3	
CBS4006	Quantum Computation & Quantum Information	3	0	2	0	4	
CBS4007	Advanced Social, Text and Media Analytics	3	0	0	0	3	
CBS4008	Mobile Computing	3	0	0	4	4	
CBS4009	Image Processing and Pattern Recognition	3	0	0	4	4	
MGT1071	Engineering Economics	2	0	0	0	3	
MGT1072	Business Strategy	2	0	0	0	3	
MGT1073	Behavioural Economics	3	0	0	0	3	
MGT1074	Psychology	3	0	0	0	3	
MGT1075	Enterprise Systems	3	0	0	0	3	
MGT1076	Advanced Finance	3	0	0	0	3	
MGT1077	Human Resource Management	2	0	0	0	3	
MGT1078	Computational Finance & Modelling	3	0	2	0	4	

University Electives (6 Credits)