

**ACADEMIC CURRICULUM  
(REGULATIONS 2019)**

FOR

**UNDER GRADUATE PROGRAMMES  
CHOICE BASED CREDIT SYSTEM**

(Applicable to the students admitted from the Academic Year 2019-20 onwards)

**B.TECH – INFORMATION TECHNOLOGY**



**EASWARI ENGINEERING COLLEGE  
(AUTONOMOUS INSTITUTION)**

Bharathi Salai, Ramapuram, Chennai – 600 089



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SEMESTER I								
S.No	Course Code	Course Title	Category	L	T	P	R	C
<b>THEORY</b>								
1.	191LEH101T	Technical English	HS	3	-	-	-	3
2.	191MAB101T	Engineering Mathematics - I	BS	3	2	-	-	4
3.	191PYB101T	Engineering Physics	BS	3	-	-	-	3
4.	191CYB101T	Engineering Chemistry	BS	3	-	-	-	3
5.	191GES101T	Engineering Graphics	ES	2	-	4	-	4
6.	191GES102T	Problem Solving through Python Programming	ES	3	-	-	-	3
<b>LABORATORY</b>								
7.	191GEB111L	Physics and Chemistry Laboratory	BS	-	-	4	-	2
8.	191GES111L	Python Programming Laboratory	ES	-	-	3	1	2
<b>TOTAL CREDITS</b>								<b>24</b>
<b>MANDATORY COURSE</b>								
9.	191GEM101L	Induction Training <sup>A</sup>	MC	-	-	2	-	1 <sup>A</sup>

<sup>A</sup> Mandatory to attend Induction training programme and earn one credit.



SEMESTER II								
S.No	Course Code	Course Title	Category	L	T	P	R	C
<b>THEORY</b>								
1.	191LEH201T	Professional Communication/ BEC Certification	HS	3	-	-	-	3
2.	191MAB201T	Engineering Mathematics - II	BS	3	2	-	-	4
3.	191PYB202T	Physics for Information Science	BS	3	-	-	-	3
4.	191GES201T	Basic Electrical and Electronics Engineering	ES	3	-	-	-	3
5.	191GES204T	Programming in C	ES	3	-	-	-	3
<b>LABORATORY</b>								
6.	191GES211L	Engineering Practices Laboratory	ES	-	-	4	-	2
7.	191GES213L	C Programming Laboratory	ES	-	-	3	1	2
<b>TOTAL CREDITS</b>								<b>20</b>
<b>MANDATORY COURSE</b>								
8.	191CYM201T	Environmental Science <sup>2*</sup>	MC	3	-	-	-	3 <sup>2*</sup>
9.	191GEM211L	NSS / NCC / YRC -Phase - I*	MC	-	-	2	-	1*

<sup>2\*</sup> Mandatory to register for the course and earn three credits

- \* The student may opt for any one. They have to complete the respective Phase II and Phase III. Those who are not opting NSS/NCC/YRC have to opt for Foreign language / Indian constitution in the sixth semester.



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SEMESTER III								
S.No	Course Code	Course Title	Category	L	T	P	R	C
<b>THEORY</b>								
1.	191MAB302T	Discrete Mathematics	BS	3	2	-	-	4
2.	191ECS321T	Digital Principles and System Design	ES	3	-	-	-	3
3.	191ITC301T	Data Structures and Algorithms	PC	3	-	-	-	3
4.	191ITC302T	Object Oriented Programming	PC	3	-	-	-	3
5.	191ITC303T	Operating Systems	PC	3	-	-	-	3
<b>LABORATORY</b>								
6.	191ECS331L	Digital Systems Laboratory	ES	-	-	4	-	2
7.	191ITC311L	Data Structures Laboratory	PC	-	-	4	-	2
8.	191ITC312L	Object Oriented Programming Laboratory	PC	-	-	3	1	2
<b>HUMAN EXCELLENCE COURSE</b>								
9.	191GEH311L	Yoga / Social Service - Phase - I**	HS	-	-	2	-	1
<b>TOTAL CREDITS</b>								23
<b>EMPLOYABILITY ENHANCEMENT COURSE</b>								
10.	191ITA311I	Inplant Training / Internship <sup>8</sup>	EEC	-	-	-	-	1 <sup>9</sup>
11.	191ITA301I	Industry Supported Course (Optional) <sup>10</sup>	EEC	1	-	-	-	1 <sup>10</sup>
<b>ONLINE COURSE</b>								
12.		Online Course (Optional) <sup>5</sup>	PE	-	-	-	-	3 <sup>5</sup>

\*\* Student may opt for any one. They have to complete the respective Phase II in semester V.

<sup>8</sup> Mandatory to do Internship and earn minimum one credit between 3<sup>rd</sup> and 6<sup>th</sup> semester.

<sup>9</sup> Students may earn credits in lieu of Professional elective - V in 8th semester. Please refer Clause 26.1.1 of B.E. Regulations 2019.

<sup>5</sup> Online courses of three credits each can be considered in lieu of Professional Elective - IV and Professional Elective - VI. A student earned only three credits can drop only Professional Elective - VI. Please refer Clause 14.9 of B.E. Regulations 2019.



SEMESTER IV								
S.No	Course Code	Course Title	Category	L	T	P	R	C
<b>THEORY</b>								
1.	191MAB405T	Probability and Statistics	BS	3	2	-	-	4
2.	191ITC401T	Database Management Systems	PC	3	-	-	-	3
3.	191ITC402T	Software Engineering	PC	3	-	-	-	3
4.	191ITC403T	Computer Architecture	PC	3	-	-	-	3
5.	191ECS422T	Principles of Communication	ES	3	-	-	-	3
<b>LABORATORY</b>								
6.	191ITC411L	Database Management Systems Laboratory	PC	-	-	4	-	2
7.	191ITC412L	Software Engineering Laboratory	PC	-	-	3	1	2
8.	191ITC413L	Open Source Programming Laboratory	PC	-	-	4	-	2
<b>TOTAL CREDITS</b>								<b>22</b>
<b>MANDATORY COURSE</b>								
9.	191GEM411L	NSS / NCC / YRC -Phase -II*	MC	-	-	2	-	1*
<b>EMPLOYABILITY ENHANCEMENT COURSE</b>								
10.	191ITA411I	Inplant Training / Internship <sup>†</sup>	EEC	-	-	-	-	1 <sup>†</sup>
11.	191ITA401I	Industry Supported Course (Optional) <sup>**</sup>	EEC	1	-	-	-	1 <sup>**</sup>
<b>ONLINE COURSE</b>								
12.		Online Course (Optional) <sup>‡</sup>	PE	-	-	-	-	3 <sup>‡</sup>

\* Students have to complete the respective phase II.

† Mandatory to do Internship and earn minimum one credit between 3<sup>rd</sup> and 6<sup>th</sup> semester.

\*\* Students may earn credits in lieu of Professional elective - V in 8<sup>th</sup> semester. Please refer Clause 26.1.1 of B.E. Regulations 2019.

‡ Online courses of three credits each can be considered in lieu of Professional Elective - IV and Professional Elective - VI. A student earned only three credits can drop only Professional Elective - VI. Please refer Clause 14.9 of B.E. Regulations 2019.



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SEMESTER V									
S.No	Course Code	Course Title	Category	L	T	P	R	C	
<b>THEORY</b>									
1.	191MBC521T	Professional Ethics and Principles of Management	HS	3	-	-	-	3	
2.	191ITC501T	Computer Networks	PC	3	-	-	-	3	
3.	191ITC502T	Data warehousing and Data Mining	PC	3	-	-	-	3	
4.	191ITC503T	Web Technology	PC	3	-	-	-	3	
5.		Professional Elective - I	PE	3	-	-	-	3	
6.		Open Elective - I	OE	3	-	-	-	3	
<b>LABORATORY</b>									
7.	191ITC511L	Web Technology Laboratory	PC	-	-	4	-	2	
8.	191ITC512L	Mobile Application Development Laboratory	PC	-	-	3	1	2	
<b>HUMAN EXCELLENCE COURSE</b>									
9.	191GEH511L	Yoga / Social Service – Phase - II**	HS	-	-	2	-	1	
<b>TOTAL CREDITS</b>								<b>23</b>	
<b>EMPLOYABILITY ENHANCEMENT COURSE</b>									
10.	191ITA511I	In plant Training / Internship <sup>a</sup>	EEC	-	-	-	-	1 <sup>a</sup>	
11.	191ITA501I	Industry Supported Course (Optional) <sup>aa</sup>	EEC	1	-	-	-	1 <sup>aa</sup>	
<b>ONLINE COURSE</b>									
12.		Online Course (Optional) <sup>s</sup>	PE	-	-	-	-	3 <sup>s</sup>	

\*\* Students have to complete the respective phase II.

<sup>a</sup> Mandatory to do Internship and earn minimum one credit between 3<sup>rd</sup> and 6<sup>th</sup> semester.

<sup>aa</sup> Students may earn credits in lieu of Professional Elective - V in 8th semester. Please refer Clause 26.1.1 of B.E. Regulations 2019.

<sup>s</sup> Online courses of three credits each can be considered in lieu of Professional Elective – IV and Professional Elective – VI. A student earned only three credits can drop only Professional Elective – VI. Please refer Clause 14.9 of B.E. Regulations 2019.



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SEMESTER VI									
S.No	Course Code	Course Title	Category	L	T	P	R	C	
<b>THEORY</b>									
1.	19IITC601T	Mobile Computing	PC	3	-	-	-	3	
2.	19IITC602T	Artificial Intelligence	PC	3	-	-	-	3	
3.	19IITC603T	Embedded Systems and IoT Applications	PC	3	-	-	-	3	
4.		Professional Elective - II	PE	3	-	-	-	3	
5.		Open Elective - II	OE	3	-	-	-	3	
<b>LABORATORY</b>									
6.	19IITC611L	Networks Laboratory	PC	-	-	4	-	2	
7.	19IITC612L	Embedded Systems and IoT Laboratory	PC	-	-	3	1	2	
8.	19ILEH612L	Communication Skills Laboratory	HS	-	-	2	-	1	
<b>TOTAL CREDITS</b>									20
<b>EMPLOYABILITY ENHANCEMENT COURSE</b>									
9.	19IITA611I	Inplant Training / Internship <sup>#</sup>	EEC	-	-	-	-	1 <sup>#</sup>	
10.	19IITA601I	Industry Supported Course (Optional) <sup>**</sup>	EEC	1	-	-	-	1 <sup>**</sup>	
<b>MANDATORY COURSE</b>									
11.	19IGEM611L	NSS / NCC / YRC - Phase - III <sup>*</sup>	MC	-	-	2	-	1 <sup>*</sup>	
12.	19IGEM601T	Foreign Language / Indian Constitution <sup>‡</sup>	MC	3	-	-	-	3 <sup>‡</sup>	
<b>ONLINE COURSE<sup>§</sup></b>									
13.		Online Course (Optional) <sup>§</sup>	PE	-	-	-	-	3 <sup>§</sup>	

\* Students have to complete the respective phase III.

‡ Students those who have not earned 3 credits through NSS / NCC / YRC must register for this course and earn 3 credits.

# Mandatory to do Internship and earn minimum one credit between 3<sup>rd</sup> and 6<sup>th</sup> semester.

\*\* Students may earn credits in lieu of Professional Elective - V in 8<sup>th</sup> semester. Please refer Clause 26.1.1 of B.E. Regulations 2019.

‡ Online courses of three credits each can be considered in lieu of Professional Elective - IV and Professional Elective - VI. A student earned only three credits can drop only Professional Elective - VI. Please refer Clause 14.9 of B.E. Regulations 2019.



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SEMESTER VII									
S.No	Course Code	Course Title	Category	L	T	P	R	C	
<b>THEORY</b>									
1.	1911TC701T	Cryptography and Network Security	PC	3	-	-	-	3	
2.		Open Elective III	OE	3	-	-	-	3	
3.		Professional Elective III	PE	3	-	-	-	3	
4.		Professional Elective IV	PE	3	-	-	-	3	
5.	1911TA701T	Comprehensive Examination <sup>2</sup>	PC	-	-	-	-	3 <sup>3</sup>	
<b>LABORATORY</b>									
6.	1911TC711L	Security Laboratory	PC	-	-	4	-	2	
<b>EMPLOYABILITY ENHANCEMENT COURSE</b>									
7.	1911TP711J	Project Work / Start up – Phase - I	EEC	-	-	-	4	2	
8.	1911TA711I	Inplant Training / Internship <sup>4</sup>	EEC	-	-	-	-	1	
<b>TOTAL CREDITS</b>									17
9.	1911TA701I	Industry Supported Course (optional) <sup>4,5</sup>	EEC	1	-	-	-	1 <sup>6</sup>	
<b>ONLINE COURSE<sup>8</sup></b>									
10.		Online Course (optional) <sup>5</sup>	PE	-	-	-	-	3 <sup>5</sup>	

<sup>2</sup> Students may earn credits in lieu of Professional elective – III in 7<sup>th</sup> semester. Please refer clause 26.2 of B.E. Regulations 2019

<sup>4</sup> Mandatory to earn at least one credit by doing internship between 3<sup>rd</sup> and 6<sup>th</sup> semester with one credit reflecting in this semester for CGPA calculation.

<sup>6</sup> Students may earn credits in lieu of Professional Elective - V in 8<sup>th</sup> semester. Please refer Clause 26.1.1 of B.E. Regulations 2019.

<sup>5</sup> Online courses of three credits each can be considered in lieu of Professional Elective – IV and Professional Elective – VI. A student earned only three credits can drop only Professional Elective – VI. Please refer Clause 14.9 of B.E. Regulations 2019.



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SEMESTER VIII									
S.No	Course Code	Course Title	Category	L	T	P	R	C	
<b>THEORY</b>									
1.		Professional Elective -V	PE	3	-	-	-	3	
2.		Professional Elective -VI	PE	3	-	-	-	3	
<b>EMPLOYABILITY ENHANCEMENT COURSE</b>									
3.	191HTP811J	Project Work / Start up – Phase - II	EEC	-	-	-	20	10	
<b>TOTAL CREDITS</b>									<b>16</b>

**PROGRAMME TOTAL CREDITS – 165**



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**HUMANITIES AND SOCIAL SCIENCES (HS)**

S.No	Subject Code	Subject	Semester	Credits
1.	191LEH101T	Technical English	I	3
2.	191LEH201T	Professional Communication/BEC Certification	II	3
3.	191GEH311L	Yoga / Social Service (Phase I)	III	1
4.	191GEH511L	Yoga / Social Service (Phase II)	V	1
5.	191MBC521T	Professional Ethics and Principles of Management	VI	3
6.	191LEH612L	Communication Skills Laboratory	VI	1
<b>TOTAL CREDITS</b>				<b>12</b>

**BASIC SCIENCE COURSES (BS)**

S.No	Subject Code	Subject	Semester	Credits
1.	191MAB101T	Engineering Mathematics - I	I	4
2.	191PYB101T	Engineering Physics	I	3
3.	191CYB101T	Engineering Chemistry	I	3
4.	191GEB111L	Physics and Chemistry Laboratory	I	2
5.	191MAB201T	Engineering Mathematics - II	II	4
6.	191PYB202T	Physics for Information Science	II	3
7.	191MAB302T	Discrete Mathematics	III	4
8.	191MAB405T	Probability and Statistics	IV	4
<b>TOTAL CREDITS</b>				<b>27</b>

**ENGINEERING SCIENCE COURSES (ES)**

S.No	Subject Code	Subject	Semester	Credits
1.	191GES102T	Problem Solving and Python Programming	I	3
2.	191GES211L	Python Programming Laboratory	I	2



3.	191GES101T	Engineering Graphics	I	4
4.	191GES201T	Basic Electrical and Electronics Engineering	II	3
5.	191GES111L	Engineering Practices Laboratory	II	2
6.	191GES204T	Programming in C	II	3
7.	191GES213L	C Programming Laboratory	II	2
8.	191ECS321T	Digital Principles and System Design	III	3
9.	191ECS331L	Digital Systems Laboratory	III	2
10.	191ECS422T	Principles of Communication	III	3
<b>TOTAL CREDITS</b>				<b>27</b>

#### PROFESSIONAL CORE COURSES (PC)

S.No	Subject Code	Subject	Semester	Credits
1.	191ITC301T	Data Structures and Algorithms	III	3
2.	191ITC302T	Object Oriented Programming	III	3
3.	191ITC303T	Operating Systems	III	3
4.	191ITC311L	Data Structures Laboratory	III	2
5.	191ITC312L	Object Oriented Programming Laboratory	III	2
6.	191ITC401T	Database Management Systems	IV	3
7.	191ITC402T	Software Engineering	IV	3
8.	191ITC403T	Computer Architecture	IV	3
9.	191ITC411L	Database Management Systems Laboratory	IV	2
10.	191ITC412L	Software Engineering Laboratory	IV	2
11.	191ITC413L	Open Source Programming Laboratory	IV	2
12.	191ITC501T	Computer Networks	V	3
13.	191ITC502T	Data warehousing and Data Mining	V	3
14.	191ITC503T	Web Technology	V	3



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15.	191ITC511L	Web Technology Laboratory	V	2
16.	191ITC512L	Mobile Application Development Laboratory	V	2
17.	191ITC601T	Mobile Computing	VI	3
18.	191ITC602T	Artificial Intelligence	VI	3
19.	191ITC603T	Embedded Systems and IoT Applications	VI	3
20.	191ITC611L	Networks Laboratory	VI	2
21.	191ITC612L	Embedded Systems and IoT Laboratory	VI	2
22.	191ITC701T	Cryptography and Network Security	VII	3
23.	191ITC711L	Security Laboratory	VII	2
<b>TOTAL CREDITS</b>				<b>59</b>

#### PROFESSIONAL ELECTIVE COURSES (PE)

Sl No	Code No	Subject	Semester	Credits
<b>Professional Elective -I</b>				
1.	191ITE501T	Big Data Analytics	V	3
2.	191ITE502T	Image Processing	V	3
3.	191ITE503T	Cyber Law	V	3
4.	191ITE504T	Block Chain Technology	V	3
5.	191ITE505T	Principles of Cloud Computing	V	3
6.	191ITE506T	Design and Development of Cloud	V	3
7.	191ITE507T	Software Testing	V	3
8.	191ITE508T	Principles of Compiler Design	V	3
<b>Professional Elective -II</b>				
9.	191ITE601T	NO SQL	VI	3
10.	191ITE602T	Machine Learning	VI	3
11.	191ITE603T	Network Programming, Protocols and Standards.	VI	3
12.	191ITE604T	Ethical Hacking		3

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13.	191ITE605T	Cloud Architecture and Application Development	VI	3
14.	191ITE606T	Cloud Data Streaming	VI	3
15.	191ITE607T	Internet of Things	VI	3
16.	191ITE608T	Human Computer Interaction	VI	3
<b>Professional Elective -III</b>				
17.	191ITE701T	Deep Learning	VII	3
18.	191ITE702T	Knowledge Engineering	VII	3
19.	191ITE703T	Mobile and Wireless Security	VII	3
20.	191ITE704T	Security Governance, Risk and compliance	VII	3
21.	191ITE705T	Cloud Big Data Essentials	VII	3
22.	191ITE706T	Cloud Strategy Planning and Management	VII	3
23.	191ITE707T	Robotics	VII	3
24.	191ITE708T	Genetic Algorithms	VII	3
<b>Professional Elective -IV</b>				
25.	191ITE711T	Natural Language Processing	VII	3
26.	191ITE712T	Business Intelligence	VII	3
27.	191ITE713T	Malware Analysis	VII	3
28.	191ITE714T	Secure Coding and Principles	VII	3
29.	191ITE715T	IoT -Architecture Protocols and Security	VII	3
30.	191ITE716T	Cloud Security	VII	3
31.	191ITE717T	3D Printing and Design	VII	3
32.	191ITE718T	Parallel Programming Using Open CL	VII	3
<b>Professional Elective -V</b>				
33.	191ITE801T	Bio Inspired Computing	VIII	3
34.	191ITE802T	Database Security	VIII	3
35.	191ITE803T	Software Defined Networks	VIII	3
36.	191ITE804T	Forensics and Incident Response	VIII	3

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37.	191ITE805T	Edge Computing	VIII	3
38.	191ITE806T	Energy Management for IOT devices	VIII	3
39.	191ITE807T	Pervasive Computing	VIII	3
40.	191ITE808T	OS for Smart Devices	VIII	3
<b>Professional Elective -VI</b>				
41.	191ITE811T	Data Visualization Techniques	VIII	3
42.	191ITE812T	Data Science	VIII	3
43.	191ITE813T	Cyber Security	VIII	3
44.	191ITE814T	Data Centric Networks	VIII	3
45.	191ITE815T	Cloud Virtualization	VIII	3
46.	191ITE816T	IoT Security	VIII	3
47.	191ITE817T	Virtual Reality	VIII	3
48.	191ITE818T	Quantum Computing	VIII	3
<b>TOTAL CREDITS</b>				<b>18</b>

#### EMPLOYABILITY ENHANCEMENT COURSES (EEC)

Sl. No.	Subject Code	Subject	Semester	Credits
1.		In plant Training / Internship	III to VII	1
2.		Industry Supported Course (optional)	III to VII	—
3.	191ITP711J	Project Work / Start up – Phase -I	VII	2
4.	191ITP811J	Project Work / Start up – Phase -II	VIII	10

#### MANDATORY COURSES (MC)

Sl. No.	Subject Code	Subject	Semester	Credits
1.	191GEM101L	Induction Training	I	1
2.	191CYM201T	Environmental Science	II	3
3.	191GEM211L	NSS / NCC / YRC (Phase I)	II	1



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4.	191GEM411L	NSS / NCC / YRC (Phase II)	IV	1
5.	191GEM611L	NSS / NCC / YRC (Phase III)	VI	1
6.	191GEM601T	Foreign Language / Indian Constitution	VI	3

### CREDIT DISTRIBUTION

SEMESTER →	I	II	III	IV	V	VI	VII	VIII	CREDIT
Humanities and Social Sciences (HS)	3	3	1		4	1			12
Basic Sciences(BS)	12	7	4	4					27
Engineering Sciences (ES)	9	10	5	3					27
Professional Core (PC)			13	15	13	13	5		59
Professional Electives (PE)					3	3	6	6	18
Open Electives (OE)					3	3	3		9
Employability Enhancement Courses (EEC)							3	10	13
Total Credit	24	20	23	22	23	20	17	16	165

### NON CGPA COURSES DETAILS

	I	II	III	IV	V	VI	VII	VIII	Minimum credits to be earned for awarding degree
In plant Training / Internship			√	√	√	√	√		1
Industry Supported Course			√	√	√	√	√		-
Mandatory courses (MC)	√	√		√		√			7
Online Courses (PE)			√	√	√	√	√		-