Date:01-07-2020

All programmes offered by VFSTR follow Choice Based Credit System (CBCS). The annexure contains the structure of programmes indicating the courses, credits/electives.

DEAN ACADEMICS

B. Tech.

BT

I YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

I Year I Semester

Course Code	Course Title	L	T	P	C
16HS101	Basic Mathematics-I	3	1	2	5
16HS102	Engineering Physics	3	-	-	3
16HS105	Technical English Communication	3	-	2	4
16CS101	Basics of Computers and Internet	3	-	2	4
16CS102	Computer Programming	3	1	2	5
16EE101	Basics of Engineering Products	3	-	2	4
16HS104	English Proficiency and Communication Skills	-	-	2	1
16HS110	Engineering Physics Laboratory	-	-	3	2
	Total	**18**	**2**	**15**	**28**

I Year II Semester

Course Code	Course Title	L	T	P	C
16HS106	Basic Mathematics-II	3	1	2	5
16HS107	Engineering Chemistry	3	-	-	3
16ME101	Engineering Graphics	1	-	3	3
16EE102	Basics of Electrical and Electronics Engineering	3	-	2	4
16HS111	Engineering Chemistry Laboratory	-	-	3	2
16HS109	Environmental Science and Technology	2	-	-	2
16BT102	Bioproducts and Bioentrepreneurship	3	1	-	4
16ME103	Work shop Practice	-	-	3	2
	Total	**15**	**2**	**13**	**25**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course ;

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

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II YEAR

II Year I Semester

Course Code	Course Title	L	T	P	C
16HS202	Probability and Statistics	3	1	-	4
16MS201	Management Science	3	-	-	3
16BT201	Biochemistry	3	-	2	4
16BT202	Cell Biology	3	-	2	4
16BT203	Microbiology	3	-	2	4
16BT204	Process Engineering Principles	3	1	-	4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	18	2	6	24-26

*   Courses and Progrmmes such as Foreign Languages, Summer Internship, NCC, NSS, Yoga, Music, Dance, Value Added Courses etc. for which credits and other details shall be defined by concerned coordinators.

II Year II Semester

Course Code	Course Title	L	T	P	C
16BT205	Genetics	3	1	-	4
16BT206	Heat and Mass Transfer	3	-	2	4
16BT207	Instrumental Methods of Biological Analysis	3	-	2	4
16BT208	Molecular Biology	3	-	2	4
16EL102	Soft Skills Lab	-	-	2	1
	Department Elective	-	-	-	4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	12	1	8	25-28

B.Tech.

BT

III YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
16BT301	Biochemical Reaction Engineering	3	-	2	4
16BT302	Biosensors	3	1	-	4
16BT303	Enzyme Technology	3	-	2	4
16BT304	Industrial Biotechnology	3	1	-	4
16EL103	Professional Communication Lab	-	-	2	1
	Department Elective	-	-	-	4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**12**	**2**	**6**	**25-28**

III Year II Semester

Course Code	Course Title	L	T	P	C
16HS301	Professional Ethics	2	-	-	2
16BT305	Bioethics and Intellectual Property Rights	3	1	-	4
16BT306	Bioprocess Engineering	3	-	2	4
16BT307	Genetic Engineering and Epigenetics	3	-	2	4
16BT308	Thermodynamics for Biotechnologists	3	-	-	3
	Department Elective	-	-	-	4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**14**	**1**	**4**	**25-28**

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

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IV YEAR

IV Year I Semester

Course Code	Course Title	L	T	P	C
16BT401	Nanobiotechnology	3	-	-	3
16BT402	Bioinformatics	3	-	2	4
16BT403	Down Stream Processing	2	-	2	3
16BT404	Genomics and Proteomics	3	-	2	4
16BT405	Immunology and Immunoinformatics	3	-	2	4
	Department Elective	-	-	-	4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**14**	**-**	**8**	**26-29**

IV Year II Semester

Course Code	Course Title	L	T	P	C
16BT411/16BT412	Project work / Internship	-	-	30	15
	Total	**-**	**-**	**30**	**15**

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA	: Writing Assignment / Reading Assignment
SSH/HSH	: Self Study Hours / Home Study Hours
CS	: Case Study and Example
SA	: Skills Activity
S	: Seminar
BS	: Beyond Syllabus

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BT

ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

DEPARTMENT ELECTIVE STREAMS AND COURSES

STREAM - 1: PLANT BIOTECHNOLOGY

Course Code	Course Title	L	T	P	C
16BT250	PLANT METABOLISM	3	1	-	4
16BT350	AGRICULTURAL BIOTECHNOLOGY	3	1	-	4
16BT353	PLANT TISSUE CULTURE	3	-	2	4
16BT450	TRANSGENIC PLANTS	3	1	-	4

STREAM - 2: ANIMAL BIOTECHNOLOGY

Course Code	Course Title	L	T	P	C
16BT251	PHYSIOLOGY AND HISTOLOGY	3	1	-	4
16BT351	CELL CULTURE TECHNIQUES	3	-	2	4
16BT354	TISSUE ENGINEERING AND REGENERATIVE MEDICINE	3	1	-	4
16BT451	DRUG TOXICITY EVALUATION	3	1	-	4

STREAM - 3: FERMENTATION TECHNOLOGY

Course Code	Course Title	L	T	P	C
16BT252	MICROBIAL TECHNOLOGY	3	1	-	4
16BT352	FERMENTATION PRODUCTS	3	1	-	4
16BT355	BIOPROCESS MODELLING AND SIMULATIONS	3	1	-	4
16BT452	METABOLOMICS AND METABOLIC ENGINEERING	3	1	-	4

MODULAR COURSES

Course Code	Course Title	L	T	P	C
-	MODULAR COURSE I	1	-	-	1
-	MODULAR COURSE II	1	-	-	1

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OPEN ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

OPEN ELECTIVE STREAMS AND COURSES

A) MINOR STREAMS:

MANAGEMENT STREAM

Course Code	Course Title	L	T	P	C
16MS202	Principles and Practice of Management	3	-	-	3
16MS301	Managerial Economics	3	-	-	3
16MS302	Finance for Engineers	3	-	-	3
16MS401	Engineering Entrepreneurship	3	-	-	3

HUMANITIES STREAM

Course Code	Course Title	L	T	P	C
16HS219	Indian History and Culture	3	-	-	3
16HS224	Polity and Governance of India	3	-	-	3
16HS307	Economic and Social Development of India	3	-	-	3
16HS308	Geography and Environmental Concerns of India	3	-	-	3

IT STREAM

Course Code	Course Title	L	T	P	C
16IT201	Object Oriented Programming	3	-	2	4
16CS303	Web Technologies	3	1	2	5
16CS254	Scripting Languages	3	-	2	4
16CS201	Database Management Systems	3	1	2	5
16IT309	Unix Programming	3	1	-	4
16CS301	Software Engineering	3	-	2	4
16CS302	Data Mining Techniques	3	-	2	4
16IT409	Multimedia Systems	3	-	2	4

B) OPEN STREAMS OF OTHER DEPARTMENTS

Elective Streams offered by other departments that are opted by the students are included in this category.

C) INDIVIDUAL ELECTIVE COURSES OF OTHER DEPARTMENTS

Individual elective courses of other departments that are opted by the students are included in this category.

B.Tech.

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I YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

I Year I Semester

Course Code	Course Title	L	T	P	C
16HS103	Engineering Mathematics-I	3	1	2	5
16HS102	Engineering Physics	3	-	-	3
16HS105	Technical English Communication	3	-	2	4
16CS101	Basics of Computers and Internet	3	-	2	4
16CS102	Computer Programming	3	1	2	5
16EE101	Basics of Engineering Products	3	-	2	4
16HS104	English Proficiency and Communication Skills	-	-	2	1
16HS110	Engineering Physics Laboratory	-	-	3	2
	Total	**18**	**2**	**15**	**28**

I Year II Semester

Course Code	Course Title	L	T	P	C
16HS108	Engineering Mathematics-II	3	1	2	5
16HS107	Engineering Chemistry	3	-	-	3
16ME101	Engineering Graphics	1	-	3	3
16EE102	Basics of Electrical and Electronics Engineering	3	-	2	4
16HS111	Engineering Chemistry Laboratory	-	-	3	2
16HS109	Environmental Science and Technology	2	-	-	2
16ME103	Work shop Practice	-	-	3	2
16CH101	Basics of Chemical Engineering	3	-	-	3
	Total	**15**	**1**	**13**	**24**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course ;

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

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CHE
II YEAR

II Year I Semester

Course Code	Course Title	L	T	P	C
16HS202	Probability and Statistics	4	-	-	4
16EL102	Soft Skills Laboratory	-	-	2	1
16CS202	Data Structures	3	-	2	4
16CH102	Materials Science and Technology	4	-	-	4
16CH201	Chemical Process Calculations	3	1	-	4
16CH202	Momentum Transfer	3	-	2	4
16CH203	Process Instrumentation	3	1	-	4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**20**	**2**	**6**	**26-28**

* Courses and Programmes such as Foreign Languages, Summer Internship, NCC, NSS, Yoga, Music, Dance, Value Added Courses etc. for which credits and other details shall be defined by concerned coordinators.

II Year II Semester

Course Code	Course Title	L	T	P	C
16EL103	Professional Communications Laboratory	-	-	2	1
16CH204	Chemical Engineering Thermodynamics-I	3	1	-	4
16CH205	Mechanical Unit Operations	3	-	2	4
16CH206	Organic Chemistry	3	1	2	4
16CH207	Process Heat Transfer	3	-	2	4
	Department Elective	-	-	-	3
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**12**	**2**	**8**	**24-27**

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III YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
16CH301	Chemical Engineering Thermodynamcis-II	3	1	-	4
16CH302	Chemical Reaction Engineering-I	3	-	2	4
16CH303	Mass Transfer Operations-I	3	-	2	4
16CH304	Process Dynamics and Control	3	-	2	4
	Department / Open Elective	-	-	-	3-4
	Department Elective	-	-	-	3
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**12**	**1**	**6**	**23-26**

III Year II Semester

Course Code	Course Title	L	T	P	C
16HS301	Professional Ethics	2	-	-	2
16CH305	Chemical Reaction Engineering-II	3	-	2	4
16CH306	Chemical Technology	3	-	2	4
16CH307	Mass Transfer Operations-II	3	-	2	4
16CH308	Process Modeling and Simulation	3	-	2	4
	Department Elective	-	-	-	3
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**17**	**-**	**8**	**25-28**

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

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IV YEAR

IV Year I Semester

Course Code	Course Title	L	T	P	C
16MS201	Management Science	3	-	-	3
16CH401	Chemical Engineering Plant Design and Economics	3	1	-	4
16CH402	Chemical Process Equipment Design	3	-	2	4
16CH403	Optimization of Chemical Processes	3	1	-	4
16CH404	Transport Phenomena	3	1	-	4
	Department Elective	-	-	-	3
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**15**	**3**	**2**	**22-25**

IV Year II Semester

Course Code	Course Title	L	T	P	C
16CH411/16CH412	Project work / Internship	-	-	30	15
	Total	**-**	**-**	**30**	**15**

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA	: Writing Assignment / Reading Assignment
SSH/HSH	: Self Study Hours / Home Study Hours
CS	: Case Study and Example
SA	: Skills Activity
S	: Seminar
BS	: Beyond Syllabus

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CHE

ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

DEPARTMENT ELECTIVE STREAMS AND COURSES

STREAM - 1: ENVIRONMENTAL AND SAFETY ENGINEERING

Course Code	Course Title	L	T	P	C
16CH240	Effluent Treatment Methods	3	-	-	3
16CH340	Solid Waste Management and Treatment	3	-	-	3
16CH350	Environmental Regulations and Impact Analysis	3	-	-	3
16CH440	Industrial Safety and Hazard Analysis	3	-	-	3

STREAM - 2: MINERAL PROCESSING

Course Code	Course Title	L	T	P	C
16CH241	Mineral Process Technology	3	-	-	3
16CH341	Mining Methods and Unit Operations	3	-	-	3
16CH351	Physical Separation Process	3	-	-	3
16CH441	Extraction Metalurgy	3	-	-	3

STREAM - 3: PHARMACEUTICAL AND FINE CHEMICALS

Course Code	Course Title	L	T	P	C
16CH242	Pharmaceuticals Chemistry	3	-	-	3
16CH342	Pharmaceutical and Fine Chemicals	3	-	-	3
16CH352	Pharmaceutical Analytical Techniques	3	-	-	3
16CH442	Drug Design and Formulation	3	-	-	3

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ELECTIVES

R-16 CURRICULUM
(Applicable for students admitted into First Year from academic year 2016-17 onwards)

DEPARTMENT ELECTIVE STREAMS AND COURSES

STREAM - 4: POLYMER AND PLASTICS ENGINEERING

Course Code	Course Title	L	T	P	C
16CH243	Polymer Structure and Property Relationship	3	-	-	3
16CH343	Manufacturing of Industrial Polymers	3	-	-	3
16CH353	Polymer Processing Technology	3	-	-	3
16CH443	Polymer Testing Methods	3	-	-	3

STREAM - 5: PETROLEUM ENGINEERING

Course Code	Course Title	L	T	P	C
16CH244	Petroleum Production Operations	3	-	-	3
16CH344	Petroleum Refinery Engineering	3	-	-	3
16CH354	Petrochemicals	3	-	-	3
16PL401	Natural Gas Engineering	3	-	-	3

INDIVIDUAL ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
16CH245	Conventional Energy Sources	3	-	-	3
16CH345	Non Conventional Energy Sources	3	-	-	3
16CH355	Energy Management and Auditing	3	-	-	3
16CH445	Energy Integraion	3	-	-	3

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ELECTIVES

R-16 CURRICULUM
(Applicable for students admitted into First Year from academic year 2016-17 onwards)

OPEN ELECTIVE STREAMS AND COURSES

A) MINOR STREAMS:
MANAGEMENT STREAM

Course Code	Course Title	L	T	P	C
16MS202	Principles and Practice of Management	3	-	-	3
16MS301	Managerial Economics	3	-	-	3
16MS302	Finance for Engineers	3	-	-	3
16MS401	Engineering Entrepreneurship	3	-	-	3

HUMANITIES STREAM

Course Code	Course Title	L	T	P	C
16HS219	Indian History and Culture	3	-	-	3
16HS224	Polity and Governance of India	3	-	-	3
16HS307	Economic and Social Development of India	3	-	-	3
16HS308	Geography and Environmental Concerns of India	3	-	-	3

IT STREAM

Course Code	Course Title	L	T	P	C
16IT201	Object oriented Programming	3	-	2	4
16CS303	Web Technologies	3	1	2	5
16CS254	Scripting Languages	3	-	2	4
16CS201	Database Management Systems	3	1	2	5
16IT309	Unix Programming	3	1	-	4
16CS301	Software Engineering	3	-	2	4
16CS302	Data Mining Techniques	3	-	2	4
16IT409	Multimedia Systems	3	-	2	4

B) OPEN STREAMS OF OTHER DEPARTMENTS
Elective Streams offered by other departments that are opted by the students are included in this category.

C) INDIVIDUAL ELECTIVE COURSES OF OTHER DEPARTMENTS
Individual elective courses of other departments that are opted by the students are included in this category.

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I YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

I Year I Semester

Course Code	Course Title	L	T	P	C
16HS103	Engineering Mathematics-I	3	1	2	5
16HS102	Engineering Physics	3	-	-	3
16HS105	Technical English Communication	3	-	2	4
16CS101	Basics of Computers and Internet	3	-	2	4
16CS102	Computer Programming	3	1	2	5
16EE101	Basics of Engineering Products	3	-	2	4
16HS104	English Proficiency and Communication Skills	-	-	2	1
16HS110	Engineering Physics Laboratory	-	-	3	2
	Total	**18**	**2**	**15**	**28**

I Year II Semester

Course Code	Course Title	L	T	P	C
16HS108	Engineering Mathematics-II	3	1	2	5
16HS107	Engineering Chemistry	3	-	-	3
16ME101	Engineering Graphics	1	-	3	3
16EE102	Basics of Electrical and Electronics Engineering	3	-	2	4
16HS111	Engineering Chemistry Laboratory	-	-	3	2
16HS109	Environmental Science and Technology	2	-	-	2
16ME102	Engineering Mechanics	3	1	-	4
16ME103	Work shop Practice	-	-	3	2
	Total	**15**	**2**	**13**	**25**

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

B.Tech.

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II YEAR

II Year I Semester

Course Code	Course Title	L	T	P	C
16HS202	Probability and Statistics	3	1	-	4
16CE201	Building Materials and Concrete Technology	3	1	-	4
16CE202	Fluid Mechanics	3	-	2	4
16CE203	Solid Mechanics	3	1	-	4
16CE204	Surveying - I	3	-	2	4
16CE205	Material Testing Laboratory	-	-	3	2
16HS301	Professional Ethics	2	-	-	2
	Employability and Life Skills*	-	-	-	1-3
	Total	**17**	**3**	**7**	**25-27**

II Year II Semester

Course Code	Course Title	L	T	P	C
16CE206	Building Construction and Planning	3	-	2	4
16CE207	Environmental Engineering - I	3	1	-	4
16CE208	Hydraulics and Hydraulic Machines	3	-	2	4
16CE209	Structural Analysis - I	3	1	-	4
16CE210	Surveying - II	3	-	2	4
16EL102	Soft Skills Laboratory	-	-	2	1
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills*	-	-	-	1-3
	Total	**15**	**2**	**8**	**28-32**

B.Tech.

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III YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
16CE301	Environmental Engineering - II	3	-	2	4
16CE302	Geo Technical Engineering - I	3	-	2	4
16CE303	Structural Analysis - II	3	1	-	4
16CE304	Transportation Engineering - I	3	-	2	4
16CE305	Water Resources Engineering - I	3	1	-	4
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills*	-	-	-	1-3
	Total	15	2	6	27-31

III Year II Semester

Course Code	Course Title	L	T	P	C
16CE306	Design of Reinforced Concrete Structures	3	1	-	4
16CE307	Geo Technical Engineering - II	3	-	2	4
16CE308	Structural Analysis - III	3	1	-	4
16CE309	Water Resources Engineering - II	3	1	-	4
16EL103	Professional Communication Laboratory	-	-	2	1
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills*	-	-	-	1-3
	Total	12	3	4	24-28

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IV YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

IV Year I Semester

Course Code	Course Title	L	T	P	C
16CE401	Design of Steel Structures	3	1	-	4
16CE402	Engineering Geology	3	-	2	4
16CE403	Estimation and Costing	3	-	2	4
16MS201	Management Science	3	-	-	3
16CE405	Computer Applications in Civil Engg. Lab	-	-	3	2
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills*	-	-	-	1-3
	Total	11	2	7	24-28

* Courses and Programmes such as Foreign Languages, Summer Internship, NCC, NSS, Yoga, Music, Dance, Value Added Courses etc. for which credits and other details shall be defined by concerned coordinators.

IV Year II Semester

Course Code	Course Title	L	T	P	C
16CE411/16CE412	Project work / Internship	-	-	30	15
	Total	-	-	30	15

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course ;

In addition, the following information in hours/semester is also provided for each course.

WA/RA	:	Writing Assignment / Reading Assignment
SSH/HSH	:	Self Study Hours / Home Study Hours
CS	:	Case Study and Example
SA	:	Skills Activity
S	:	Seminar
BS	:	Beyond Syllabus

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**DEPARTMENT
ELECTIVES**

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

DEPARTMENT ELECTIVE STREAMS AND COURSES

STREAM - 1: CONSTRUCTION STREAM

Course Code	Course Title	L	T	P	C
16CE240	Non-Destructive Testing	3	1	-	4
16CE340	Urban Infrastructure	3	1	-	4
16CE341	Disaster Management and Mitigation	3	1	-	4
16CE440	Construction Methods and Equipments	3	1	-	4

INDIVIDUAL ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
16CE280	Engineering Seismology	3	1	-	4
16CE281	Renewable Energy Resources	3	1	-	4
16CE380	Remote Sensing and GIS Application	3	-	2	4
16CE381	Traffic Engineering	3	1	-	4
16CE382	Ground Improvement Techniques	3	1	-	4
16CE383	Structural Dynamics	3	1	-	4
16CE480	Advanced Structural Design	3	1	-	4
16CE481	Soil Dynamics and Machine Foundations	3	1	-	4

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R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

OPEN ELECTIVE STREAMS AND COURSES

A) MINOR STREAMS:

MANAGEMENT STREAM

Course Code	Course Title	L	T	P	C
16MS202	Principles and Practice of Management	3	-	-	3
16MS301	Managerial Economics	3	-	-	3
16MS302	Finance for Engineers	3	-	-	3
16MS401	Engineering Entrepreneurship	3	-	-	3

HUMANITIES STREAM

Course Code	Course Title	L	T	P	C
16HS219	Indian History and Culture	3	-	-	3
16HS224	Polity and Governance of India	3	-	-	3
16HS307	Economic and Social Development of India	3	-	-	3
16HS308	Geography and Environmental Concerns of India	3	-	-	3

IT STREAM

Course Code	Course Title	L	T	P	C
16IT201	Object oriented Programming	3	-	2	4
16CS303	Web Technologies	3	1	2	5
16CS254	Scripting Languages	3	-	2	4
16CS201	Database Management Systems	3	1	2	5
16IT309	Unix Programming	3	1	-	4
16CS301	Software Engineering	3	-	2	4
16CS302	Data Mining Techniques	3	-	2	4
16IT409	Multimedia Systems	3	-	2	4

B) OPEN STREAMS OF OTHER DEPARTMENTS

Elective Streams offered by other departments that are opted by the students are included in this category.

C) INDIVIDUAL ELECTIVE COURSES OF OTHER DEPARTMENTS

Individual elective courses of other departments that are opted by the students are included in this category.

B. Tech.

CSE

I YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

B. Tech - COMPUTER SCIENCE AND ENGINEERING

I Year I Semester

Course Code	Course Title	L	T	P	C
16HS103	Engineering Mathematics-I	3	1	2	5
16HS102	Engineering Physics	3	-	-	3
16HS105	Technical English Communication	3	-	2	4
16CS101	Basics of Computers and Internet	3	-	2	4
16CS102	Computer Programming	3	1	2	5
16EE101	Basics of Engineering Products	3	-	2	4
16HS104	English Proficiency and Communication Skills	-	-	2	1
16HS110	Engineering Physics Laboratory	-	-	3	2
	Total	**18**	**2**	**15**	**28**

I Year II Semester

Course Code	Course Title	L	T	P	C
16HS108	Engineering Mathematics-II	3	1	2	5
16HS107	Engineering Chemistry	3	-	-	3
16ME101	Engineering Graphics	1	-	3	3
16EE102	Basics of Electrical and Electronics Engineering	3	-	2	4
16HS111	Engineering Chemistry Laboratory	-	-	3	2
16HS109	Environmental Science and Technology	2	-	-	2
16EC202	Electronic Devices and Circuits	3	-	2	4
16ME103	Work shop Practice	-	-	3	2
	Total	**15**	**1**	**15**	**25**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course ;

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

B.Tech.

CSE

II YEAR

II Year I Semester

Course Code	Course Title	L	T	P	C
16HS202	Probability and Statistics	4	-	-	4
16MS201	Management Science	3	-	-	3
16CS201	Database Management Systems	3	1	2	5
16CS202	Data Structures	3	-	2	4
16CS203	Digital Logic Design	3	1	-	4
16CS204	Discrete Mathematical Structures	3	-	-	3
16EL102	Soft Skills Laboraotry	-	-	2	1
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**19**	**2**	**6**	**25-27**

*   Courses and Programmes such as Foreign Languages, Summer Internship, NCC, NSS, Yoga, Music, Dance, Value Added Courses etc. for which credits and other details shall be defined by concerned coordinators.

II Year II Semester

Course Code	Course Title	L	T	P	C
16CS205	Computer Organization and Architecture	3	1	-	4
16CS206	Design and Analysis of Algorithms	3	-	2	4
16CS207	Formal Languages and Automata Theory	3	1	-	4
16CS208	Object Oriented Programming using JAVA	3	-	2	4
16EL103	Professional Communications Laboratory	-	-	2	1
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**12**	**2**	**6**	**24-28**

B. Tech.

CSE

III YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
16HS301	Professional Ethics	2	-	-	2
16CS301	Software Engineering	3	-	2	4
16CS302	Web Technologies	3	1	2	5
16CS303	Compiler Design	3	-	-	3
16CS304	Operating Systems	3	-	2	4
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**14**	**1**	**6**	**25-29**

*   Includes Courses and Programmes like Foreign Languages, Summer Internship, NCC, NSS, Yoga, Music, Dance and Value Added Courses.

III Year II Semester

Course Code	Course Title	L	T	P	C
16CS305	Data Mining Techniques	3	-	2	4
16CS306	Comuter Networks	3	-	2	4
16CS307	Microprocessors and Interfacing	3	-	-	3
16CS308	Operations Research for Computer Science Engineers	3	1	-	4
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**12**	**1**	**4**	**22-26**

B. Tech.

CSE

IV YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

IV Year I Semester

Course Code	Course Title	L	T	P	C
16CS401	Search Engines	3	-	-	3
16CS402	Embedded Systems	3	-	2	4
16CS403	Information Security	3	-	2	4
16CS404	Mobile Communications	3	-	2	4
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**12**	**-**	**6**	**22-26**

IV Year II Semester

Course Code	Course Title	L	T	P	C
16CS411/412	Project work/ Internship	-	-	30	15
	Total	**-**	**-**	**30**	**15**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course ;
In addition, the following information in hours/semester is also provided for each course.

WA/RA	:	Writing Assignment /Reading Assignment
SSH/HSH	:	Self Study Hours/ Home Study
CS	:	Case Study and Example
SA	:	Skills Activity
S	:	Seminar
BS	:	Beyond Syllabus

B. Tech.

CSE
**OPEN
ELECTIVES**

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

DEPARTMENT ELECTIVE STREAMS COURSES

STREAM - 1: ADAVANCED NETWORKS

Cours Code	Course Title	L	T	P	C
16CS240	DATA COMMUNICATIONS	3	-	-	3
16CS340	MOBILE TECHNOLOGIES	3	-	2	4
16CS346	NETWORK PROGRAMMING	3	-	2	4
16CS440	MOBILE AD HOC NETWORKS	3	-	2	4

STREAM - 2: COMPUTER VISION

Cours Code	Course Title	L	T	P	C
16CS241	COMPUTER GRAPHICS	3	-	2	4
16CS341	FUNDAMENTALS OF IMAGE PROCESSING	3	-	2	4
16CS344	ARTIFICIAL INTELLIGENCE	3	-	-	3
16CS441	PATTERN RECOGNITION	3	-	2	4

STREAM - 3: TECHNOLOGIES FOR BUSINESS APPLICATIONS

Cours Code	Course Title	L	T	P	C
16CS242	SCRIPTING LANGUAGES	3	-	2	4
16CS342	OPEN SYSTEMS FOR WEB TECHNOLOGIES	3	-	2	4
16CS347	MIDDLEWERE TECHNOLOGIES	3	-	2	4
16CS442	EMERGING TECHNOLOGIES	3	-	2	4

STREAM - 4: EMBEDDED COMPUTING

Course Code	Course Title	L	T	P	C
16CS243	ADVANCED MICROCONTROLLERS	3	-	2	4
16CS343	REAL TIME OPERATING SYSTEMS	3	-	-	3
16CS348	EMBEDDED C	3	-	2	4
16CS443	INTERNET OF THINGS	3	1	-	4

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OPEN
ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

DEPARTMENT ELECTIVE STREAMS COURSES

STREAM - 5: SOFT COMPUTING

Course Code	Course Title	L	T	P	C
16CS244	FUZZY SET THEORY AND LOGIC	3	1	-	4
16CS344	ARTIFICIAL INTELLIGENCE	3	-	-	3
16CS349	ARTIFICIAL NEURAL NETWORKS	3	-	2	4
16CS444	OTIMIZATION TECHNIQUES	3	1	-	4

STREAM - 6: DATA SCIENCE

Course Code	Course Title	L	T	P	C
16CS245	ADVANCED DATABASES	3	1	-	4
16CS345	DISTRIBUTED SYSTEMS	3	-	-	3
16CS350	CLOUD COMPUTING	3	-	2	4
16CS445	BIG DATA ANALYTICS	3	-	2	4

MODULAR COURSES

Course Code	Course Title	L	T	P	C
16CS370	LAMP - Linux, Apache, MySQL, PHP	2	-	-	2
16CS470	OCJP - Oracle Certified Java Programmer	2	-	-	2

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OPEN ELECTIVES

R-16 CURRICULUM
(Applicable for students admitted into First Year from academic year 2016-17 onwards)

OPEN ELECTIVE STREAMS

MANAGEMENT STREAM

Course Code	Course Title	L	T	P	C
16MS202	Principles and Practice of Management	3	-	-	3
16MS301	Managerical Economics	3	-	-	3
16MS302	Finance for Engineers	3	-	-	3
16MS401	Engineering Entrepreneurship	3	-	-	3

HUMANITIES STREAM

Course Code	Course Title	L	T	P	C
16HS219	Indian History and Culture	3	-	-	3
16HS224	Polity and Governance of India	3	-	-	3
16HS307	Economic and Social Development of India	3	-	-	3
16HS308	Geography and Environmental Concerns of India	3	-	-	3

OPEN STREAMS OF OTHER DEPARTMENTS
Elective Streams offered by other departments that are opted by the students are included in this category.

INDIVIDUAL ELECTIVE COURSES OF OTHER DEPARTMENTS
Individual elective courses of other departments that are opted by the students are included in this category.

B.Tech.
ECE
I YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

I Year I Semester

Course Code	Course Title	L	T	P	C
16HS103	Engineering Mathematics-I	3	1	2	5
16HS102	Engineering Physics	3	-	-	3
16HS105	Technical English Communication	3	-	2	4
16CS101	Basics of Computers and Internet	3	-	2	4
16CS102	Computer Programming	3	1	2	5
16EE101	Basics of Engineering Products	3	-	2	4
16HS104	English Proficiency and Communication Skills	-	-	2	1
16HS110	Engineering Physics Laboratory	-	-	3	2
	Total	**18**	**2**	**15**	**28**

I Year II Semester

Course Code	Course Title	L	T	P	C
16HS108	Engineering Mathematics-II	3	1	2	5
16HS107	Engineering Chemistry	3	-	-	3
16ME101	Engineering Graphics	1	-	3	3
16EE102	Basics of Electrical and Electronics Engineering	3	-	2	4
16HS111	Engineering Chemistry Laboratory	-	-	3	2
16HS109	Environmental Science and Technology	2	-	-	2
16CS202	Data Structures	3	-	2	4
16ME103	Work shop Practice	-	-	3	2
	Total	**15**	**1**	**15**	**25**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course ;

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

B. Tech.

ECE

II YEAR

II Year I Semester

Course Code	Course Title	L	T	P	C
16HS201	Complex Variables and Transformations	3	1	-	4
16EC201	Materials for Electronics Engineering	3	-	-	3
16EC202	Electronic Devices and Circuits	3	-	2	4
16EC203	Network Theory	3	1	-	4
16EC204	Signals and Systems	3	-	2	4
16EC205	Digital Electronics	3	-	2	4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	18	2	6	24-26

*   Courses and Programmes such as Foreign Languages, Summer Internship, NCC, NSS, Yoga, Music, Dance, Value Added Courses etc. for which credits and other details shall be defined by concerned coordinators.

II Year II Semester

Course Code	Course Title	L	T	P	C
16EC206	Probability Theory and Stochastic Processes	3	1	-	4
16EC207	Electronic Circuit Analysis	3	-	2	4
16EC208	Analog Communications	3	-	2	4
16EC209	Linear Control Systems	3	-	-	3
16EL102	Soft Skills Laboratory`	-	-	2	1
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	12	1	6	23-27

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III YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
16EC301	Linear IC's and Applications	3	-	2	4
16EC302	Microprocessors and Microcontrollers	3	-	2	4
16EC303	Digital Communications	3	-	2	4
16EC304	Electromagnetic Waves and Transmission Lines	3	1	-	4
16EL103	Professional Communication Lab	-	-	2	1
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**12**	**1**	**8**	**24-28**

III Year II Semester

Course Code	Course Title	L	T	P	C
16HS301	Professional Ethics	2	-	-	2
16EC305	Computer Architecture and Organization	3	-	-	3
16EC306	VLSI Design	3	-	2	4
16EC307	Antenna Propagation	3	1	-	4
16EC308	Digital Signal Processing	3	-	2	4
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**14**	**1**	**4**	**24-28**

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

B.Tech.

ECE

IV YEAR

IV Year I Semester

Course Code	Course Title	L	T	P	C
16MS201	Management Science	3	-	-	3
16EC401	Optical Communications	3	-	-	3
16EC402	Microwave and Radar Engineering	3	-	2	4
16EC403	Electronic Instrumentation	3	-	2	4
16CS306	Computer Networks	3	-	2	4
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**15**	**-**	**6**	**25-29**

IV Year II Semester

Course Code	Course Title	L	T	P	C
16EC411/16EC412	Project work / Internship	-	-	30	15
	Total	**-**	**-**	**30**	**15**

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA	:	Writing Assignment / Reading Assignment
SSH/HSH	:	Self Study Hours / Home Study Hours
CS	:	Case Study and Example
SA	:	Skills Activity
S	:	Seminar
BS	:	Beyond Syllabus

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ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

DEPARTMENT ELECTIVE STREAMS AND COURSES

STREAM - 1: VLSI

Course Code	Course Title	L	T	P	C
16EC250	Digital System Design using HDL	3	-	2	4
16EC350	Perl and Python	3	-	-	3
16EC351	System on Chip Design	3	-	-	3
16EC450	Hardware Verification Techniques	3	-	-	3
16EC451	Testing of VLSI Circuits	3	-	-	3
16EC452	Nano Electronics	3	-	-	3

STREAM - 2: COMMUNICATION SYSTEMS

Course Code	Course Title	L	T	P	C
16EC260	Television Engineering	3	-	-	3
16EC360	Cellular and Mobile Communications	3	-	-	3
16EC460	Satellite Communications	3	-	-	3
16EC461	Digital Image Processing	3	-	2	4

STREAM - 3: EMBEDDED SYSTEMS AND NETWORKING

Course Code	Course Title	L	T	P	C
16EC270	Embedded Linux	3	1	-	4
16EC370	Microcontrollers for Embedded Systems	3	-	-	3
16EC371	Adhoc and Sensor Networks	3	-	-	3
16EC470	High Speed Networks	3	-	-	3

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

B. Tech.

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ELECTIVES

DEPARTMENT ELECTIVE STREAMS AND COURSES

INDIVIDUAL ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
16CS307	Operating Systems	3	-	2	4
16EC380	Unix and Shell Programming	3	-	-	3
16EC480	DSP Architectures and Programming	3	-	2	4
16EC481	Robotics and Automation	3	-	-	3
16CS457	Internet of Things	3	1	-	4
16EC482	MEMS and NEMS	3	-	-	3

MODULAR COURSES

Course Code	Course Title	L	T	P	C
16EC490	Thermal Management of Electronics Systems	2	-	-	2
16EC491	Introduction to Switch Mode Power Converters	2	-	-	2

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OPEN ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

OPEN ELECTIVE STREAMS AND COURSES

A) MINOR STREAMS:

MANAGEMENT STREAM

Course Code	Course Title	L	T	P	C
16MS202	Principles and Practice of Management	3	-	-	3
16MS301	Managerical Economics	3	-	-	3
16MS302	Finance for Engineers	3	-	-	3
16MS401	Engineering Entrepreneurship	3	-	-	3

HUMANITIES STREAM

Course Code	Course Title	L	T	P	C
16HS219	Indian History and Culture	3	-	-	3
16HS224	Polity and Governance of India	3	-	-	3
16HS307	Economic and Social Development of India	3	-	-	3
16HS308	Geography and Environmental Concerns of India	3	-	-	3

IT STREAM

Course Code	Course Title	L	T	P	C
16IT201	Object oriented Programming	3	-	2	4
16CS303	Web Technologies	3	1	2	5
16CS254	Scripting Languages	3	-	2	4
16CS201	Database Management Systems	3	1	2	5
16IT309	Unix Programming	3	1	-	4
16CS301	Software Engineering	3	-	2	4
16CS302	Data Mining Techniques	3	-	2	4
16IT409	Multimedia Systems	3	-	2	4

B) OPEN STREAMS OF OTHER DEPARTMENTS

Elective Streams offered by other departments that are opted by the students are included in this category.

C) INDIVIDUAL ELECTIVE COURSES OF OTHER DEPARTMENTS

Individual elective courses of other departments that are opted by the students are included in this category.

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

B.Tech.

EEE

I YEAR

I Year I Semester

Course Code	Course Title	L	T	P	C
16HS103	Engineering Mathematics-I	3	1	2	5
16HS102	Engineering Physics	3	-	-	3
16HS105	Technical English Communication	3	-	2	4
16CS101	Basics of Computers and Internet	3	-	2	4
16CS102	Computer Programming	3	1	2	5
16EE101	Basics of Engineering Products	3	-	2	4
16HS104	English Proficiency and Communication Skills	-	-	2	1
16HS110	Engineering Physics Laboratory	-	-	3	2
	Total	**18**	**2**	**15**	**28**

I Year II Semester

Course Code	Course Title	L	T	P	C
16HS108	Engineering Mathematics-II	3	1	2	5
16HS107	Engineering Chemistry	3	-	-	3
16ME101	Engineering Graphics	1	-	3	3
16EE102	Basics of Electrical and Electronics Engineering	3	-	2	4
16HS111	Engineering Chemistry Laboratory	-	-	3	2
16HS109	Environmental Science and Technology	2	-	-	2
16CS202	Data Structures	3	-	2	4
16ME103	Work shop Practice	-	-	3	2
	Total	**15**	**1**	**15**	**25**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course ;

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EEE
II YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

II Year I Semester

Course Code	Course Title	L	T	P	C
16EE201	Linear Systems and Signal Analysis	3	1	-	4
16MS201	Management Science	3	-	-	3
16EE203	Electrical Circuit Analysis	3	-	2	4
16EE205	Electromagnetic Fields and Transmission Lines	3	1	-	4
16EC205	Digital Electronics	3	-	2	4
16EE207	Electronic Devices and Circuit Theory	3	-	2	4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	18	2	6	**24-26**

*   Courses and Progrmmes such as Foreign Languages, Summer Internship, NCC, NSS, Yoga, Music, Dance, Value Added Courses etc. for which credits and other details shall be defined by concerned coordinators.

II Year II Semester

Course Code	Course Title	L	T	P	C
16EE202	DC Machines	3	-	2	4
16EE204	Power Generation Systems	3	1	-	4
16EE206	Power Electronic Devices and Circuits	3	-	2	4
16EE208	Analog Electronics	3	-	2	4
16EL102	Soft Skills Laboratory	-	-	2	1
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	12	1	8	**24-28**

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

B.Tech.

EEE

III YEAR

III Year I Semester

Course Code	Course Title	L	T	P	C
16EE301	Control Systems	3	-	2	4
16EE303	Electrical Power Transmission and Distribution	3	-	2	4
16EE305	Electrical Measurements and Instrumentation	2	-	2	3
16EE307	Transformers and Induction Motors	3	-	2	4
16EL103	Professional Communication Laboratory	-	-	2	1
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	11	-	5	**23-27**

III Year II Semester

Course Code	Course Title	L	T	P	C
16HS301	Professional Ethics	2	-	-	2
16EE302	Power System Analysis	3	-	2	4
16EE304	Microprocessors Architectures and Control	3	-	2	4
16EE306	Switch Gear and protection	3	-	-	3
16EE308	Synchronous and Special Machines	3	-	2	4
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	14	-	6	**24-28**

B.Tech.

EEE

IV YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

IV Year I Semester

Course Code	Course Title	L	T	P	C
16EE401	Electric Drives	3	-	2	4
16EE403	Power System Operation and Control	3	-	2	4
16EE405	Principles of Digital Signal Processing	3	1	-	4
16EE407	AI Techniques in Electrical Engineering	3	-	-	3
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	12	1	4	**22-26**

IV Year II Semester

Course Code	Course Title	L	T	P	C
16EE411/16EE412	Project work / Internship	-	-	30	15
	Total	-	-	30	15

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA	: Writing Assignment / Reading Assignment
SSH/HSH	: Self Study Hours / Home Study Hours
CS	: Case Study and Example
SA	: Skills Activity
S	: Seminar
BS	: Beyond Syllabus

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ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

DEPARTMENT ELECTIVE STREAMS AND COURSES

STREAM - 1 : Power Systems

Course Code	Course Title	L	T	P	C
16EE251	Renewable Energy Technologies #	3	1	-	4
16EE351	HVDC and FACTS	3	-	2	4
16EE352	Advanced AC Transmission Systems	3	1	-	4
16EE451	Advanced Power System Engineering	3	1	-	4
16EE452	High Voltage Engineering	3	1	-	4
16EE453	Advanced Switch Gear for Power Systems	3	1	-	4

STREAM - 2 : Power Electronics

Course Code	Course Title	L	T	P	C
16EE252	Alternate Energy Resources	3	1	-	4
16EE353	Power Semiconductor Devices and Passive Components	3	1	-	4
16EE354	Analysis of Inverters	3	-	2	4
16EE454	Design of Power electronic Systems	3	-	2	4
16EE455	SMPS based Converters	3	1	-	4
16EE456	Advanced Control Systems #	3	-	2	4

STREAM - 3 : Automation and Energy Systems

Course Code	Course Title	L	T	P	C
16EE251	Renewable Energy Technologies #	3	1	-	4
16EE355	Utilization of Electrical Energy	3	1	-	4
16EE356	Energy Audit, Conservation and Management	3	1	-	4
16EE457	Energy Economics	3	1	-	4
16EE458	Digital Control Systems	3	-	2	4
16EE456	Advanced Control Systems #	3	-	2	4

\# Offered in multiple streams

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EEE

OPEN ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

OPEN ELECTIVE STREAMS AND COURSES

A) MINOR STREAMS:

MANAGEMENT STREAM

Course Code	Course Title	L	T	P	C
16MS202	Principles and Practice of Management	3	-	-	3
16MS301	Managerical Economics	3	-	-	3
16MS302	Finance for Engineers	3	-	-	3
16MS401	Engineering Entrepreneurship	3	-	-	3

HUMANITIES STREAM

Course Code	Course Title	L	T	P	C
16HS219	Indian History and Culture	3	-	-	3
16HS224	Polity and Governance of India	3	-	-	3
16HS307	Economic and Social Development of India	3	-	-	3
16HS308	Geography and Environmental Concerns of India	3	-	-	3

IT STREAM

Course Code	Course Title	L	T	P	C
16IT201	Object oriented Programming	3	-	2	4
16CS303	Web Technologies	3	1	2	5
16CS254	Scripting Languages	3	-	2	4
16CS201	Database Management Systems	3	1	2	5
16IT309	Unix Programming	3	1	-	4
16CS301	Software Engineering	3	-	2	4
16CS302	Data Mining Techniques	3	-	2	4
16IT409	Multimedia Systems	3	-	2	4

B) OPEN STREAMS OF OTHER DEPARTMENTS

Elective Streams offered by other departments that are opted by the students are included in this category.

C) INDIVIDUAL ELECTIVE COURSES OF OTHER DEPARTMENTS

Individual elective courses of other departments that are opted by the students are included in this category.

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I YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

I Year I Semester

Code	Course Title	L	T	P	C
16HS103	Engineering Mathematics-I	3	1	2	5
16HS107	Engineering Chemistry	3	-	-	3
16EE101	Basics of Engineering Products	3	-	2	4
16EE102	Basics of Electrical and Electronics Engineering	3	-	2	4
16HS104	English Proficiency and Communication Skills	-	-	2	1
16CS101	Basics of Computers and Internet	3	-	2	4
16ME103	Workshop Practice	-	-	3	2
16HS111	Engineering Chemistry Laboratory	-	-	3	2
	Total	**15**	**1**	**16**	**25**

I Year II Semester

Code	Course Title	L	T	P	C
16HS108	Engineering Mathematics-II	3	1	2	5
16HS102	Engineering Physics	3	-	-	3
16CS102	Computer Programming	3	1	2	5
16EC202	Electronic Devices and Circuits	3	-	2	4
16HS109	Environmental Science and Technology	2	-	-	2
16ME101	Engineering Graphics	1	-	3	3
16HS105	Technical English Communications	3	-	2	4
16HS110	Engineering Physics Laboratory	-	-	3	2
	Total	**18**	**2**	**14**	**28**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course ;

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II YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

II Year I Semester

Course Code	Course Title	L	T	P	C
16HS202	Probability and Statistics	3	1	-	4
16MS201	Management Science	3	-	-	3
16IT201	Object Oriented Programming	3	-	2	4
16CS202	Data Structures	3	-	2	4
16CS203	Digital Logic Design	3	1	-	4
16CS302	Web Technologies	3	1	2	5
16EL102	Soft Skills Laboraotry	-	-	2	1
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**18**	**3**	**8**	**26-28**

* Includes Courses and Progrmmes like Foreign Languages, Summer Internship, NCC, NSS, Yoga, Music, Dance and Value Added Courses.

II Year II Semester

Course Code	Course Title	L	T	P	C
16CS205	Computer Organization and Architecture	3	1	-	4
16IT202	Advanced Data Structures	3	-	2	4
16CS201	Database Management Systems	3	1	2	5
16CS204	Discrete Mathematical Structures	3	-	-	3
16EL103	Professional Communications Laboratory	-	-	2	1
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**12**	**2**	**6**	**24-28**

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III YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
16CS301	Software Engineering	3	-	2	4
16CS206	Design and Analysis of Algorithms	3	-	2	4
16CS207	Formal Languages and Automata Theory	3	1	-	4
16CS304	Operating Systems	3	-	2	4
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**12**	**1**	**6**	**23-27**

III Year II Semester

Course Code	Course Title	L	T	P	C
16CS301	Professional Ethics	2	-	-	2
16CS305	Data Mining Techniques	3	-	2	4
16CS306	Computer Networks	3	-	2	4
16IT301	Human Computer Interaction	3	-	-	3
16CS303	Compiler Design	3	-	-	3
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**14**	**-**	**4**	**23-27**

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

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IV YEAR

IV Year I Semester

Course Code	Course Title	L	T	P	C
16CS350	Cloud Computing	3	-	2	4
16IT401	Information Assurance and Security	3	-	2	4
16CS445	Bigdata Analytics	3	-	2	4
16IT402	Mobile Application Development	3	-	2	4
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**12**	**-**	**6**	**23-27**

*   Includes Courses and Progrmmes like Foreign Languages, Summer Internship, NCC, NSS, Yoga, Music, Dance and Value Added Courses.

IV Year II Semester

Course Code	Course Title	L	T	P	C
16IT411	Project work	-	-	-	15
16IT412	Internship	-	-	-	15
	Total	**-**	**-**	**-**	**30**

L : Lecture Hours/week ; T : Tutorial Hours/week ; P : Practical Hours/week ; C : Credits of the Course ; In addition, the following information inhours/semester is also provided for each course.

WA/RA	:	Writing Assignment /Reading Assignment
SSH/HSH	:	Self Study Hours/ Home Study
CS	:	Case Study and Example
SA	:	Skills Activity
S	:	Seminar
BS	:	BeyondSyllabus

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DEPARTMENT ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

DEPARTMENT ELECTIVE STREAMS AND COURSES

STREAM - I : WEB SYSTEMS AND TECHNOLOGIES

Cours Code	Course Title	L	T	P	C
16CS242	Scripting Language	3	-	2	4
16CS342	Open Systems for Web Technologies	3	-	2	4
16CS347	Middleware Technologies	3	-	2	4
16IT440	Enterprise Computing	3	-	2	4

STREAM - II : EMBEDDED SYSTEMS

Cours Code	Course Title	L	T	P	C
16CS307	Micro Processors and Interfacing	3	-	-	3
16CS402	Embedded Systems	3	-	2	4
16IT340	Wireless Sensor Networks	3	-	2	4
16CS443	Internet of Things	3	-	2	4

STREAM - III : MACHINE LEARNING

Cours Code	Course Title	L	T	P	C
16CS344	Artificial Intelligence	3	-	-	3
16CS444	Optimization Techniques	3	-	2	4
16IT341	Soft Computing	3	1	-	4
16IT441	Agent Technologies	3	1	-	4

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

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DEPARTMENT
ELECTIVES

DEPARTMENT ELECTIVE STREAMS AND COURSES

STREAM - IV : COMPUTER VISION

Course Code	Course Title	L	T	P	C
16CS241	Computer Graphics	3	-	2	4
16CS341	Fundamentals of Image Processing	3	-	2	4
16CS441	Pattern Recognition	3	-	2	4
16IT442	Virtual Reality Systems	3	-	-	3

MODULAR COURSES

Course Code	Course Title	L	T	P	C
16IT370	Web Application Development using MONGODB and Angular JS	2	-	-	2
16IT470	Mobile Application Development using Android	2	-	-	2

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OPEN ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

OPEN ELECTIVE STREAMS AND COURSES

MANAGEMENT STREAM

Course Code	Course Title	L	T	P	C
16MS202	Principles and Practice of Management	3	-	-	3
16MS301	Managerical Economics	3	-	-	3
16MS302	Finance for Engineers	3	-	-	3
16MS401	Engineering Entrepreneurship	3	-	-	3

HUMANITIES STREAM

Course Code	Course Title	L	T	P	C
16HS219	Indian History and Culture	3	-	-	3
16HS224	Polity and Governance of India	3	-	-	3
16HS307	Economic and Social Development of India	3	-	-	3
16HS308	Geography and Environmental Concerns of India	3	-	-	3

IT STREAM

Course Code	Course Title	L	T	P	C
16IT201	Object Oriented Programming	3	-	2	4
16CS303	Web Technologies	3	1	2	5
16CS254	Scripting Languages	3	-	2	4
16CS201	Database Management Systems	3	1	2	5
16IT309	Unix Programming	3	1	-	4
16CS301	Software Engineering	3	-	2	4
16CS302	Data Mining Techniques	3	-	2	4
16IT409	Multimedia Systems	3	-	2	4

OPEN STREAMS OF OTHER DEPARTMENTS
Elective Streams offered by other departments that are opted by the students are included in this category.

INDIVIDUAL ELECTIVE COURSES OF OTHER DEPARTMENTS
Individual elective courses of other departments that are opted by the students are included in this category.

MECH ENGG

II YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

II Year I Semester

Course Code	Course Title	L	T	P	C
16ME201	Manufacturing Technology	3	-	2	4
16ME202	Material Science and Metallurgy	3	-	2	4
16ME203	Mechanics of Solids	3	-	2	4
16ME204	Thermodynamics	4	-	-	4
16ME205	Computer Aided Machine Drawing	-	-	3	2
16MS201	Management Science	3	-	-	3
16HS301	Professional Ethics	2	-	-	2
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**18**	**-**	**9**	**24-26**

*   Courses and Progrmmes such as Foreign Languages, Summer Internship, NCC, NSS, Yoga, Music, Dance, Value Added Courses etc. for which credits and other details shall be defined by concerned coordinators.

II Year II Semester

Course Code	Course Title	L	T	P	C
16ME206	Fluid Mechanics and Hydraulic Machines	3	-	2	4
16ME207	Kinematics of Machines	3	-	2	4
16ME208	Metal Cutting and Machine Tools	3	-	2	4
16ME209	Prime Movers	3	-	2	4
16EL102	Soft Skills Laboratory	-	-	2	1
	Department Elective	-	-	-	4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**12**	**-**	**10**	**25-28**

MECH ENGG
III YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
16ME301	CAD / CAM	3	-	2	4
16ME302	Design of Machine Elements	3	-	2	4
16ME303	Dynamics of Machinery	3	-	2	4
16ME304	Thermal Turbo Machinery	3	1	-	4
16EL103	Professional Communication Lab	-	-	2	1
	Department Elective	-	-	-	4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	12	1	8	25-28

III Year II Semester

Course Code	Course Title	L	T	P	C
16ME305	Design of Transmission Elements	3	-	2	4
16ME306	Finite Element Methods	3	-	2	4
16ME307	Heat Transfer	3	-	2	4
16ME308	Metrology and Instrumentation	3	-	2	4
	Department Elective	-	-	-	4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	12	-	8	24-27

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

MECH ENGG

IV YEAR

IV Year I Semester

Course Code	Course Title	L	T	P	C
16ME401	Industrial Engineering and Production Management	3	1	-	4
16ME402	Operations Research	3	1	-	4
16ME403	Refrigeration and Air Conditioning	3	1	-	4
16HS109	Environmental Science and Tecnology	2	-	-	2
	Department Elective	-	-	-	4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**11**	**3**	**-**	**22-25**

IV Year II Semester

Course Code	Course Title	L	T	P	C
16EC411/16EC412	Project work / Internship	-	-	30	15
	Total	**-**	**-**	**30**	**15**

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA   : Writing Assignment / Reading Assignment
SSH/HSH   : Self Study Hours / Home Study Hours
CS   : Case Study and Example
SA   : Skills Activity
S   : Seminar
BS   : Beyond Syllabus

MECH ENGG

ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

DEPARTMENT ELECTIVE STREAMS

STREAM -1: DESIGN

Course Code	Course Title	L	T	P	C
16ME251	Advanced Mechanics of Solids	4	-	-	4
16ME355	Experimental Stress Analysis	4	-	-	4
16ME454	Fracture Mechanics	4	-	-	4
16ME362	Mechanical Vibrations	4	-	-	4
16ME366	Theory of Elasticity	4	-	-	4
16ME358	Tribology	4	-	-	4

STREAM -2: THERMAL

Course Code	Course Title	L	T	P	C
16ME451	Advanced Fluid Mechanics	4	-	-	4
16ME452	Advanced Heat Transfer	4	-	-	4
16ME252	Advanced Thermodynamics	4	-	-	4
16ME360	Automobile Engineering	4	-	-	4
16ME354	Computational Fluid Dynamics	4	-	-	4
16ME356	Non - Conventional Sources of Energy	4	-	-	4
16ME364	Power Plant Engineering	4	-	-	4

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

MECH ENGG
ELECTIVES

DEPARTMENT ELECTIVE STREAMS

STREAM -3: MANUFACTURING

Course Code	Course Title	L	T	P	C
16ME351	Additive Manufacturing	4	-	-	4
16ME456	Advanced Manufacturing Process	4	-	-	4
16ME253	Casting Process	4	-	-	4
16ME361	Computer Integrated Manufacturing	4	-	-	4
16ME453	Flexible Manufacturing System	4	-	-	4
16ME357	Theory of Metal Cutting	4	-	-	4
16ME359	Welding Technology	4	-	-	4

STREAM -4: MATERIALS

Course Code	Course Title	L	T	P	C
16ME254	Ceramics and Polymers	4	-	-	4
16ME352	Characterization of Materials	4	-	-	4
16ME353	Composite Materials	4	-	-	4
16ME363	Nanotechnology	4	-	-	4
16ME365	Surface Engineering	4	-	-	4
16ME455	Non - Destructive Testing For Mechanical Engineers	4	-	-	4

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OPEN ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

OPEN ELECTIVE STREAMS

MANAGEMENT STREAM

Course Code	Course Title	L	T	P	C
16MS201	Management Science	3	-	-	3
16MS202	Principles and Practice of Management	3	-	-	3
16MS301	Managerical Economics	3	-	-	3
16MS302	Finance for Engineers	3	-	-	3
16MS401	Engineering Entrepreneurship	3	-	-	3

HUMANITIES STREAM

Course Code	Course Title	L	T	P	C
16HS219	Indian History and Culture	3	-	-	3
16HS224	Polity and Governance of India	3	-	-	3
16HS307	Economic and Social Development of India	3	-	-	3
16HS308	Geography and Environmental Concerns of India	3	-	-	3

IT STREAM

Course Code	Course Title	L	T	P	C
16IT201	Object oriented Programming	3	-	2	4
16CS303	Web Technologies	3	1	2	5
16CS254	Scripting Languages	3	-	2	4
16CS201	Database Management Systems	3	1	2	5
16IT309	Unix Programming	3	1	-	4
16CS301	Software Engineering	3	-	2	4
16CS302	Data Mining Techniques	3	-	2	4
16IT409	Multimedia Systems	3	-	2	4

OPEN STREAMS OF OTHER DEPARTMENTS

Elective Streams offered by other departments that are opted by the students are included in this category.

INDIVIDUAL ELECTIVE COURSES OF OTHER DEPARTMENTS

Individual elective courses of other departments that are opted by the students are included in this category.

B.Tech.

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I YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

I Year I Semester

Course Code	Course Title	L	T	P	C
16HS103	Engineering Mathematics-I	3	1	2	5
16HS102	Engineering Physics	3	-	-	3
16HS105	Technical English Communication	3	-	2	4
16CS101	Basics of Computers and Internet	3	-	2	4
16CS102	Computer Programming	3	1	2	5
16EE101	Basics of Engineering Products	3	-	2	4
16HS104	English Proficiency and Communication Skills	-	-	2	1
16HS110	Engineering Physics Laboratory	-	-	3	2
	Total	**18**	**2**	**15**	**28**

I Year II Semester

Course Code	Course Title	L	T	P	C
16HS108	Engineering Mathematics-II	3	1	2	5
16HS107	Engineering Chemistry	3	-	-	3
16ME101	Engineering Graphics	1	-	3	3
16EE102	Basics of Electrical and Electronics Engineering	3	-	2	4
16HS111	Engineering Chemistry Laboratory	-	-	3	2
16CH104	Materials Science and Technology	3	1	-	4
16ME102	Engineering Mechanics	3	1	-	4
16ME103	Work shop Practice	-	-	3	2
	Total	**15**	**2**	**13**	**25**

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

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II YEAR

II Year I Semester

Course Code	Course Title	L	T	P	C
16EL102	Soft Skills Laboratory	0	0	2	1
16HS109	Environmental Science and Technology	2	0	0	2
16AE201	Automotive Chassis	3	0	2	4
16AE202	Engineering Thermodynamics and Heat Transfer	2	0	2	3
16AE203	Fundamentals of IC Engines	3	0	2	4
16AE204	Fundamentals of Motorsport Engineering	3	-	-	3
16AE205	Materials for Automobile Industry	3	-	2	4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	14	3	10	23-25

*   Courses and Programmes such as Foreign Languages, Summer Internship, NCC, NSS, Yoga, Music, Dance, Value Added Courses etc. for which credits and other details shall be defined by concerned coordinators.

II Year II Semester

Course Code	Course Title	L	T	P	C
16AE206	Advanced Theory of IC Engines	2	1	-	3
16AG206	Strength of Materials	3	-	2	4
16AE207	Manufacturing Processes for Automotive Components	3	-	2	4
16AG208	Theory of Machines	2	2	-	3
16HS203	Professional Communication Laboratory	-	-	2	1
	Department Elective	4	-	-	4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	10	1	11	23-27

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III YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
16CS202	Data Structures	3	-	2	3
16AE302	Automotive Transmission	2	-	2	3
16AE305	Two and Three wheelers Technology	2	1	-	3
16ME206	Fluid Mechanics and Hydraulic Machines	3	-	2	4
16AG304	Machine Design	2	1	2	4
	Department Elective				3-4
	Department Elective / Open Elective				3-4
	Employability and Life Skills Elective				1-3
	Total	**12**	**2**	**8**	**26-30**

III Year II Semester

Course Code	Course Title	L	T	P	C
16HS301	Professional Ethics	2	-	-	2
16AE301	Automotive Components Design	2	-	2	3
16AE303	Special Purpose Vehicles	2	-	2	3
16AE305	Vehicle Body Engineering	3	-	-	3
16AE306	Vehicle Dynamics	3	-	2	4
16AE307	Autotronics	3	-	2	4
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective	-	-	-	1-3
	Total	**13**	**-**	**8**	**24-28**

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

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IV YEAR

IV Year I Semester

Course Code	Course Title	L	T	P	C
16AE401	Automotive Fuels, Emissions and Control	3	-	2	4
16AE402	Electronics and Micro Controllers	3	-	2	4
16ME402	Operations Research	2	1	-	3
16MS201	Management Science	3	-	-	3
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**11**	**1**	**4**	**21-25**

IV Year II Semester

Course Code	Course Title	L	T	P	C
16AE411/16AE412	Project work / Internship	-	-	30	15
	Total	**-**	**-**	**30**	**15**

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA	:	Writing Assignment / Reading Assignment
SSH/HSH	:	Self Study Hours / Home Study Hours
CS	:	Case Study and Example
SA	:	Skills Activity
S	:	Seminar
BS	:	Beyond Syllabus

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ELECTIVES

R-16 CURRICULUM
(Applicable for students admitted into First Year from academic year 2016-17 onwards)

DEPARTMENT ELECTIVE STREAMS AND COURSES

STREAM -1: MODERN AUTOMOTIVE TECHNOLOGIES

Course Code	Course Title	L	T	P	C
16AE242	Modern Vehicle Technology	3	-	-	3
16AE243	New Generation and Hybrid Vehicles	3	-	-	3
16AE341	Combustion in Engines	3	-	-	3
16AE342	Nano Technology	3	-	-	3
16AE442	Finite Element Methods	3	-	-	3
16AE444	Automotive Aerodynamics	3	-	-	3
16AE245	Engineering Metrology and Instrumentation	3	-	2	4

STREAM -2: ADVANCED ENGINE AND VEHICLE MANAGEMENT

Course Code	Course Title	L	T	P	C
16AE241	Engine Testing and Certification	3	-	-	3
16AE244	Racing Two Wheeler and Four Wheelers	3	-	-	3
16AE343	Motorsport Vehicle Analysis	3	-	-	3
16AE344	Vehicle Maintenance	3	-	-	3
16AE441	Automotive Air-Conditioning	3	-	-	3
16AE443	Transport Management	3	-	-	3

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ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

DEPARTMENT ELECTIVE STREAMS AND COURSES

INDIVIDUAL ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
16AE406	Automotive Safety	4	-	-	3
16AE415	Automotive Systems	4	-	-	3

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OPEN
ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

OPEN ELECTIVE STREAMS AND COURSES

A) MINOR STREAMS:

MANAGEMENT STREAM

Course Code	Course Title	L	T	P	C
16MS202	Principles and Practice of Management	3	-	-	3
16MS301	Managerical Economics	3	-	-	3
16MS302	Finance for Engineers	3	-	-	3
16MS401	Engineering Entrepreneurship	3	-	-	3

HUMANITIES STREAM

Course Code	Course Title	L	T	P	C
16HS219	Indian History and Culture	3	-	-	3
16HS224	Polity and Governance of India	3	-	-	3
16HS307	Economic and Social Development of India	3	-	-	3
16HS308	Geography and Environmental Concerns of India	3	-	-	3

IT STREAM

Course Code	Course Title	L	T	P	C
16IT201	Object oriented Programming	3	-	2	4
16CS303	Web Technologies	3	1	2	5
16CS254	Scripting Languages	3	-	2	4
16CS201	Database Management Systems	3	1	2	5
16IT309	Unix Programming	3	1	-	4
16CS301	Software Engineering	3	-	2	4
16CS302	Data Mining Techniques	3	-	2	4
16IT409	Multimedia Systems	3	-	2	4

B) OPEN STREAMS OF OTHER DEPARTMENTS

Elective Streams offered by other departments that are opted by the students are included in this category.

C) INDIVIDUAL ELECTIVE COURSES OF OTHER DEPARTMENTS

Individual elective courses of other departments that are opted by the students are included in this category.

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I YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

I Year I Semester

Course Code	Course Title	L	T	P	C
16HS103	Engineering Mathematics-I	3	1	2	5
16HS102	Engineering Physics	3	-	-	3
16HS105	Technical English Communication	3	-	2	4
16CS101	Basics of Computers and Internet	3	-	2	4
16CS102	Computer Programming	3	1	2	5
16EE101	Basics of Engineering Products	3	-	2	4
16HS104	English Proficiency and Communication Skills	-	-	2	1
16HS110	Engineering Physics Laboratory	-	-	3	2
	Total	**18**	**2**	**15**	**28**

I Year II Semester

Course Code	Course Title	L	T	P	C
16HS108	Engineering Mathematics-II	3	1	2	5
16HS107	Engineering Chemistry	3	-	-	3
16ME101	Engineering Graphics	1	-	3	3
16EE102	Basics of Electrical and Electronics Engineering	3	-	2	4
16HS111	Engineering Chemistry Laboratory	-	-	3	2
16HS109	Environmental Science and Technology	2	-	-	2
16TF101	Textile Fibres	3	-	2	4
16CH102	Material Science and Technology	3	1	-	4
	Total	**18**	**2**	**12**	**27**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course ;

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II YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

II Year I Semester

Course Code	Course Title	L	T	P	C
16HS202	Probability and Statistics	3	1	-	4
16EL102	Soft Skills Laboratory	-	-	2	1
16TF201	Technology of Manufactured Fibres	3	-	-	3
16TF202	Yarn Manufacturing	3	-	-	3
16TF203	Fabric Manufacturing	3	-	-	3
16TF204	Fashion, Art, Design and Accessories	3	-	-	3
16TF205	Pattern Engineering	3	-	-	3
16TF206	Fashion Illustration Laboratory	-	-	3	2
16TF207	Accessories and Surface Ornmentation Laboratory	-	-	3	2
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**18**	**1**	**8**	**25-27**

*   Courses and Progrmmes such as Foreign Languages, Summer Internship, NCC, NSS, Yoga, Music, Dance, Value Added Courses etc. for which credits and other details shall be defined by concerned coordinators.

II Year II Semester

Course Code	Course Title	L	T	P	C
16EL103	Professional Communication Laboratory	-	-	2	1
16TF208	Garment Construction Techniques	3	-	2	4
16TF209	Technology of Knits and Non-wovens	3	-	-	3
16TF210	Fabric Structure and Design	3	-	2	4
16TF211	Textile Wet Processing	3	-	3	5
	Department Elective	-	-	-	3
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**12**	**-**	**9**	**24-27**

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III YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
16TF301	Testing of Fibres and Yarns	3	-	2	4
16TF302	Apparel Production, Planning and Control	3	-	-	3
16TF303	Garment Dyeing, Printing and Embroidery	3	-	3	5
16TF304	Textile Mathematics	3	-	-	3
	Department Elective	-	-	-	3
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**12**	**-**	**5**	**22-25**

III Year II Semester

Course Code	Course Title	L	T	P	C
16HS301	Professional Ethics	2	-	-	2
16TF305	Garment Machinery	3	-	2	4
16TF306	Testing of Fabrics and Garments	3	-	2	4
16TF307	Apparel Merchandising	3	1	-	4
16TF308	Textile and Fashion CAD Lab	-	-	3	2
	Department Elective	-	-	-	3
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**11**	**1**	**7**	**23-26**

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

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IV YEAR

IV Year I Semester

Course Code	Course Title	L	T	P	C
16MS201	Management Science	3	-	-	3
16TF401	Cloting Comfort	3	-	-	3
16TF402	Industrial Engineering for Textiles and Apparels	3	-	-	3
16TF403	Apparel Costing and Export Documentation	3	-	-	3
16TF404	Technical Textiles	3	-	-	3
16TF405	Men, Women, Children Wear Construction Laboratory	-	-	3	2
	Department Elective	-	-	-	3
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**15**	**-**	**3**	**24-27**

IV Year II Semester

Course Code	Course Title	L	T	P	C
16TF406/16TF407	Project work / Internship	-	-	30	15
	Total	**-**	**-**	**30**	**15**

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA	: Writing Assignment / Reading Assignment
SSH/HSH	: Self Study Hours / Home Study Hours
CS	: Case Study and Example
SA	: Skills Activity
S	: Seminar
BS	: Beyond Syllabus

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ELECTIVES

R-16 CURRICULUM
(Applicable for students admitted into First Year from academic year 2016-17 onwards)

DEPARTMENT ELECTIVE STREAMS AND COURSES

STREAM - 1: YARN MANUFACTURING

Course Code	Course Title	L	T	P	C
16TF250	Practical Aspects in Blow Room and Carding	3	-	-	3
16TF350	Practical Aspects in Drawing, Comber and Simplex	3	-	-	3
16TF351	Practical Aspects in Yarn Manufacturing	3	-	-	3
16TF450	Maintenance in Spinning	3	-	-	3

STREAM - 2: WOVEN FABRIC MANUFACTURING

Course Code	Course Title	L	T	P	C
16TF251	Practical Aspects in Weaving Preparatory	3	-	-	3
16TF352	Principles of Weaving	3	-	-	3
16TF353	Shuttleless Weaving	3	-	-	3
16TF451	Mechanics of Weaving Machines	3	-	-	3

STREAM - 3: KNITTING TECHNOLOGY

Course Code	Course Title	L	T	P	C
16TF252	Hand Knitting and Flat Knitting	3	-	-	3
16TF354	Circular Knitting	3	-	-	3
16TF355	Wrap Knitting	3	-	-	3
16TF452	Advancement in Knitting Technology	3	-	-	3

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R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

DEPARTMENT ELECTIVE STREAMS AND COURSES

STREAM - 4: TEXTILE WET PROCESSING

Course Code	Course Title	L	T	P	C
16TF253	Dyes and Pigments	3	-	-	3
16TF356	Dyeing and Printing Machinery	3	-	-	3
16TF357	Eco-Friendly Wet Processing	3	-	-	3
16TF453	Functional Finishes	3	-	-	3

STREAM - 5: INDIVIDUAL ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
16TF358	Computer Applications in Textiles	3	-	-	3
16TF359	Lean and Six Sigma in Textiles and Apparels	3	-	-	3
16TF360	Physical Properties of Textile Fibres	3	-	-	3
16TF361	Process Control and Quality Management in Textiles	3	-	-	3

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OPEN ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

OPEN ELECTIVE STREAMS AND COURSES

A) MINOR STREAMS:

MANAGEMENT STREAM

Course Code	Course Title	L	T	P	C
16MS202	Principles and Practice of Management	3	-	-	3
16MS301	Managerial Economics	3	-	-	3
16MS302	Finance for Engineers	3	-	-	3
16MS401	Engineering Entrepreneurship	3	-	-	3

HUMANITIES STREAM

Course Code	Course Title	L	T	P	C
16HS219	Indian History and Culture	3	-	-	3
16HS224	Polity and Governance of India	3	-	-	3
16HS307	Economic and Social Development of India	3	-	-	3
16HS308	Geography and Environmental Concerns of India	3	-	-	3

IT STREAM

Course Code	Course Title	L	T	P	C
16IT201	Object Oriented Programming	3	-	2	4
16CS303	Web Technologies	3	1	2	5
16CS254	Scripting Languages	3	-	2	4
16CS201	Database Management Systems	3	1	2	5
16IT309	Unix Programming	3	1	-	4
16CS301	Software Engineering	3	-	2	4
16CS302	Data Mining Techniques	3	-	2	4
16IT409	Multimedia Systems	3	-	2	4

B) OPEN STREAMS OF OTHER DEPARTMENTS

Elective Streams offered by other departments that are opted by the students are included in this category.

C) INDIVIDUAL ELECTIVE COURSES OF OTHER DEPARTMENTS

Individual elective courses of other departments that are opted by the students are included in this category.

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I YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

B. Tech - AGRICULTURE ENGINEERING

I Year I Semester

Course Code	Course Title	L	T	P	C
16HS103	Engineering Mathematics-I	3	1	2	5
16HS102	Engineering Physics	3	-	-	3
16HS105	Technical English Communication	3	-	2	4
16CS101	Basics of Computers and Internet	3	-	2	4
16CS102	Computer Programming	3	1	2	5
16EE101	Basics of Engineering Products	3	-	2	4
16HS104	English Proficiency and Communication Skills	-	-	2	1
16HS110	Engineering Physics Laboratory	-	-	3	2
	Total	**18**	**2**	**15**	**28**

I Year II Semester

Course Code	Course Title	L	T	P	C
16HS108	Engineering Mathematics-II	3	1	2	5
16HS107	Engineering Chemistry	3	-	-	3
16ME101	Engineering Graphics	1	-	3	3
16EE102	Basics of Electrical and Electronics Engineering	3	-	2	4
16HS111	Engineering Chemistry Laboratory	-	-	3	2
16HS109	Environmental Science and Technology	2	-	-	2
16ME102	Engineering Mechanics	3	1	-	4
16ME103	Workshop Practice	-	-	3	2
	Total	**15**	**1**	**15**	**25**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course ;

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

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II YEAR

II Year I Semester

Course Code	Course Title	L	T	P	C
16AG201	Engineering Properties of Biological Materials and Food Quality	3	-	0	3
16AG202	Farm Power and Renewable Energy Sources	2	-	2	3
16HS202	Probability and Statistics	3	1	-	4
16CE202	Fluid Mechanics	2	1	2	4
16AG203	Principles of Thermodynamics	2	-	2	3
16AG204	Soil Mechanics	2	1	2	4
16EL102	Soft Skills Laboratory	0	0	2	1
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	14	3	10	23-25

* Courses and Programmes such as Foreign Languages, Summer Internship, NCC, NSS, Yoga, Music, Dance, Value Added Courses etc. for which credits and other details shall be defined by concerned coordinators.

II Year II Semester

Course Code	Course Title	L	T	P	C
16AG205	Crop Production Technology	2	-	2	3
16AG206	Strength of Materials	2	-	2	3
16AG207	Surveying and Levelling	1	-	3	3
16AG208	Theory of Machines	2	-	2	3
16AG425	Principles of Heat and Mass Transfer	3	1	-	4
16EL103	Professional Communication Laboratory	-	-	2	1
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	10	1	11	24-28

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III YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
16AG301	Crop Process Engineering	3	-	2	4
16AG302	Drying and Storage Engineering	2	-	2	3
16AG303	Hydrology	2	1	-	3
16AG304	Machine Design	2	1	2	4
16AG305	Tractor Systems and Controls	2	-	2	3
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**10**	**2**	**8**	**24-28**

III Year II Semester

Course Code	Course Title	L	T	P	C
16HS301	Professional Ethics	2	0	0	2
16AG306	Dairy and Food Engineering	2	0	2	3
16AG307	Drainage Engineering	3	0	2	4
16AG308	Farm Machinery and Equipment-1	2	0	2	3
16AG309	Ground Water, Wells and Pumps	2	1	0	3
16AG310	Irrigation Engineering	2	0	2	3
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**12**	**1**	**8**	**24-28**

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

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IV YEAR

IV Year I Semester

Course Code	Course Title	L	T	P	C
16AG401	Agricultural Business Management	3	-	-	3
16AG402	Farm Machinery and Equipment-II	3	-	2	4
16AG403	Soil and Water Engineering	3	1	-	4
16ME403	Refrigeration and Air Conditioning	3	1	-	4
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**11**	**1**	**4**	**21-25**

IV Year II Semester

Course Code	Course Title	L	T	P	C
16AG411/16AG412	Project work / Internship	-	-	30	15
	Total	**-**	**-**	**30**	**15**

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA	:	Writing Assignment / Reading Assignment
SSH/HSH	:	Self Study Hours / Home Study Hours
CS	:	Case Study and Example
SA	:	Skills Activity
S	:	Seminar
BS	:	Beyond Syllabus

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ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

DEPARTMENT ELECTIVE STREAMS AND COURSES

STREAM -1: FOOD PROCESS ENGINEERING DOMAIN

Course Code	Course Title	L	T	P	C
16FT301	Bakery and Confectionery Technology	3	-	2	4
16AG341	Agricultural Structures and Environment Control	3	1	-	4
16AG342	Development of Processed Products and Equipment	4	-	-	4
16AG241	Food Packaging Technology	3	-	2	4
16AG442	Food Processing Plant Design and Layout	3	1	-	4
16AG343	Waste and By-Product Utilization	4	-	-	4
16AG441	Automation in Food Industries	4	-	-	4
16AG242	Processing of Horticultural Products	4	-	-	4

STREAM -2: FARM POWER & MACHINERY DOMAIN

Course Code	Course Title	L	T	P	C
16AG345	Applications of Hydraulics and Pneumatics in Agricultural Machinery	3	-	2	4
16AG244	Biomass Management for Fodder and Energy	3	1	-	4
16AG243	Farm Power and Machinery Management	3	1	-	4
16AG443	Human Engineering and Safety	3	1	-	4
16AG344	Hydraulic Drive and Controls	3	1	-	4
16AG444	Machinery Systems for Precision Agriculture	3	1	-	4
16AG448	Mechanics of Tillage and Traction	3	-	2	4
16AG346	Production Technology for Agricultural Machinery	3	-	2	4
16AG347	Tractor Design and Testing	3	1	-	4

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ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

DEPARTMENT ELECTIVE STREAMS AND COURSES

STREAM -3: SOIL & WATER CONSERVATION ENGINEERING DOMAIN

Course Code	Course Title	L	T	P	C
16AG245	Climate Change and Water Resources	3	1	-	4
16CE408	Remote Sensing and GIS Applications	3	-	2	4
16AG348	Gully and Ravine Control Structures	3	1	-	4
16AG349	Micro Irrigation Systems Design	3	1	-	4
16AG445	Minor Irrigation and Command Area Development	3	-	2	4
16AG350	Non-Point Source Pollution and Management	3	1	-	4
16AG351	Reservoir and Farm Pond Design	3	-	2	4
16AG446	Watershed Planning and Management	3	1	-	4

INDIVIDUAL ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
16CE408	Remote Sensing and GIS Applications	3	-	2	4
16AG443	Human Engineering and Safety	3	1	-	4

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**OPEN
ELECTIVES**

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

OPEN ELECTIVE STREAMS AND COURSES

A) MINOR STREAMS:

MANAGEMENT STREAM

Course Code	Course Title	L	T	P	C
16MS202	Principles and Practice of Management	3	-	-	3
16MS301	Managerical Economics	3	-	-	3
16MS302	Finance for Engineers	3	-	-	3
16MS401	Engineering Entrepreneurship	3	-	-	3

HUMANITIES STREAM

Course Code	Course Title	L	T	P	C
16HS219	Indian History and Culture	3	-	-	3
16HS224	Polity and Governance of India	3	-	-	3
16HS307	Economic and Social Development of India	3	-	-	3
16HS308	Geography and Environmental Concerns of India	3	-	-	3

IT STREAM

Course Code	Course Title	L	T	P	C
16IT201	Object oriented Programming	3	-	2	4
16CS303	Web Technologies	3	1	2	5
16CS254	Scripting Languages	3	-	2	4
16CS201	Database Management Systems	3	1	2	5
16IT309	Unix Programming	3	1	-	4
16CS301	Software Engineering	3	-	2	4
16CS302	Data Mining Techniques	3	-	2	4
16IT409	Multimedia Systems	3	-	2	4

B) OPEN STREAMS OF OTHER DEPARTMENTS

Elective Streams offered by other departments that are opted by the students are included in this category.

C) INDIVIDUAL ELECTIVE COURSES OF OTHER DEPARTMENTS

Individual elective courses of other departments that are opted by the students are included in this category.

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I YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

I Year I Semester

Course Code	Course Title	L	T	P	C
16HS101	Basic Mathematics-I	3	1	2	5
16HS102	Engineering Physics	3	-	-	3
16HS105	Technical English Communication	3	-	2	4
16CS101	Basics of Computers and Internet	3	-	2	4
16CS102	Computer Programming	3	1	2	5
16EE101	Basics of Engineering Products	3	-	2	4
16HS104	English Proficiency and Communication Skills	-	-	2	1
16HS110	Engineering Physics Laboratory	-	-	3	2
	Total	**18**	**2**	**15**	**28**

I Year II Semester

Course Code	Course Title	L	T	P	C
16HS106	Basic Mathematics-II	3	1	2	5
16HS107	Engineering Chemistry	3	-	-	3
16ME101	Engineering Graphics	1	-	3	3
16EE102	Basics of Electrical and Electronics Engineering	3	-	2	4
16HS111	Engineering Chemistry Laboratory	-	-	3	2
16HS109	Environmental Science and Technology	2	-	-	2
16BT102	Bioproducts and Bioentrepreneurship	3	1	-	4
16ME103	Work shop Practice	-	-	3	2
	Total	**15**	**2**	**13**	**25**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course ;

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

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II YEAR

II Year I Semester

Course Code	Course Title	L	T	P	C
16HS202	Probability and Statistics	3	1	-	4
16MS201	Management Science	3	-	-	3
16BT201	Biochemistry	3	-	2	4
16BT202	Cell Biology	3	-	2	4
16BT203	Microbiology	3	-	2	4
16CS254	Scripting Languages	3	-	2	4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**18**	**1**	**8**	**24-26**

*   Courses and Progrmmes such as Foreign Languages, Summer Internship, NCC, NSS, Yoga, Music, Dance, Value Added Courses etc. for which credits and other details shall be defined by concerned coordinators.

II Year II Semester

Course Code	Course Title	L	T	P	C
16BT205	Genetics	3	1	-	4
16BT208	Molecular Biology	3	-	2	4
16BI201	Biological Databases	3	-	2	4
16BI202	Molecular Evolution	3	-	2	4
16EL102	Soft Skills Lab	-	-	2	1
	Department Elective	-	-	-	4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**12**	**1**	**8**	**25-28**

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III YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
16BI301	Molecular Phylogenetics	3	1	-	4
16BT302	Biosensors	3	1	-	4
16BT303	Enzyme Technology	3	-	2	4
16IT201	Object Oriented Programming	3	-	2	4
16EL103	Professional Communication Lab	-	-	2	1
	Department Elective	-	-	-	4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	12	2	6	25-28

III Year II Semester

Course Code	Course Title	L	T	P	C
16HS301	Professional Ethics	2	-	-	2
16BT305	Bioethics and Intellectual Property Rights	3	1	-	4
16BT307	Genetic Engineering and Epigenetics	3	-	2	4
16BI302	Biodiversity and Conservation	3	1	-	4
16IT309	Unix programming	3	-	2	4
	Department Elective	-	-	-	4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	14	2	4	26-29

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

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IV YEAR

IV Year I Semester

Course Code	Course Title	L	T	P	C
16BT401	Nanobiotechnology	3	-	-	3
16BT404	Genomics and Proteomics	3	-	2	4
16BT405	Immunology and Immunoinformatics	3	-	2	4
16BI401	Structural bioinformatics	3	1	-	4
16BI402	Biomedical Informatics	3	-	-	3
	Department Elective	-	-	-	4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**15**	**1**	**4**	**26-29**

IV Year II Semester

Course Code	Course Title	L	T	P	C
16BI411/16BI412	Project work / Internship	-	-	30	15
	Total	**-**	**-**	**30**	**15**

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA	: Writing Assignment / Reading Assignment
SSH/HSH	: Self Study Hours / Home Study Hours
CS	: Case Study and Example
SA	: Skills Activity
S	: Seminar
BS	: Beyond Syllabus

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DEPARTMENT ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

DEPARTMENT ELECTIVE STREAMS AND COURSES

STREAM - 1: DRUGS

Course Code	Course Title	L	T	P	C
16BI250	BIOPHARMACEUTICAL TECHNOLOGY	3	1	-	4
16BI350	MOLECULAR MODELING	3	1	-	4
16BI353	METABOLOMICS AND METABOLIC ENGINEERING	3	1	-	4
16BI450	DRUG DESIGN	3	1	-	4

STREAM - 2: GENOME

Course Code	Course Title	L	T	P	C
16BI251	GENOMES OF PATHOGENS	3	1	-	4
16BI351	NEXT GENERATION SEQUENCING AND ANALYSIS	3	1	-	4
16BI354	FORENSIC GENOMICS	3	1	-	4
16BI451	METAGENOMICS	3	1	-	4

MODULAR COURSES

Course Code	Course Title	L	T	P	C
16BT356	TILLING METHOD FOR CROP IMPROVEMENT	1	-	-	1
16BT357	SNAKE BIOLOGY AND ANTI-VENOM PRODUCTION	1	-	-	1

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R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

OPEN ELECTIVE STREAMS AND COURSES

A) MINOR STREAMS:

MANAGEMENT STREAM

Course Code	Course Title	L	T	P	C
16MS202	Principles and Practice of Management	3	-	-	3
16MS301	Managerial Economics	3	-	-	3
16MS302	Finance for Engineers	3	-	-	3
16MS401	Engineering Entrepreneurship	3	-	-	3

HUMANITIES STREAM

Course Code	Course Title	L	T	P	C
16HS219	Indian History and Culture	3	-	-	3
16HS224	Polity and Governance of India	3	-	-	3
16HS307	Economic and Social Development of India	3	-	-	3
16HS308	Geography and Environmental Concerns of India	3	-	-	3

IT STREAM

Course Code	Course Title	L	T	P	C
16IT201	Object oriented Programming	3	-	2	4
16CS303	Web Technologies	3	1	2	5
16CS254	Scripting Languages	3	-	2	4
16CS201	Database Management Systems	3	1	2	5
16IT309	Unix Programming	3	1	-	4
16CS301	Software Engineering	3	-	2	4
16CS302	Data Mining Techniques	3	-	2	4
16IT409	Multimedia Systems	3	-	2	4

B) OPEN STREAMS OF OTHER DEPARTMENTS

Elective Streams offered by other departments that are opted by the students are included in this category.

C) INDIVIDUAL ELECTIVE COURSES OF OTHER DEPARTMENTS

Individual elective courses of other departments that are opted by the students are included in this category.

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I YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

I Year I Semester

Course Code	Course Title	L	T	P	C
16HS101	Basic Mathematics-I	3	1	2	5
16HS102	Engineering Physics	3	-	-	3
16HS105	Technical English Communication	3	-	2	4
16CS101	Basics of Computers and Internet	3	-	2	4
16CS102	Computer Programming	3	1	2	5
16EE101	Basics of Engineering Products	3	-	2	4
16HS104	English Proficiency and Communication Skills	-	-	2	1
16HS110	Engineering Physics Laboratory	-	-	3	2
	Total	**18**	**2**	**15**	**28**

I Year II Semester

Course Code	Course Title	L	T	P	C
16HS106	Basic Mathematics-II	3	1	2	5
16HS107	Engineering Chemistry	3	-	-	3
16ME101	Engineering Graphics	1	-	3	3
16EE102	Basics of Electrical and Electronics Engineering	3	-	2	4
16HS111	Engineering Chemistry Laboratory	-	-	3	2
16HS109	Environmental Science and Technology	2	-	-	2
16FT101	Biochemistry and Nutrition	3	-	2	4
16ME103	Work shop Practice	-	-	3	2
	Total	**15**	**1**	**15**	**25**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course ;

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II YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

II Year I Semester

Course Code	Course Title	L	T	P	C
16CH102	Materials Science and Technology	3	1	-	4
16CS202	Data Structures	3	-	2	4
16EL102	Soft Skills Laboratory	-	-	2	1
16FT201	Food Chemistry	3	-	2	4
16FT202	Food Microbiology	3	-	2	4
16FT203	Thermodyanmics and Heat Engines	3	1	-	4
16FT204	Fundamentals of Fluid Mechanics	3	-	2	4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**18**	**2**	**10**	**26-28**

*   Courses and Progrmmes such as Foreign Languages, Summer Internship, NCC, NSS, Yoga, Music, Dance, Value Added Courses etc. for which credits and other details shall be defined by concerned coordinators.

II Year II Semester

Course Code	Course Title	L	T	P	C
16EL103	Professional Communications Laboratory	-	-	2	1
16HS202	Probability and Statistics	4	-	-	4
16FT205	Principles of Food Preservation	3	1	-	4
16FT206	Fundamentals of Heat and Mass Transfer	3	-	2	4
16FT207	Unit Operations	3	-	2	4
	Department Elective	-	-	-	4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**13**	**1**	**6**	**25-28**

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III YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
16FT301	Backery Confectionary Technology	3	-	2	4
16FT302	Cereals, Legumes and Oilseeds Process Technology	3	-	2	4
16FT303	Dairy Technology	3	-	2	4
16FT304	Fruits and Vegetables Processing	3	-	2	4
	Department Elective	-	-	-	4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**12**	**-**	**6**	**24-27**

III Year II Semester

Course Code	Course Title	L	T	P	C
16HS301	Professional Ethics	2	-	-	2
16FT305	Food Packaging	3	-	2	4
16FT306	Food Safety and Standards	3	1	-	4
16FT307	Instrumental Methods of Food Analysis	3	-	2	4
16FT308	Nutraceutical and Functional Foods	3	1	-	4
	Department Elective	-	-	-	4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**14**	**2**	**4**	**26-29**

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

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IV Year I Semester

Course Code	Course Title	L	T	P	C
16MS201	Management Science	3	-	-	3
16FT401	Beverage Technology	3	-	2	4
16FT402	Food Process Equipment Design	3	-	2	4
16FT403	Meat, Fish and Poultry Process Technology	3	1	-	4
16FT404	Spices and Plantation Crops Process Technology	3	-	-	3
	Department Elective	-	-	-	4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**15**	**1**	**4**	**26-29**

IV Year II Semester

Course Code	Course Title	L	T	P	C
16FT411/16FT412	Project work / Internship	-	-	30	15
	Total	**-**	**-**	**30**	**15**

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA	: Writing Assignment / Reading Assignment
SSH/HSH	: Self Study Hours / Home Study Hours
CS	: Case Study and Example
SA	: Skills Activity
S	: Seminar
BS	: Beyond Syllabus

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ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

DEPARTMENT ELECTIVE STREAMS AND COURSES

STREAM - 1: POST HARVEST TECHNOLOGY

Course Code	Course Title	L	T	P	C
16FT250	Refrigeration and Cold Chain Management	3	-	-	3
16FT350	Grain Storage Technology	3	-	-	3
16FT360	Sugar and Jaggery Processing Technology	3	-	-	3
16FT450	Post Harvest Managment of Fruits and Vegetables	3	-	-	3

STREAM - 2: FOOD ENGINEERING

Course Code	Course Title	L	T	P	C
16FT251	Unit Operations - II	3	-	-	3
16FT351	Maintenance of Food Equipment	3	-	-	3
16FT361	Engineering Properties of Food Materials	3	-	-	3
16FT451	Renewable Energy for Food Processing	3	-	-	3

STREAM - 3: FOOD SAFETY AND QUALITY

Course Code	Course Title	L	T	P	C
16FT252	Food Additives	3	-	-	3
16FT352	Food Toxicology Agrochemical Residues in Food	3	-	-	3
16FT362	Total Quality Management for Food Industries	3	-	-	3
16FT452	Risk Analysis in Food Safety	3	-	-	3

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ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

DEPARTMENT ELECTIVE STREAMS AND COURSES

STREAM - 4: BIOCHEMICAL ENGINEERING

Course Code	Course Title	L	T	P	C
16FT253	Introduction to Biochemical Engineering and Enzyme Technology	3	-	-	3
16FT353	Instrumentation and Process Control in Food Processing	3	-	-	3
16FT363	Waste Management and Byproduct Utilization in Food Industries	3	-	-	3
16FT453	Bioprocess Engineering	3	-	-	3

STREAM - 5: FOOD CHAIN MANAGEMENT

Course Code	Course Title	L	T	P	C
16FT254	Entrepreneurship Development in Food Processing	3	-	-	3
16FT354	Strategy and Marketing of Food Products	3	-	-	3
16FT364	Cross National Co-operative and International Investment	3	-	-	3
16FT454	Project Planning, Preparation and Management	3	-	-	3

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OPEN ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

OPEN ELECTIVE STREAMS AND COURSES

A) MINOR STREAMS:

MANAGEMENT STREAM

Course Code	Course Title	L	T	P	C
16MS202	Principles and Practice of Management	3	-	-	3
16MS301	Managerial Economics	3	-	-	3
16MS302	Finance for Engineers	3	-	-	3
16MS401	Engineering Entrepreneurship	3	-	-	3

HUMANITIES STREAM

Course Code	Course Title	L	T	P	C
16HS219	Indian History and Culture	3	-	-	3
16HS224	Polity and Governance of India	3	-	-	3
16HS307	Economic and Social Development of India	3	-	-	3
16HS308	Geography and Environmental Concerns of India	3	-	-	3

IT STREAM

Course Code	Course Title	L	T	P	C
16IT201	Object Oriented Programming	3	-	2	4
16CS303	Web Technologies	3	1	2	5
16CS254	Scripting Languages	3	-	2	4
16CS201	Database Management Systems	3	1	2	5
16IT309	Unix Programming	3	1	-	4
16CS301	Software Engineering	3	-	2	4
16CS302	Data Mining Techniques	3	-	2	4
16IT409	Multimedia Systems	3	-	2	4

B) OPEN STREAMS OF OTHER DEPARTMENTS

Elective Streams offered by other departments that are opted by the students are included in this category.

C) INDIVIDUAL ELECTIVE COURSES OF OTHER DEPARTMENTS

Individual elective courses of other departments that are opted by the students are included in this category.

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I YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

I Year I Semester

Course Code	Course Title	L	T	P	C
16HS101	Basic Mathematics-I	3	1	2	5
16HS102	Engineering Physics	3	-	-	3
16HS105	Technical English Communication	3	-	2	4
16CS101	Basics of Computers and Internet	3	-	2	4
16CS102	Computer Programming	3	1	2	5
16EE101	Basics of Engineering Products	3	2	-	4
16HS104	English Proficiency and Communication Skills	-	-	2	1
16HS110	Engineering Physics Laboratory	-	-	3	2
	Total	**18**	**2**	**15**	**28**

I Year II Semester

Course Code	Course Title	L	T	P	C
16HS106	Basic Mathematics-II	3	1	2	5
16HS107	Engineering Chemistry	3	-	-	3
16ME101	Engineering Graphics	1	-	3	3
16EE102	Basics of Electrical and Electronics Engineering	3	-	2	4
16HS111	Engineering Chemistry Laboratory	-	-	3	2
16HS109	Environmental Science and Technology	2	-	-	2
16CS202	Data Structures	3	-	2	4
16BM101	Fundamentals of Anatomy and Physiology	3	1	2	5
	Total	**18**	**2**	**14**	**28**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course ;

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II YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

II Year I Semester

Course Code	Course Title	L	T	P	C
16BM201	Biomechanics	3	-	-	3
16BM202	Biostatistics	3	-	-	3
16BM203	Biochemistry	3	-	2	4
16BM204	Electronics Engineering-I	3	-	2	4
16EC203	Network Theory	3	1	-	4
16BM205	Signals and Systems for Bioengineers	3	-	2	4
16EL102	Soft Skills Laboratory	-	-	2	1
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**18**	**1**	**8**	**24-26**

*   Courses and Programmes such as Foreign Languages, Summer Internship, NCC, NSS, Yoga, Music, Dance, Value Added Courses etc. for which credits and other details shall be defined by concerned coordinators.

II Year II Semester

Course Code	Course Title	L	T	P	C
16BM206	Electronics Engineering-II	3	-	2	4
16BM207	Biomaterials and Artificial Organs	3	-	-	3
16BM208	Pathology and Microbiology	3	-	2	4
16BM209	Transducers and Biosensors	3	-	2	4
16EL103	Professional Communication Lab	-	-	2	1
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**12**	**-**	**8**	**23-27**

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III YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
16BM301	Analog and Digital Communication	3	-	2	4
16BM302	Biocontrol Systems	3	1	-	4
16BM303	Biomedical instrumentation	3	1	2	5
16BM304	Fundamentals of Microcontrollers	3	-	2	4
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	12	2	6	24-28

III Year II Semester

Course Code	Course Title	L	T	P	C
16HS301	Professional Ethics	2	-	-	2
16BM305	Biomedical Signal Processing	3	1	2	5
16BM306	Diagnostic and Therapeutic Equipments-I	3	1	-	4
16BM307	Medical informatics	3	1	-	4
16BM308	Medical Imaging Techniques	3	1	-	4
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	14	1	4	24-28

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

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IV YEAR

IV Year I Semester

Course Code	Course Title	L	T	P	C
16BM401	Diagnostic and Therapeutic Equipments-II	3	-	2	4
16BM402	Medical Image Processing	3	1	2	5
16BM403	Tele Medicine	3	1	-	4
16MS201	Managerial Science	3	-	-	3
	Department Elective	-	-	-	3-4
	Department / Open Elective	-	-	-	3-4
	Employability and Life Skills Elective*	-	-	-	1-3
	Total	**15**	**-**	**6**	**25-29**

IV Year II Semester

Course Code	Course Title	L	T	P	C
16BM411/16BM412	Project work / Internship	-	-	30	15
	Total	**-**	**-**	**30**	**15**

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA	:	Writing Assignment / Reading Assignment
SSH/HSH	:	Self Study Hours / Home Study Hours
CS	:	Case Study and Example
SA	:	Skills Activity
S	:	Seminar
BS	:	Beyond Syllabus

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ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

DEPARTMENT ELECTIVE STREAMS AND COURSES

BIOMEDICAL AND RESEARCH AND DEVELOPMENT

Course Code	Course Title	L	T	P	C
16BM240	Hospital Managemement	3	-	-	3
16BM241	Biofluids and Dynamics	3	-	-	3
16BM341	Electromagnetic Biointeraction	3	-	-	3
16BM341	Bio Informatics	3	-	-	3
16BM342	Assist Devices	3	-	-	3
16BM343	Tissue Engineering	3	-	-	3
16BM344	Fiber Optics and Lasers in Medicine	3	-	-	3
16BM440	Rehabilitation Engineering	3	-	-	3
16BM441	Biometric Systems	3	-	-	3
16BM442	Intellectual Property rights	3	-	-	3

ELECTRONICS AND HOSPITAL MANAGEMENT

Course Code	Course Title	L	T	P	C
16BM240	Hospital Managemement	3	-	-	3
16BM250	Bio MEMS	3	-	-	3
16EC306	VLSI Design	3	-	2	4
16BM342	Assist Devices	3	-	-	3
16BM344	Fiber Optics and Lasers in Medicine	3	-	-	3
16EC371	Adhoc and Sensor Networks	3	-	-	3
16BM442	Intellectual Property Rights	3	-	-	3

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

DEPARTMENT ELECTIVE STREAMS AND COURSES

HEALTHCARE IT AND SOFTWARE

Course Code	Course Title	L	T	P	C
16BM240	Hospital Managemement	3	-	-	3
16CS307	Operating Systems	3	-	2	4
16BM360	Computer Organization	3	-	-	3
16BM342	Assist Devices	3	-	-	3
16CS306	Computer Networks	3	-	-	3
16BM361	Internet and Java Programming	3	-	2	4
16BM460	Virtual Reality	3	-	-	3
16BM461	Soft Computing	3	-	-	3

MEDICAL COURSES

Course Code	Course Title	L	T	P	C
16BM490	Medical Physics	3	-	-	3

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OPEN ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

OPEN ELECTIVE STREAMS AND COURSES

A) MINOR STREAMS:

MANAGEMENT STREAM

Course Code	Course Title	L	T	P	C
16MS202	Principles and Practice of Management	3	-	-	3
16MS301	Managerial Economics	3	-	-	3
16MS302	Finance for Engineers	3	-	-	3
16MS401	Engineering Entrepreneurship	3	-	-	3

HUMANITIES STREAM

Course Code	Course Title	L	T	P	C
16HS219	Indian History and Culture	3	-	-	3
16HS224	Polity and Governance of India	3	-	-	3
16HS307	Economic and Social Development of India	3	-	-	3
16HS308	Geography and Environmental Concerns of India	3	-	-	3

IT STREAM

Course Code	Course Title	L	T	P	C
16IT201	Object oriented Programming	3	-	2	4
16CS303	Web Technologies	3	1	2	5
16CS254	Scripting Languages	3	-	2	4
16CS201	Database Management Systems	3	1	2	5
16IT309	Unix Programming	3	1	-	4
16CS301	Software Engineering	3	-	2	4
16CS302	Data Mining Techniques	3	-	2	4
16IT409	Multimedia Systems	3	-	2	4

B) OPEN STREAMS OF OTHER DEPARTMENTS

Elective Streams offered by other departments that are opted by the students are included in this category.

C) INDIVIDUAL ELECTIVE COURSES OF OTHER DEPARTMENTS

Individual elective courses of other departments that are opted by the students are included in this category.

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I YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

I Year I Semester

Course Code	Course Title	L	T	P	C
16HS103	Engineering Mathematics-I	3	1	2	5
16HS102	Engineering Physics	3	-	-	3
16HS105	Technical English Communication	3	-	2	4
16CS101	Basics of Computers and Internet	3	-	2	4
16CS102	Computer Programming	3	1	2	5
16EE101	Basics of Engineering Products	3	-	2	4
16HS104	English Proficiency and Communication Skills	-	-	2	1
16HS110	Engineering Physics Laboratory	-	-	3	2
	Total	**18**	**2**	**15**	**28**

I Year II Semester

Course Code	Course Title	L	T	P	C
16HS108	Engineering Mathematics-II	3	1	2	5
16HS107	Engineering Chemistry	3	-	-	3
16ME101	Engineering Graphics	1	-	3	3
16EE102	Basics of Electrical and Electronics Engineering	3	-	2	4
16HS111	Engineering Chemistry Laboratory	-	-	3	2
16HS109	Environmental Science and Technology	2	-	-	2
16ME103	Work shop Practice	-	-	3	2
16PL102	Basics of Petroleum Engineering	3	1	-	4
	Total	**15**	**2**	**13**	**25**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course ;

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

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II Year I Semester

Course Code	Course Title	L	T	P	C
16HS202	Probability and Statistics	4	-	-	4
16EL102	Soft Skills Laboratory	-	-	2	1
16PL201	Fundamentals of Geology	3	-	2	4
16PL203	Petroleum Geology	3	1	-	4
16PL204	Surveying and Offshore Structures	3	1	-	4
16CH201	Chemical Process Calculations	3	1	-	4
16CH202	Momentum Transfer	3	-	2	4
	Employability and Life Skills Elective*	-	-	-	1
	Total	19	3	6	26

* Courses and Programmes such as Foreign Languages, Summer Internship, NCC, NSS, Yoga, Music, Dance, Value Added Courses etc. for which credits and other details shall be defined by concerned coordinators.

II Year II Semester

Course Code	Course Title	L	T	P	C
16EL103	Professional Communications Laboratory	-	-	2	1
16PL202	Petroleum Exploration	3	1	-	4
16PL205	Petroleum Engineering Thermodynamics	3	1	-	4
16PL206	Drilling Fluids and Cementing Technology	3	-	2	4
16CH207	Process Heat Transfer	3	-	2	4
	Department Elective	3	-	-	3
	Open Elective	3	1	-	4
	Employability and Life Skills Elective*	-	-	-	1
	Total	18	3	6	25

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III YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
16PL301	Process Dynamics and Control	3	-	2	4
16PL302	Drilling Technology	3	-	-	3
16PL303	Process Instrumentation	3	-	2	4
16PL304	Well Logging and Formation Evaluation	3	-	2	4
	Department Elective	3	-	-	3
	Open Elective	3	1	-	4
	Employability and Life Skills Elective*	-	-	-	1
	Total	**18**	**1**	**6**	**23**

III Year II Semester

Course Code	Course Title	L	T	P	C
16HS301	Professional Ethics	2	-	-	2
16PL305	Petroleum Reservior Engineering-I	3	-	2	4
16PL306	Petroleum Production Engineering	3	-	-	3
16PL307	Surface Production Operations	3	-	-	3
16PL308	Petroleum Economics and Asset Managment	3	-	-	3
	Petroleum Analysis Laboratory	-	-	2	2
	Department Elective	3	-	-	3
	Open Elective	3	1	-	4
	Employability and Life Skills Elective*	-	-	-	1
	Total	**20**	**1**	**4**	**25**

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IV YEAR

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

IV Year I Semester

Course Code	Course Title	L	T	P	C
16MS201	Management Science	3	-	-	3
16PL401	Health, Safety and Environmental Engineering	3	1	-	4
16PL402	Petroleum Engineering Equipment Design	3	-	2	4
16PL403	Petroleum Reservior Engineering-II	3	-	2	4
16PL404	Enhanced Oil Recovery Methods	3	-	2	4
	Department Elective	3	-	-	3
	Open Elective	3	1	-	4
	Employability and Life Skills Elective*	-	-	-	1
	Total	**21**	**2**	**6**	**27**

IV Year II Semester

Course Code	Course Title	L	T	P	C
16PL411/16PL412	Project Work / Internship	-	-	30	15
	Total	**-**	**-**	**30**	**15**

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA   : Writing Assignment / Reading Assignment
SSH/HSH   : Self Study Hours / Home Study Hours
CS   : Case Study and Example
SA   : Skills Activity
S   : Seminar
BS   : Beyond Syllabus

B.Tech.

PE

ELECTIVES

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

DEPARTMENT ELECTIVE STREAMS AND COURSES

STREAM - 1: DOWN STREAM PROCESSING

Course Code	Course Title	L	T	P	C
16PL240	Production of Petro Chemical	3	-	-	3
16PL340	Petroleum Refinery Engineering	3	-	-	3
16PL350	Fundamentals of LNG	3	-	-	3
16PL440	Natural Gas Processing	3	-	-	3

STREAM - 2: UP STREAM EXPLORATION

Course Code	Course Title	L	T	P	C
16PL241	Natural Gas Hydrates	3	-	-	3
16PL341	Advanced Natural Gas Engineering	3	-	-	3
16PL351	Reservior Modeling and Simulation	3	-	-	3
16PL441	Reservior Stimulation	3	-	-	3

R-16 CURRICULUM

(Applicable for students admitted into First Year from academic year 2016-17 onwards)

B.Tech.

PE

ELECTIVES

DEPARTMENT ELECTIVE STREAMS AND COURSES

STREAM - 3: CHEMICAL ENGINEERING

Course Code	Course Title	L	T	P	C
16PL242	Transport Phenomena	3	-	-	3
16PL342	Mass Transfer Operations	3	-	-	3
16PL352	Chemical Reaction Engineering	3	-	-	3
16PL442	Computational Fluid Dynamics	3	-	-	3

INDIVIDUAL ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
16CH245	Conventional Energy Sources	3	-	-	3
16CH345	Non Conventional Energy Sources	3	-	-	3
16CH355	Energy Management and Auditing	3	-	-	3
16CH445	Energy Integraion	3	-	-	3

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ELECTIVES

R-16 CURRICULUM
(Applicable for students admitted into First Year from academic year 2016-17 onwards)

OPEN ELECTIVE STREAMS AND COURSES

A) MINOR STREAMS:

MANAGEMENT STREAM

Course Code	Course Title	L	T	P	C
16MS202	Principles and Practice of Management	3	-	-	3
16MS301	Managerial Economics	3	-	-	3
16MS302	Finance for Engineers	3	-	-	3
16MS401	Engineering Entrepreneurship	3	-	-	3

HUMANITIES STREAM

Course Code	Course Title	L	T	P	C
16HS219	Indian History and Culture	3	-	-	3
16HS224	Polity and Governance of India	3	-	-	3
16HS307	Economic and Social Development of India	3	-	-	3
16HS308	Geography and Environmental Concerns of India	3	-	-	3

IT STREAM

Course Code	Course Title	L	T	P	C
16IT201	Object oriented Programming	3	-	2	4
16CS303	Web Technologies	3	1	2	5
16CS254	Scripting Languages	3	-	2	4
16CS201	Database Management Systems	3	1	2	5
16IT309	Unix Programming	3	1	-	4
16CS301	Software Engineering	3	-	2	4
16CS302	Data Mining Techniques	3	-	2	4
16IT409	Multimedia Systems	3	-	2	4

B) OPEN STREAMS OF OTHER DEPARTMENTS
Elective Streams offered by other departments that are opted by the students are included in this category.

C) INDIVIDUAL ELECTIVE COURSES OF OTHER DEPARTMENTS
Individual elective courses of other departments that are opted by the students are included in this category.

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I YEAR

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

I Year I Semester

Course Code	Course Title	L	T	P	C
19HS102	Engineering Mathematics I(B)	3	1	2	5
19HS115	Engineering Physics I(C)	3	0	2	4
19EE101	Basics of Electrical and Electronics Engineering	3	0	2	4
19ME101	Engineering Graphics & Design	2	0	2	3
19EE102	Basic Engineering Products	2	0	2	3
19PC101	Physical Fitness, Sports & Games–I	0	0	3	1
	Total	13	1	13	20

I Year II Semester

Course Code	Course Title	L	T	P	C
19HS108	Engineering Mathematics II(B)	3	1	2	5
19HS121	Organic Chemistry	3	0	2	4
19CS101	Programming for Problem Solving	2	0	4	4
19HS122	English Proficiency and Communication Skills	0	0	2	1
19ME103	Workshop	1	0	2	2
19HS123	Technical English Communication	2	0	2	3
19HS124	Constitution of India	1	0	0	1
19BT101	Bioproducts and Bioentrepreneurship	3	1	0	4
19PC002	Physical Fitness, Sports & Games–II	0	0	3	1
	Total	15	2	17	25

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course ;

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

II Year I Semester

Course Code	Course Title	L	T	P	C
19HS203	Probability and Statistics	3	1	0	4
19BT201	Biochemistry	3	0	2	4
19BT202	Cell and Molecular Biology	3	0	2	4
19BT203	Microbiology	3	0	2	4
19BT204	Unit Operations	3	0	0	3
19MS302	Management Science	3	0	0	3
19PC003	Life Skills-I	0	0	2	-
19PC004	Technical Seminar-I	0	0	4	1
19PC005	Intra-Disciplinary Projects-I	0	0	3	1
19PC006	Physical Fitness, Sports & Games-III	0	0	2	1
	Total	18	1	17	25

II Year II Semester

Course Code	Course Title	L	T	P	C
19BT211	Genetics	3	0	2	4
19BT212	Biothermodynamics	3	0	0	3
19BT213	Bioanalytical Techniques	3	0	2	4
19BT214	Microbial Technology	3	0	0	3
19HS204	Environmental Studies	1	0	0	1
19PC007	Life Skills -II	0	0	2	1
19PC008	Technical Seminar-II	0	0	2	1
19PC009	Intra-Disciplinary Projects-II	0	0	2	1
	Open Elective-I	3	0	0	3
	Total	16	0	10	21

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
19BT301	Bioprocess Engineering	3	0	2	4
19BT302	Enzyme Technology	3	0	2	4
19BT303	Heat and Mass Transfer for Biotechnologists	3	0	2	4
19HS205	Soft Skills Laboratory	1	0	0	1
19PC010	Employability Skills-I	0	0	2	-
19PC011	Inter-Departmental Projects-I	0	0	4	2
19PC012	Modular course	0	0	0	1
	Any one from 3 elective streams	3	0	0	3
	Open Elective-II	3	0	0	3
	Total	16	0	12	22

III Year II Semester

Course Code	Course Title	L	T	P	C
19BT311	Biochemical Reaction Engineering	3	0	2	4
19BT312	Genetic Engineering	3	0	2	4
19BT313	Downstream Processing	3	1	0	4
19HS206	Professional Communications Laboratory	0	0	2	1
19HS301	Human Values, Professional Ethics & Gender Equity	2	0	0	2
19PC013	Employability Skills-II	0	0	2	1
19PC014	Inter-Departmental Projects-II	0	0	4	2
	Any one from 3 elective streams	3	0	0	3
	Open Elective-III	3	0	0	3
	Total	17	1	12	24

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

IV Year I Semester

Course Code	Course Title	L	T	P	C
19BT401	Bioinformatics	3	0	2	4
19BT402	Genomics, Proteomics and Metabolomics	3	0	2	4
19BT403	Immunology and Immunoinformatics	4	0	2	4
19PC015	Societal-Centric and Industry Related Projects	0	0	6	3
	Any one from 3 elective streams	3	0	0	3
	Any one from 3 elective streams	3	0	0	3
	Total	16	0	12	21

IV Year II Semester

Course Code	Course Title	L	T	P	C
19PC016/19PC017	Internship / Project work	-	-	24	12
	Total	-	-	24	12

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA   : Writing Assignment / Reading Assignment

SSH/HSH : Self Study Hours / Home Study Hours

CS   : Case Study and Example

SA   : Skills Activity

S   : Seminar

BS   : Beyond Syllabus

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

DEPARTMENT ELECTIVE STREAMS AND COURSES

STREAM - 1: IMMOUNOTECHNOLOGY AND TISSUE ENGINEERING

Course Code	Course Title	L	T	P	C
19BT331	Methods and Practice of Animal and Human Cell Culture	3	-	-	3
19BT332	Handling of Animals for Experiments	3	-	-	3
19BT338	Tissue and Organ Replacement Technology	3	-	-	3
19BT339	Assisted Reproductive Technology	3	-	-	3
19BT340	Immunotechnology	3	-	-	3
19BT431	Vaccinology	3	-	-	3
19BT432	Phage Display	3	-	-	3

STREAM - 2: CONSERVATION OF BIODIVERSITY AND CROP IMPROVEMENT

Course Code	Course Title	L	T	P	C
19BT333	Plant Breeding	3	-	-	3
19BT334	Plant Tissue Culture and Transgenics	3	-	-	3
19BT341	Biodiversity and Ecology	3	-	-	3
19BT342	Plant Metabolism	3	-	-	3
19BT343	Phytopharma	3	-	-	3
19BT433	Medicinal Plants and Ethnobotany	3	-	-	3
19BT434	Conservation of Biodiversity	3	-	-	3
19BT435	DNA Barcoding for Conservation Strategy	3	-	-	3
19BT436	Interdisciplinary Topics	3	-	-	3

STREAM - 3: BIOINFORMATICS

Course Code	Course Title	L	T	P	C
19BT335	Data Science	3	-	-	3
19BT336	Bioenergetics	3	-	-	3
19BT337	Dynamic Energy Budgets	3	-	-	3
19BT344	Perl	3	-	-	3
19BT345	Metabolic Engineering and Metabolomics	3	-	-	3
19BT437	Python Programming for Biotechnologists	2	-	2	3
19BT438	Algorithms in Bioinformatics	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19AE521	Basic Automobile Engineering	3	-	-	3
19AE531	On Road and Off-road Vehicles	3	-	-	3
19AE532	Safety systems in Automobiles	3	-	-	3
19AE541	Vehicle Maintenance and pollution Norms	3	-	-	3
19BI521	Community Informatics	3	-	-	3
19BI531	Health Informatics	3	-	-	3
19BI532	Software Tools for Sustainable Biodiversity	3	-	-	3
19BM521	Basic Clinical Sciences	3	-	-	3
19BM522	Assist Devices and Implant Technology	3	-	-	3
19BM531	Clinical Instrumenatation	3	-	-	3
19BM532	Biomaterial and Artificial Organs	3	-	-	3
19BM533	Biomedical Equipments	3	-	-	3
19BM541	Medical Imaging Techniques	3	-	-	3
19BM542	Medical Physics	3	-	-	3
19BT521	Elements of Biotechnology	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19BT531	Community Medicine and Public Health	3	-	-	3
19BT532	Biodiversity Economics, Trade and Commerce	3	-	-	3
19BT533	Bioplastics and Biocomposites engineering	3	-	-	3
19CE521	Environmental Pollution & Control	3	-	-	3
19CE522	Building Technology	3	-	-	3
19CE531	Disaster Management	3	-	-	3
19CE532	Solid Waste Management	3	-	-	3
19CE533	Remote Sensing & Geographical Information System	3	-	-	3
19CE534	Geo - Informatics	3	-	-	3
19CE541	Environmental Impact Assessment	3	-	-	3
19CS531	Python Programming	3	-	-	3
19CS532	R Programming	3	-	-	3
19CS533	Data Structures	3	-	-	3
19CS534	Database Management Systems	3	-	-	3
19CS535	Operating Systems	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19CS541	Data Mining Techniques	3	-	-	3
19CS542	Internet of Things	3	-	-	3
19EC521	Embedded Linux	3	-	-	3
19EC531	Embedded Systems and RTOS	3	-	-	3
19EC532	Microcontrollers for Embedded Systems	3	-	-	3
19EC541	Design of IOT Systems (IOT)	3	-	-	3
19EE521	Solar PV Technologies-I	3	-	-	3
19EE531	Solar PV Technologies-II	3	-	-	3
19EE532	Design & Economics of PV plants	3	-	-	3
19EE541	Solar Thermal Conversion Systems	3	-	-	3
19FT521	Introduction of Food Laws and Regulation	3	-	-	3
19FT531	Food Quality and Evaluation	3	-	-	3
19FT532	Subjective and Objective Evaluation in Food Products	3	-	-	3
19FT541	Food Safety and Public Health	3	-	-	3
19HS521	Modern Indian History and Indian Culture	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19HS531	Polity and Governance in India	2	-	-	2
19HS532	Economic and Social Development in India	2	-	-	2
19HS541	Geography of India	2	-	-	2
19IT521	OOPs through JAVA	3	-	-	3
19IT541	Data Science using Python	3	-	-	3
19MS521	Business Environment and Ethics	3	-	-	3
19MS522	Managerial Economics	3	-	-	3
19MS531	Marketing and HR Management	3	-	-	3
19MS532	Finance for Engineers	3	-	-	3
19MS541	Production and Operations Management	3	-	-	3
19ME521	Biomechanics & Kinesiology	3	-	-	3
19ME522	Basics in Robotics	3	-	-	3
19ME531	Advances in Robotics	3	-	-	3
19ME532	Reliability Engineering	3	-	-	3
19ME533	Field and Service Robots	3	-	-	3
19ME534	Energy Audit & Management	3	-	-	3
19ME535	Supply Chain Management	3	-	-	3
19TT531	Fashion Product Development	3	-	-	3
19TT532	Costing of Fashion and Apparel Production	3	-	-	3
19TT541	Fashion Marketing and Visual Merchandising	3	-	-	3

B.Tech.

CHE
I YEAR

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

I Year I Semester

Course Code	Course Title	L	T	P	C
19HS104	Engineering Mathematics - I (D)	3	1	2	5
19HS114	Engineering Physics (B)	3	0	2	4
19EE101	Basics of Electrical & Electronics Engineering	3	0	2	4
19ME101	Engineering Graphics & Design	2	0	2	3
19CH101	Chemical Engineering Thermodynamics - I	3	1	0	4
19PC001	Physical Fitness, Sports & Games-I	0	0	3	1
	Total	14	1	11	21

I Year II Semester

Course Code	Course Title	L	T	P	C
19HS110	Engineering Mathematics - II (D)	3	1	2	5
19HS121	Organic Chemistry	3	0	2	4
19CS101	Programming for Problem Solving	2	0	4	4
19HS122	English Proficiency and Communication Skills	0	0	2	1
19HS123	Technical English Communication	2	0	2	3
19HS124	Constitution of India	1	0	0	1
19ME103	Workshop	1	0	2	2
19CH102	Momentum Transfer	3	0	2	4
19PC002	Physical Fitness, Sports & Games-II	0	0	3	1
	Total	15	2	17	25

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course ;

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

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II YEAR

II Year I Semester

Course Code	Course Title	L	T	P	C
19CH201	Chemical Process Calculations	3	1	0	4
19CH202	Mechanical Unit Operations	3	0	2	4
19CH203	Process Heat Transfer	3	0	2	4
19CH204	Chemical Engineering Thermodynamics-II	3	1	0	4
19CH205	Mass Transfer Operations-I	3	0	2	4
19PC003	Life Skills-I	0	0	2	0
19PC004	Technical Seminar-I	0	0	2	1
19PC005	Intra-disciplinary Projects-I	0	0	3	1
19PC006	Physical Fitness, Sports & Games-III	0	0	2	1
	Total	15	2	15	23

II Year II Semester

Course Code	Course Title	L	T	P	C
19CH211	General Pharmacy	3	0	2	4
19CH212	Chemical Reaction Engineering-I	3	1	0	4
19CH213	Mass Transfer Operations-II	3	0	2	4
19HS204	Environmental Studies	1	0	0	1
19EL102	Department Elective-I	3	0	0	3
19MS302	Management Science	3	0	0	3
19PC007	Life Skills-II	0	0	2	1
19PC008	Technical Seminar-II	0	0	2	1
19PC009	Intra Disciplinary Projects-II	0	0	2	1
	Open Elective-I	3	0	0	3
	Total	19	1	10	25

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III YEAR

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
19CH301	Pre-Formulation Studies	3	0	2	4
19CH302	Chemical Reaction Engineering-II	3	0	2	4
19CH303	Instrumentation and Process Control	3	0	2	4
19EL102	Soft Skills Laboratory	0	0	2	1
19PC010	Employability Skills-I	0	0	2	0
19HS301	Human Values, Professional Ethics & Gender Equity	2	0	0	2
19PC011	Inter Departmental Projects-I	0	0	4	2
19PC012	Modular Course	0	0	0	1
	Department Elective-II	3	0	0	3
	Open Elective-II	3	0	0	3
	Total	18	0	12	24

III Year II Semester

Course Code	Course Title	L	T	P	C
19CH311	Chemical Engineering Process Design and Economics	3	1	0	4
19CH312	Industrial Pharmacy	3	0	2	4
19CH313	Safety in Chemical Industries-I	3	1	0	3
19EL103	Professional Communications Laboratory	0	0	2	1
19PC013	Employability Skills-II	0	0	2	1
19PC014	Inter Departmental Projects-II	0	0	4	2
	Department Elective-III	3	0	0	3
	Open Elective-III	3	0	0	3
	Total	15	1	10	21

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

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IV YEAR

IV Year I Semester

Course Code	Course Title	L	T	P	C
19CH401	Quality Control of Pharmaceutical Dosage Forms	3	0	0	3
19CH402	Safety in Chemical Industries-II	3	0	0	3
19CH403	Industrial Process Technologies-I	3	0	0	3
19CH404	Industrial Process Technologies-II	3	0	2	4
19PC015	Societal Centric and Industry Related Project	0	0	6	3
	Department Elective-IV	3	0	0	3
	Total	15	1	8	19

IV Year II Semester

Course Code	Course Title	L	T	P	C
19PC016	Project work / Internship (Industry Oriented Projects)	0	0	24	12
	Total			24	12

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA   : Writing Assignment / Reading Assignment

SSH/HSH : Self Study Hours / Home Study Hours

CS   : Case Study and Example

SA   : Skills Activity

S   : Seminar

BS   : Beyond Syllabus

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ELECTIVES

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

DEPARTMENT ELECTIVE STREAMS AND COURSES

ELECTIVE - I

Course Code	Course Title	L	T	P	C
19CH231	Material Technology	3	-	-	3
19CH232	Industrial Effluent Treatment Methods	3	-	-	3
19CH233	Energy Management and Auditing	3	-	-	3
19CH234	Mineral Process Technology	3	-	-	3
19CH235	Polymer Science and Engineering	3	-	-	3
19CH236	Petro Chemicals	3	-	-	3
19CH237	Fudamentals of Biotechnology	3	-	-	3

ELECTIVE - II

Course Code	Course Title	L	T	P	C
19CH331	Process Modelling and Simulation	3	-	-	3
19CH332	Solid Waste Management and Treatment	3	-	-	3
19CH333	Petroleum Refinery Engineering	3	-	-	3
19CH334	Colloidal and Interfacial Science	3	-	-	3
19CH335	Fundamentals of Nanotechnoogy	3	-	-	3
19CH336	Membrane Technology	3	-	-	3
19CH337	Bio Process Engineering	3	-	-	3

ELECTIVE - III

Course Code	Course Title	L	T	P	C
19CH338	Transport Phenomena	3	-	-	3
19CH339	Energy Conservation and Waste Heat Recovery	3	-	-	3
19CH340	Non Conventional Energy Sources	3	-	-	3
19CH341	Computational Fluid Dynamics	3	-	-	3
19CH342	Introduction to Matlab Programming	3	-	-	3

ELECTIVE - IV

Course Code	Course Title	L	T	P	C
19CH431	Design and Analysis of Experiments	3	-	-	3
19CH432	Matlab Programming for Numerical Computation	3	-	-	3
19CH433	Optimization in Chemical Engineering	3	-	-	3
19CH434	Chemical Process Equipment Design	3	-	-	3
19CH435	Environmental Regulations and Impact Analysis	3	-	-	3

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ELECTIVES

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19AE521	Basic Automobile Engineering	3	-	-	3
19AE531	On Road and Off-road Vehicles	3	-	-	3
19AE532	Safety systems in Automobiles	3	-	-	3
19AE541	Vehicle Maintenance and pollution Norms	3	-	-	3
19BI521	Community Informatics	3	-	-	3
19BI531	Health Informatics	3	-	-	3
19BI532	Software Tools for Sustainable Biodiversity	3	-	-	3
19BM521	Basic Clinical Sciences	3	-	-	3
19BM522	Assist Devices and Implant Technology	3	-	-	3
19BM531	Clinical Instrumenatation	3	-	-	3
19BM532	Biomaterial and Artificial Organs	3	-	-	3
19BM533	Biomedical Equipments	3	-	-	3
19BM541	Medical Imaging Techniques	3	-	-	3
19BM542	Medical Physics	3	-	-	3
19BT521	Elements of Biotechnology	3	-	-	3

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CHE
ELECTIVES

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19BT531	Community Medicine and Public Health	3	-	-	3
19BT532	Biodiversity Economics, Trade and Commerce	3	-	-	3
19BT533	Bioplastics and Biocomposites Engineering	3	-	-	3
19CE521	Environmental Pollution & Control	3	-	-	3
19CE522	Building Technology	3	-	-	3
19CE531	Disaster Management	3	-	-	3
19CE532	Solid Waste Management	3	-	-	3
19CE533	Remote Sensing & Geographical Information System	3	-	-	3
19CE541	Environmental Impact Assessment	3	-	-	3
19CS531	Python Programming	3	-	-	3
19CS532	R Programming	3	-	-	3
19CS533	Data Structures	3	-	-	3
19CS534	Database Management Systems	3	-	-	3
19CS535	Operating Systems	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

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OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19CS541	Data Mining Techniques	3	-	-	3
19CS542	Internet of Things	3	-	-	3
19EC521	Embedded Linux	3	-	-	3
19EC531	Embedded Systems and RTOS	3	-	-	3
19EC532	Microcontrollers for Embedded Systems	3	-	-	3
19EC541	Design of IOT Systems (IOT)	3	-	-	3
19EE521	Solar PV Technologies-I	3	-	-	3
19EE531	Solar PV Technologies-II	3	-	-	3
19EE532	Design & Economics of PV plants	3	-	-	3
19EE541	Solar Thermal Conversion Systems	3	-	-	3
19FT521	Introduction of Food Laws and Regulation	3	-	-	3
19FT531	Food Quality and Evaluation	3	-	-	3
19FT532	Subjective and Objective Evaluation in Food Products	3	-	-	3
19FT541	Food Safety and Public Health	3	-	-	3
19HS521	Modern Indian History and Indian Culture	3	-	-	3

B.Tech.

CHE
ELECTIVES

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19HS531	Policy and Governance in India	2	-	-	2
19HS532	Economic and Social Development in India	2	-	-	2
19HS541	Geography of India	2	-	-	2
19IT521	OOPs through JAVA	3	-	-	3
19IT541	Data Science using Python	3	-	-	3
19MS521	Business Environment and Ethics	3	-	-	3
19MS522	Managerial Economics	3	-	-	3
19MS531	Marketing and HR Management	3	-	-	3
19MS532	Finance for Engineers	3	-	-	3
19MS541	Production and Operations Management	3	-	-	3
19ME521	Biomechanics & Kinesiology	3	-	-	3
19ME522	Basics in Robotics	3	-	-	3
19ME531	Advances in Robotics	3	-	-	3
19ME532	Reliability Engineering	3	-	-	3
19ME533	Field and Service Robots	3	-	-	3
19ME534	Energy Audit & Management	3	-	-	3
19ME535	Supply Chain Management	3	-	-	3
19TT531	Fashion Product Development	3	-	-	3
19TT532	Costing of Fashion and Apparel Production	3	-	-	3
19TT541	Fashion Marketing and Visual Merchandising	3	-	-	3

Note : Students should not choose open electives offered by their branch.

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(Applicable for students admitted into First Year from academic year 2019-20 onwards)

B.Tech.

CE

I YEAR

I Year I Semester

Course Code	Course Title	L	T	P	C
19HS106	Engineering Mathematics - I (F)	3	1	2	5
19HS114	Engineering Physics -I (B)	3	-	2	4
19EE101	Basic Electrical and Electronics Engineering	3	-	2	4
19ME101	Engineering Graphics and Design	2	-	2	3
19ME102	Engineering Mechanics	3	1	-	4
19PC001	Physical Fitness, Sports & Games-I	-	-	3	1
	Total	**14**	**2**	**11**	**21**

I Year II Semester

Course Code	Course Title	L	T	P	C
19HS112	Engineering Mathematics - II (F)	3	1	2	5
19HS119	Engineering Chemistry - (B)	3	-	2	4
19CS101	Programming for Problem Solving	3	-	2	4
19HS112	English Proficiency and Communication Skills	-	-	2	1
19ME103	Workshop	1	-	2	2
19HS124	Constitution of India	1	-	-	1
19HS123	Technical English Communication	2	-	2	3
19EE102	Basics of Engineering Products	2	-	2	3
19PC002	Physical Fitness, Sports & Games-II	-	-	3	1
	Total	**15**	**1**	**21**	**24**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course ;

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(Applicable for students admitted into First Year from academic year 2019-20 onwards)

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II YEAR

II Year I Semester

Course Code	Course Title	L	T	P	C
19CE201	Probability and Statistics	3	1	-	4
19CE202	Strength of Materials	3	1	-	4
19CE203	Fluid Mechanics	3	-	2	4
19CE204	Building Material and Concrete Technology	3	-	2	4
19CE205	Surveying and Geomatics	3	-	2	4
19PC003	Life Skills-I	-	-	2	-
19PC004	Technical Seminar-I	-	-	2	1
19PC005	Intra-disciplinary Project-I	-	-	3	1
19PC006	Physical Fitness, Sports & Games-III	-	-	2	1
	Total	**15**	**2**	**15**	**23**

II Year II Semester

Course Code	Course Title	L	T	P	C
19CE211	StructuralAnalysis-I	3	1	-	4
19CE212	Hydraulic Engineering	3	-	2	4
19CE213	Environmental Engineering	2	-	2	3
19CE214	Engineering Geology	2	-	2	3
19HS204	Environmental Studies	1	-	-	1
19CE215	Civil Engineering-Societal & Global Impact	2	-	-	2
*****	Open Elective-I	3	-	-	3
19PC007	Life Skills-II	-	-	2	1
19PC008	Technical Seminar-II	-	-	2	1
19PC009	Intra-discipilinary Project-II	-	-	2	1
	Total	**16**	**1**	**12**	**23**

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
19CE301	Water Resources Engineering	3	-	-	3
19CE302	GeoTechnical Engineering	3	-	2	4
19CE303	Design of Reinforced Concrete Structures	3	1	-	4
19CE304	Short Term Industrial Training	1	-	-	1
****	Department Elective -I	3	-	-	3
****	Open Elective - II	3	-	-	3
19HS301	Human Values, Professional Ethics &Gender Equity	2	-	-	2
19HS205	Soft Skills Laboratory	-	-	2	1
19PC010	Employability Skills -I	-	-	2	0.5
19PC011	Inter-departmental Project - I	-	-	4	2
19PC012	Modular Course	-	-	-	1
	Total	**19**	**2**	**6**	**24**

III Year II Semester

Course Code	Course Title	L	T	P	C
19CE311	Structural Analysis -II	3	1	-	4
19CE312	Transportation Engineering	2	-	2	3
19CE313	Design of Steel Structures	3	1	-	4
19MS301	Organisational Behaviour	2	-	-	2
19HS206	Professional Communications Lab	-	-	2	1
****	Department Elective-II	3	-	-	3
****	Open Elective-II	3	-	-	3
19PC013	Employability Skills- II	-	-	2	1
19PC014	Inter-departmental Project-II	-	-	4	2
	Total	**16**	**2**	**10**	**23**

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(Applicable for students admitted into First Year from academic year 2019-20 onwards)

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IV YEAR

IV Year I Semester

Course Code	Course Title	L	T	P	C
19CE401	Construction Planing and Management	3	-	-	3
19CE402	Engineering Economics,Estimation and Costing	3	-	2	4
19CE403	Structural Computation Lab	-	-	4	2
19CE404	Design and Analysis of Algorithms for Civil Engineering	2	-	-	2
***	Department Elective - III	3	-	-	3
***	Department Elective-IV	3	-	-	3
19PC015	Societal Centric & Industry Oriented Project	-	-	6	3
	Total	**14**	**0**	**12**	**20**

IV Year II Semester

Course Code	Course Title	L	T	P	C
19PC016/19PC017	Project Work / Internship	-	-	24	12
	Total	-	-	**24**	**12**

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA   : Writing Assignment / Reading Assignment

SSH/HSH : Self Study Hours / Home Study Hours

CS   : Case Study and Example

SA   : Skills Activity

S   : Seminar

BS   : Beyond Syllabus

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R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

DEPARTMENT ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19CE331	Sustainable Construction Methods	3	-	-	3
19CE332	Advanced Hydraulics	3	-	-	3
19CE333	Ecological Engineering	3	-	-	3
19CE334	Ground Improvement Techniques				
19CE335	Remote Sensing and GIS	3	-	-	3
19CE336	Disaster Management	3	-	-	3
19CE337	Repair and Rehabilation of Structures	3	-	-	3
19CE338	Structural Dynamics	3	-	-	3
19CE340	Environmental Pollution and Control	3	-	-	3
19CE341	Foundation Engineering	3	-	-	3
19CE342	Railway and Airport Engineering	3	-	-	3
19CE343	Numerical Methods in Civil Engineering	3	-	-	3
19CE344	Instrumentation and Sensor Technologies for Civil Engineering Application	3	-	-	3
19CE431	Bridge Engineering	3	-	-	3
19CE432	Pre-Stressed Concrete	3	-	-	3
19CE433	Urban Hydrology	3	-	-	3
19CE434	Traffic Engineering and management	3	-	-	3
19CE435	Advanced Structural Design	3	-	-	3
19CE438	Finite Elemet Analysis	3	-	-	3

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(Applicable for students admitted into First Year from academic year 2019-20 onwards)

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OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19AE521	Basic Automobile Engineering	3	-	-	3
19AE531	On Road and Off-road Vehicles	3	-	-	3
19AE532	Safety systems in Automobiles	3	-	-	3
19AE541	Vehicle Maintenance and pollution Norms	3	-	-	3
19BI521	Community Informatics	3	-	-	3
19BI531	Health Informatics	3	-	-	3
19BI532	Software Tools for Sustainable Biodiversity	3	-	-	3
19BM521	Basic Clinical Sciences	3	-	-	3
19BM522	Assist Devices and Implant Technology	3	-	-	3
19BM531	Clinical Instrumenatation	3	-	-	3
19BM532	Biomaterial and Artificial Organs	3	-	-	3
19BM533	Biomedical Equipments	3	-	-	3
19BM541	Medical Imaging Techniques	3	-	-	3
19BM542	Medical Physics	3	-	-	3
19BT521	Elements of Biotechnology	3	-	-	3

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R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19BT531	Community Medicine and Public Health	3	-	-	3
19BT532	Biodiversity Economics, Trade and Commerce	3	-	-	3
19BT533	Bioplastics and Biocomposites engineering	3	-	-	3
19CE521	Environmental Pollution & Control	3	-	-	3
19CE522	Building Technology	3	-	-	3
19CE531	Disaster Management	3	-	-	3
19CE532	Solid Waste Management	3	-	-	3
19CE533	Remote Sensing & Geographical Information System	3	-	-	3
19CE541	Environmental Impact Assessment	3	-	-	3
19CS531	Python Programming	3	-	-	3
19CS532	R Programming	3	-	-	3
19CS533	Data Structures	3	-	-	3
19CS534	Database Management Systems	3	-	-	3
19CS535	Operating Systems	3	-	-	3

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(Applicable for students admitted into First Year from academic year 2019-20 onwards)

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OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19CS541	Data Mining Techniques	3	-	-	3
19CS542	Internet of Things	3	-	-	3
19EC521	Embedded Linux	3	-	-	3
19EC531	Embedded Systems and RTOS	3	-	-	3
19EC532	Microcontrollers for Embedded Systems	3	-	-	3
19EC541	Design of IOT Systems (IOT)	3	-	-	3
19EE521	Solar PV Technologies-I	3	-	-	3
19EE531	Solar PV Technologies-II	3	-	-	3
19EE532	Design & Economics of PV plants	3	-	-	3
19EE541	Solar Thermal Conversion Systems	3	-	-	3
19FT521	Introduction of Food Laws and Regulation	3	-	-	3
19FT531	Food Quality and Evaluation	3	-	-	3
19FT532	Subjective and Objective Evaluation in Food Products	3	-	-	3
19FT541	Food Safety and Public Health	3	-	-	3
19HS521	Modern Indian History and Indian Culture	3	-	-	3

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(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19HS531	Polity and Governance in India	2	-	-	2
19HS532	Economic and Social Development in India	2	-	-	2
19HS541	Geography of India	2	-	-	2
19IT521	OOPs through JAVA	3	-	-	3
19IT541	Data Science using Python	3	-	-	3
19MS521	Business Environment and Ethics	3	-	-	3
19MS522	Managerial Economics	3	-	-	3
19MS531	Marketing and HR Management	3	-	-	3
19MS532	Finance for Engineers	3	-	-	3
19MS541	Production and Operations Management	3	-	-	3
19ME521	Biomechanics & Kinesiology	3	-	-	3
19ME522	Basics in Robotics	3	-	-	3
19ME531	Advances in Robotics	3	-	-	3
19ME532	Reliability Engineering	3	-	-	3
19ME533	Field and Service Robots	3	-	-	3
19ME534	Energy Audit & Management	3	-	-	3
19ME535	Supply Chain Management	3	-	-	3
19TT531	Fashion Product Development	3	-	-	3
19TT532	Costing of Fashion and Apparel Production	3	-	-	3
19TT541	Fashion Marketing and Visual Merchandising	3	-	-	3

Note : Students should not choose open electives offered by their branch.

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

I Year I Semester

Course Code	Course Title	L	T	P	C
19HS103	Engineering Mathematics I(C)	3	-	2	4
19HS113	Engineering Physics (A)	3	-	2	4
19EE101	Basics of Electrical & Electronics Engineering	3	-	2	4
19ME104	Engineering Graphics and Design	1	-	2	2
19CS103	Programming for Problem Solving -I	3	-	4	5
19CS104	Basics of Computer & Internet	1	-	2	2
19PC001	Physical fitness, Sports & Games-I	-	-	3	1
	Total	**14**	**-**	**17**	**22**

I Year II Semester

Course Code	Course Title	L	T	P	C
19HS109	Engineering Mathematics II(C)	3	-	2	4
19CS106	Discrete Mathematical Structures	3	-	-	3
19HS117	Engineering Chemistry (A)	2	-	-	2
19CS105	Programming for Problem Solving-II	3	-	4	5
19HS122	English Proficiency and Communication Skills	-	-	2	1
19HS124	Constitution of India	1	-	-	1
19ME103	Workshop	1	-	2	2
19HS123	Technical English Communication	2	-	2	3
19PC002	Physical Fitness, Sports & Games-II	-	-	3	1
	Total	**15**	**-**	**15**	**22**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

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II YEAR

II Year I Semester

Course Code	Course Title	L	T	P	C
19HS203	Probability & Statistics	4	-	-	4
19CS201	OOPs through JAVA	2	-	4	4
19CS202	Data Structures	3	-	2	4
19CS203	Database Management Systems	3	-	2	4
19CS204	Digital Logic Design	3	-	-	3
19HS204	Environmental Science	1	-	-	1
19PC003	Life Skills - I	-	-	2	-
19PC004	Technical Seminar-I	-	-	2	1
19PC005	Intra-disciplinary Projects-I	-	-	2	1
19PC006	Physical Fitness, Sports & Games-III	-	-	2	1
	Total	16	-	16	**23**

II Year II Semester

Course Code	Course Title	L	T	P	C
19CS211	Operating Systems	3	-	2	4
19CS212	Formal Languages & Automata Theory	3	-	-	3
19CS213	Design & Analysis of Algorithms	3	-	2	4
19CS214	Computer Organization & Architecture	3	-	-	3
19CS215	Web Technologies	2	-	2	3
19MS304	Principles of Management & Organizational Behaviour	3	-	-	3
19PC007	Life Skills - II	-	-	2	1
19PC008	Technical Seminar-II	-	-	2	1
19PC009	Intra-disciplinary Projects-II	-	-	2	1
	Total	17	-	12	23

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(Applicable for students admitted into First Year from academic year 2019-20 onwards)

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III YEAR

III Year I Semester

Course Code	Course Title	L	T	P	C
19CS301	Data Mining Techniques	3	-	2	4
19CS302	Software Engineering	3	-	2	4
19CS303	Compiler Design	3	-	-	3
19CS304	Computer Networks	3	-	2	4
19HS205	Softskills Laboratory	1	-	-	1
	Department Elective-I	3	-	2	4
	Open Elective-I	3	-	-	3
19PC010	Employability skills-I	-	-	2	-
19PC011	Inter-departmental Projects-I	-	-	4	2
19PC012	Modular Course	-	-	-	1
	Total	**19**	**-**	**14**	**26**

III Year II Semester

Course Code	Course Title	L	T	P	C
19CS311	Cryptography & Network Security	3	-	-	3
19CS312	Mobile Computing	3	-	2	4
19CS313	Artificial Intelligence	3	-	2	4
19CS314	Competitive Coding	-	-	2	1
19HS206	Professional Communication Laboratory	-	-	2	1
19HS301	Human Values, Professional Ethics & Gender Equity	2	-	-	2
	Department Elective-II	3	-	2	4
	Open Elective-II	3	-	-	3
19PC013	Employability skills-II	-	-	2	1
19PC014	Inter-departmental Projects-II	-	-	4	2
	Total	**17**	**-**	**16**	**25**

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(Applicable for students admitted into First Year from academic year 2019-20 onwards)

IV Year I Semester

Course Code	Course Title	L	T	P	C
19CS401	Machine Learning	3	1	-	4
	Department Elective III	3	-	2	4
	Department Elective IV	3	-	-	3
	Open Elective III	3	-	-	3
19PC015	Societal-Centric and Industry Related Projects	-	-	6	3
	Total	12	1	8	**17**

IV Year II Semester

Course Code	Course Title	L	T	P	C
19PC016 /17	Internship / Project work	-	-	24	12
	Total	-	-	24	12

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA   : Writing Assignment / Reading Assignment

SSH/HSH : Self Study Hours / Home Study Hours

CS   : Case Study and Example

SA   : Skills Activity

S   : Seminar

BS   : Beyond Syllabus

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20onwards)

DEPARTMENT ELECTIVES COURSES

Course Code	Course Title	L	T	P	C
19CS331	Python Programming	3	-	2	4
19CS332	Embedded Systems	3	-	2	4
19CS333	Open Source Web Technologies	3	-	2	4
19CS334	Fundamentals of Image Processing	3	-	2	4
19CS335	R Programming	3	-	2	4
19CS336	Network Programming	3	-	2	4
19CS337	Cloud Computing	3	-	2	4
19CS338	Advanced Data Mining	3	-	2	4
19CS 431	Internet of Things	2	-	2	3
19CS 432	Mobile Ad- hoc Networks	3	-	2	4
19CS433	Big Data & Analytics	3	-	2	4
19CS434	Deep Learning	3	-	-	3
19CS436	Parallel Processing	3	-	-	3
19CS437	Game Theory	3	-	-	3
19CS438	High Performance Computing	3	-	-	3
19CS439	Artificial Neural Networks	3	-	-	3
19CS440	Distributed Systems	3	-	-	3
19CS441	Wireless Sensor Networks	3	-	-	3

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(Applicable for students admitted into First Year from academic year 2019-20 onwards)

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ELECTIVES

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19AE521	Basic Automobile Engineering	3	-	-	3
19AE531	On Road and Off-road Vehicles	3	-	-	3
19AE532	Safety systems in Automobiles	3	-	-	3
19AE541	Vehicle Maintenance and pollution Norms	3	-	-	3
19BI521	Community Informatics	3	-	-	3
19BI531	Health Informatics	3	-	-	3
19BI532	Software Tools for Sustainable Biodiversity	3	-	-	3
19BM521	Basic Clinical Sciences	3	-	-	3
19BM522	Assist Devices and Implant Technology	3	-	-	3
19BM531	Clinical Instrumenatation	3	-	-	3
19BM532	Biomaterial and Artificial Organs	3	-	-	3
19BM533	Biomedical Equipments	3	-	-	3
19BM541	Medical Imaging Techniques	3	-	-	3
19BM542	Medical Physics	3	-	-	3
19BT521	Elements of Biotechnology	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19BT531	Community Medicine and Public Health	3	-	-	3
19BT532	Biodiversity Economics, Trade and Commerce	3	-	-	3
19BT533	Bioplastics and Biocomposites engineering	3	-	-	3
19CE521	Environmental Pollution & Control	3	-	-	3
19CE522	Building Technology	3	-	-	3
19CE531	Disaster Management	3	-	-	3
19CE532	Solid Waste Management	3	-	-	3
19CE533	Remote Sensing & Geographical Information System	3	-	-	3
19CE541	Environmental Impact Assessment	3	-	-	3
19CS531	Python Programming	3	-	-	3
19CS532	R Programming	3	-	-	3
19CS533	Data Structures	3	-	-	3
19CS534	Database Management Systems	3	-	-	3
19CS535	Operating Systems	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19CS541	Data Mining Techniques	3	-	-	3
19CS542	Internet of Things	3	-	-	3
19EC521	Embedded Linux	3	-	-	3
19EC531	Embedded Systems and RTOS	3	-	-	3
19EC532	Microcontrollers for Embedded Systems	3	-	-	3
19EC541	Design of IOT Systems (IOT)	3	-	-	3
19EE521	Solar PV Technologies-I	3	-	-	3
19EE531	Solar PV Technologies-II	3	-	-	3
19EE532	Design & Economics of PV plants	3	-	-	3
19EE541	Solar Thermal Conversion Systems	3	-	-	3
19FT521	Introduction of Food Laws and Regulation	3	-	-	3
19FT531	Food Quality and Evaluation	3	-	-	3
19FT532	Subjective and Objective Evaluation in Food Products	3	-	-	3
19FT541	Food Safety and Public Health	3	-	-	3
19HS521	Modern Indian History and Indian Culture	3	-	-	3

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R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19HS531	Polity and Governance in India	2	-	-	2
19HS532	Economic and Social Development in India	2	-	-	2
19HS541	Geography of India	2	-	-	2
19IT521	OOPs through JAVA	3	-	-	3
19IT541	Data Science using Python	3	-	-	3
19MS521	Business Environment and Ethics	3	-	-	3
19MS522	Managerial Economics	3	-	-	3
19MS531	Marketing and HR Management	3	-	-	3
19MS532	Finance for Engineers	3	-	-	3
19MS541	Production and Operations Management	3	-	-	3
19ME521	Biomechanics & Kinesiology	3	-	-	3
19ME522	Basics in Robotics	3	-	-	3
19ME531	Advances in Robotics	3	-	-	3
19ME532	Reliability Engineering	3	-	-	3
19ME533	Field and Service Robots	3	-	-	3
19ME534	Energy Audit & Management	3	-	-	3
19ME535	Supply Chain Management	3	-	-	3
19TT531	Fashion Product Development	3	-	-	3
19TT532	Costing of Fashion and Apparel Production	3	-	-	3
19TT541	Fashion Marketing and Visual Merchandising	3	-	-	3

Note : Students should not choose open electives offered by their branch.

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

I Year I Semester

Course Code	Course Title	L	T	P	C
19HS105	Engineering Mathematics - I (E)	3	-	2	4
19HS113	Engineering Physics (A)	3	-	2	4
19EE101	Basic Electrical and Electronics Engineering	3	-	2	4
19ME101	Engineering Graphics & Design	2	-	2	3
19CS101	Programming for Problem Solving	3	-	2	4
19PC001	Physical Fitness, Sports & Games - I	-	-	3	1
	Total	**14**	**-**	**13**	**20**

I Year II Semester

Course Code	Course Title	L	T	P	C
19HS111	Engineering Mathematics - II (E)	3	-	2	4
19HS118	Engineering Chemistry (C)	2	-	2	3
19EC101	Network Theory	3	1	-	4
19HS122	English Proficiency and Communication Skills	-	-	2	1
19HS123	Technical English Communication	2	-	2	3
19HS124	Constitution of India	1	-	-	1
19EE102	Basic Engineering Products	2	-	2	3
19ME103	Workshop	1	-	2	2
19PC002	Physical Fitness, Sports & Games - II	-	-	3	1
	Total	**14**	**1**	**15**	**22**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course.

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

B.Tech.
ECE
II YEAR

II Year I Semester

Course Code	Course Title	L	T	P	C
19HS202	Transforms & Complex Variables	3	1	-	4
19EC201	Electronic Devices and Circuits	3	-	2	4
19EC202	Signals and Systems	3	-	2	4
19EC203	Digital System Design	3	-	2	4
19EC204	PCB Lab	-	-	2	1
19HS204	Environmental Studies	1	-	-	1
19PC003	Life Skills - I	-	-	2	-
19PC004	Technical Seminar - I	-	-	2	1
19PC005	Intra-Disciplinary Projects - I	-	-	3	1
19PC006	Physical Fitness, Sports & Games - III	-	-	2	1
	Total	13	1	17	21

II Year II Semester

Course Code	Course Title	L	T	P	C
19EC211	Analog Communications	2	-	2	3
19EC212	Analog Circuits	3	-	2	4
19EC213	Microcontrollers	3	-	2	4
19EC214	Probability Theory and Stochastic Processes	3	1	-	4
19EC215	Control Systems	3	-	-	3
19PC007	Life Skills - II	-	-	2	1
19PC008	Technical Seminar - II	-	-	2	1
19PC009	Intra-Disciplinary Projects - II	-	-	2	1
	Open Elective - I	3	-	-	3
	Total	17	1	12	24

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
19EC301	Digital Communications	3	-	2	4
19EC302	Electromagnetic Waves and Transmission Lines	3	1	-	4
19EC303	Sensors and Instrumentation	2	-	2	3
19EC304	Data Communications and Computer Networks	3	-	2	4
19HS301	Human Values, Professional Ethics & Gender Equity	2	-	-	2
19HS205	Soft Skills Laboratory	-	-	2	1
19PC010	Employability Skills - I	-	-	2	-
19PC011	Inter-Departmental Projects - I	-	-	4	2
	Department Elective - I	3	-	-	3
	Open Elective - II	3	-	-	3
	Total	**19**	**1**	**14**	**26**

III Year II Semester

Course Code	Course Title	L	T	P	C
19EC311	Data Structures and Algorithms	3	-	2	4
19EC312	Antennas and Wave Propagation	3	-	-	3
19EC313	Digital Signal Processing	3	-	2	4
19EC314	Internet of Things	3	-	2	4
19HS206	Professional Communication Laboratory	-	-	2	1
19PC012	Modular Course	-	-	-	1
19PC013	Employability Skills - II	-	-	2	1
19PC014	Inter-Departmental Projects - II	-	-	4	2
	Department Elective - II	3	-	-	3
	Open Elective - III	3	-	-	3
	Total	**18**	**0**	**14**	**26**

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

B.Tech.
ECE
IV YEAR

IV Year I Semester

Course Code	Course Title	L	T	P	C
19MS303	Principles of Management and Organizational Behavior	3	-	-	3
19EC401	VSLI Design	3	-	2	4
19PC015	Societal - Centric and Industry Related Projects	-	-	2	3
	Department Elective - III	3	-	-	3
	Department Elective - IV	3	-	-	3
	Department Elective - V	3	-	-	3
	Total	**15**	**-**	**4**	**19**

IV Year II Semester

Course Code	Course Title	L	T	P	C
19PC016/19PC017	Internship / Project Work	-	-	24	12
	Total	**-**	**-**	**24**	**12**

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA   : Writing Assignment / Reading Assignment

SSH/HSH : Self Study Hours / Home Study Hours

CS   : Case Study and Example

SA   : Skills Activity

S   : Seminar

BS   : Beyond Syllabus

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

DEPARTMENT ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19EC331	Digital Design through Verilog	3	-	-	3
19EC332	PYTHON Programming	3	-	-	3
19EC333	Computer Architecture and Organization	3	-	-	3
19EC334	Optical Communication	3	-	-	3
19EC335	Information Theory and Coding	3	-	-	3
19EC336	Digital TV and Broadcasting	3	-	-	3
19EC337	Embedded Systems	3	-	-	3
19EC338	Cellular and Mobile Communications	3	-	-	3
19EC431	Mobile OS and Application Development	3	-	-	3
19EC432	RF and MW Engineering	3	-	-	3
19EC433	Wireless Sensor Networks	3	-	-	3
19EC434	Machine Learning	3	-	-	3
19EC435	Satellite Communications	3	-	-	3
19EC436	Radar Systems	3	-	-	3
19EC437	Digital Image and Video Processing	3	-	-	3
19EC438	Software Defined Radio	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

B.Tech.

ECE

ELECTIVES

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19AE521	Basic Automobile Engineering	3	-	-	3
19AE531	On Road and Off-road Vehicles	3	-	-	3
19AE532	Safety systems in Automobiles	3	-	-	3
19AE541	Vehicle Maintenance and pollution Norms	3	-	-	3
19BI521	Community Informatics	3	-	-	3
19BI531	Health Informatics	3	-	-	3
19BI532	Software Tools for Sustainable Biodiversity	3	-	-	3
19BM521	Basic Clinical Sciences	3	-	-	3
19BM522	Assist Devices and Implant Technology	3	-	-	3
19BM531	Clinical Instrumenatation	3	-	-	3
19BM532	Biomaterial and Artificial Organs	3	-	-	3
19BM533	Biomedical Equipments	3	-	-	3
19BM541	Medical Imaging Techniques	3	-	-	3
19BM542	Medical Physics	3	-	-	3
19BT521	Elements of Biotechnology	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19BT531	Community Medicine and Public Health	3	-	-	3
19BT532	Biodiversity Economics, Trade and Commerce	3	-	-	3
19BT533	Bioplastics and Biocomposites engineering	3	-	-	3
19CE521	Environmental Pollution & Control	3	-	-	3
19CE522	Building Technology	3	-	-	3
19CE531	Disaster Management	3	-	-	3
19CE532	Solid Waste Management	3	-	-	3
19CE533	Remote Sensing & Geographical Information System	3	-	-	3
19CE534	Geo - Informatics	3	-	-	3
19CE541	Environmental Impact Assessment	3	-	-	3
19CS531	Python Programming	3	-	-	3
19CS532	R Programming	3	-	-	3
19CS533	Data Structures	3	-	-	3
19CS534	Database Management Systems	3	-	-	3
19CS535	Operating Systems	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19CS541	Data Mining Techniques	3	-	-	3
19CS542	Internet of Things	3	-	-	3
19EC521	Embedded Linux	3	-	-	3
19EC531	Embedded Systems and RTOS	3	-	-	3
19EC532	Microcontrollers for Embedded Systems	3	-	-	3
19EC541	Design of IOT Systems (IOT)	3	-	-	3
19EE521	Solar PV Technologies-I	3	-	-	3
19EE531	Solar PV Technologies-II	3	-	-	3
19EE532	Design & Economics of PV plants	3	-	-	3
19EE541	Solar Thermal Conversion Systems	3	-	-	3
19FT521	Introduction of Food Laws and Regulation	3	-	-	3
19FT531	Food Quality and Evaluation	3	-	-	3
19FT532	Subjective and Objective Evaluation in Food Products	3	-	-	3
19FT541	Food Safety and Public Health	3	-	-	3
19HS521	Modern Indian History and Indian Culture	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19HS531	Polity and Governance in India	2	-	-	2
19HS532	Economic and Social Development in India	2	-	-	2
19HS541	Geography of India	2	-	-	2
19IT521	OOPs through JAVA	3	-	-	3
19IT541	Data Science using Python	3	-	-	3
19MS521	Business Environment and Ethics	3	-	-	3
19MS522	Managerial Economics	3	-	-	3
19MS531	Marketing and HR Management	3	-	-	3
19MS532	Finance for Engineers	3	-	-	3
19MS541	Production and Operations Management	3	-	-	3
19ME521	Biomechanics & Kinesiology	3	-	-	3
19ME522	Basics in Robotics	3	-	-	3
19ME531	Advances in Robotics	3	-	-	3
19ME532	Reliability Engineering	3	-	-	3
19ME533	Field and Service Robots	3	-	-	3
19ME534	Energy Audit & Management	3	-	-	3
19ME535	Supply Chain Management	3	-	-	3
19TT531	Fashion Product Development	3	-	-	3
19TT532	Costing of Fashion and Apparel Production	3	-	-	3
19TT541	Fashion Marketing and Visual Merchandising	3	-	-	3

Note : Students should not choose open electives offered by their branch.

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

B. Tech - ELECTRICAL AND ELECTRONICS ENGINEERING

I Year I Semester

Course Code	Course Title	L	T	P	C
19HS105	Engineering Mathematics - I (E)	3	-	2	4
19HS113	Engineering Physics (A)	3	-	2	4
19EE101	Basic Electrical and Electronics Engineering	3	-	2	4
19ME101	Engineering Graphics & Design	2	-	2	3
19CS107	C Programming for Problem Solving - I	3	-	2	4
19PC001	Physical Fitness, Sports & Games - I	-	-	3	1
	Total	**14**	**-**	**13**	**20**

I Year II Semester

Course Code	Course Title	L	T	P	C
19HS111	Engineering Mathematics - II (E)	3	-	2	4
19HS118	Engineering Chemistry (C)	2	-	2	3
19CS109	C Programming for Problem Solving - II	3	-	2	4
19HS122	English Proficiency and Communication Skills	-	-	2	1
19HS123	Technical English Communication	2	-	2	3
19HS124	Constitution of India	1	-	-	1
19EE102	Basic Engineering Products	2	-	2	3
19ME103	Workshop	1	-	2	2
19PC002	Physical Fitness, Sports & Games - II	-	-	3	1
	Total	**14**	**-**	**17**	**22**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

B.Tech.

EEE

II YEAR

II Year I Semester

Course Code	Course Title	L	T	P	C
19EE201	Linear Systems and Signal Analysis	3	1	-	4
19EE202	Electrical Circuit Analysis	3	-	2	4
19EE203	Electromagnetic Fields	3	1	-	4
19EE204	Digital Electronic Circuits	3	-	2	4
19EE205	Analog Electronics	3	-	2	4
19PC003	Life Skills - I	-	-	2	-
19PC004	Technical Seminar - I	-	-	2	1
19PC005	Intra-Disciplinary Projects - I	-	-	2	1
19PC006	Physical Fitness, Sports & Games - III	-	-	2	1
	Total	15	2	15	**23**

II Year II Semester

Course Code	Course Title	L	T	P	C
19EE211	Electrical Machines - I	3	-	2	4
19EE212	Control Systems	3	-	2	4
19EE213	Power Transmission and Distribution	3	1	-	4
19HS204	Environmental Studies	1	-	-	1
19EE214	Microprocessors & Microcontrollers	3	-	2	4
19MS302	Management Science	3	-	-	3
	Open Elective - I	3	-	-	3
19PC007	Life Skills - II	-	-	2	1
19PC008	Technical Seminar - II	-	-	2	1
19PC009	Intra-Disciplinary Projects - II	-	-	2	1
	Total	19	1	12	**26**

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
19EE301	Power Electronics	3	-	2	4
19EE302	Power System Protection	3	1	-	4
19EE303	Electrical Machines - II	3	-	2	4
	Department Elective - I	3	-	-	3
	Open Elective - II	3	-	-	3
19HS205	Soft Skills Laboratory	-	-	2	1
19PC010	Employability Skills - I	-	-	2	-
19PC011	Inter-Departmental Projects - I	-	-	4	2
19PC012	Modular Course	-	-	-	1
	Total	16	1	12	**22**

III Year II Semester

Course Code	Course Title	L	T	P	C
19EE311	Digital Signal Processing	3	-	-	3
19EE312	Industrial Electric Drives	3	-	2	4
19CS315	Programming with Python	2	-	2	3
19HS206	Professional Communication Laboratory	-	-	2	1
19HS301	Human Values, Professional Ethics & Gender Equity	2	-	-	2
	Department Elective - II	3	-	-	3
	Department Elective - III	3	-	-	3
	Open Elective - III	3	-	-	3
19PC013	Employability Skills - II	-	-	2	1
19PC014	Inter-Departmental Projects - II	-	-	4	2
	Total	19	-	12	**25**

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

IV Year I Semester

Course Code	Course Title	L	T	P	C
19EE401	Analysis and Operation of Power Systems	3	-	2	4
19EE402	Embedded Systems in Electrical Engineering	3	-	-	3
19EE403	Green Energy Technologies	3	-	-	3
19EE404	Soft Computing Techniques	2	-	-	2
	Department Elective - IV	3	-	-	3
19EE405	Electrical Measurements Laboratory	-	-	4	2
19PC015	Societal-Centric and Industry Related Projects	-	-	6	3
	Total	14	-	12	**20**

IV Year II Semester

Course Code	Course Title	L	T	P	C
19PC016 / 19PC017	Internship / Project work	-	-	24	12
	Total	-	-	24	12

In addition to L,T, P, C the following information in hours/semester is also provided for each course.

WA/RA   : Writing Assignment / Reading Assignment

SSH/HSH : Self Study Hours / Home Study Hours

CS   : Case Study and Example

SA   : Skills Activity

S   : Seminar

BS   : Beyond Syllabus

DEPARTMENT ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19EE331	Energy Storage Technologies	3	-	-	3
19EE332	Energy System Economics	3	-	-	3
19EE333	High Voltage Engineering	3	-	-	3
19EE334	Industrial Automation & Robotics	3	-	-	3
19EE335	Smart Grid Technologies	3	-	-	3
19EE336	Computer Controlled Systems	3	-	-	3
19EE337	Advanced Power Electronics	3	-	-	3
19EE338	Switch Mode Power Conversion	3	-	-	3
19EE339	Energy Audit, Conservation and Management	3	-	-	3
19EE431	Electric Vehicles	3	-	-	3
19EE432	SCADA Systems and Applications	3	-	-	3
19EE434	VLSI Design and Technology	3	-	-	3

R-19 CURRICULUM

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19AE521	Basic Automobile Engineering	3	-	-	3
19AE531	On Road and Off-road Vehicles	3	-	-	3
19AE532	Safety systems in Automobiles	3	-	-	3
19AE541	Vehicle Maintenance and pollution Norms	3	-	-	3
19BI521	Community Informatics	3	-	-	3
19BI531	Health Informatics	3	-	-	3
19BI532	Software Tools for Sustainable Biodiversity	3	-	-	3
19BM521	Basic Clinical Sciences	3	-	-	3
19BM522	Assist Devices and Implant Technology	3	-	-	3
19BM531	Clinical Instrumenatation	3	-	-	3
19BM532	Biomaterial and Artificial Organs	3	-	-	3
19BM533	Biomedical Equipments	3	-	-	3
19BM541	Medical Imaging Techniques	3	-	-	3
19BM542	Medical Physics	3	-	-	3
19BT521	Elements of Biotechnology	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19BT531	Community Medicine and Public Health	3	-	-	3
19BT532	Biodiversity Economics, Trade and Commerce	3	-	-	3
19BT533	Bioplastics and Biocomposites engineering	3	-	-	3
19CE521	Environmental Pollution & Control	3	-	-	3
19CE522	Building Technology	3	-	-	3
19CE531	Disaster Management	3	-	-	3
19CE532	Solid Waste Management	3	-	-	3
19CE533	Remote Sensing & Geographical Information System	3	-	-	3
19CE534	Geo - Informatics	3	-	-	3
19CE541	Environmental Impact Assessment	3	-	-	3
19CS531	Python Programming	3	-	-	3
19CS532	R Programming	3	-	-	3
19CS533	Data Structures	3	-	-	3
19CS534	Database Management Systems	3	-	-	3
19CS535	Operating Systems	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19CS541	Data Mining Techniques	3	-	-	3
19CS542	Internet of Things	3	-	-	3
19EC521	Embedded Linux	3	-	-	3
19EC531	Embedded Systems and RTOS	3	-	-	3
19EC532	Microcontrollers for Embedded Systems	3	-	-	3
19EC541	Design of IOT Systems (IOT)	3	-	-	3
19EE521	Solar PV Technologies-I	3	-	-	3
19EE531	Solar PV Technologies-II	3	-	-	3
19EE532	Design & Economics of PV plants	3	-	-	3
19EE541	Solar Thermal Conversion Systems	3	-	-	3
19FT521	Introduction of Food Laws and Regulation	3	-	-	3
19FT531	Food Quality and Evaluation	3	-	-	3
19FT532	Subjective and Objective Evaluation in Food Products	3	-	-	3
19FT541	Food Safety and Public Health	3	-	-	3
19HS521	Modern Indian History and Indian Culture	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19HS531	Polity and Governance in India	2	-	-	2
19HS532	Economic and Social Development in India	2	-	-	2
19HS541	Geography of India	2	-	-	2
19IT521	OOPs through JAVA	3	-	-	3
19IT541	Data Science using Python	3	-	-	3
19MS521	Business Environment and Ethics	3	-	-	3
19MS522	Managerial Economics	3	-	-	3
19MS531	Marketing and HR Management	3	-	-	3
19MS532	Finance for Engineers	3	-	-	3
19MS541	Production and Operations Management	3	-	-	3
19ME521	Biomechanics & Kinesiology	3	-	-	3
19ME522	Basics in Robotics	3	-	-	3
19ME531	Advances in Robotics	3	-	-	3
19ME532	Reliability Engineering	3	-	-	3
19ME533	Field and Service Robots	3	-	-	3
19ME534	Energy Audit & Management	3	-	-	3
19ME535	Supply Chain Management	3	-	-	3
19TT531	Fashion Product Development	3	-	-	3
19TT532	Costing of Fashion and Apparel Production	3	-	-	3
19TT541	Fashion Marketing and Visual Merchandising	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

I Year I Semester

Course Code	Course Title	L	T	P	C
19HS103	Engineering Mathematics I(C)	3	-	2	4
19HS113	Engineering Physics (A)	3	-	2	4
19EE101	Basics of Electrical & Electronics Engineering	3	-	2	4
19ME104	Engineering Graphics and Design	1	-	2	2
19CS103	Programming for Problem Solving -I	3	-	4	5
19CS104	Basics of Computer & Internet	1	-	2	2
19PC001	Physical Fitness, Sports & Games-I	-	-	3	1
	Total	**14**	**-**	**17**	**22**

I Year II Semester

Course Code	Course Title	L	T	P	C
19HS109	Engineering Mathematics II(C)	3	-	2	4
19CS106	Discrete Mathematical Structures	3	-	-	3
19HS117	Engineering Chemistry (A)	2	-	-	2
19CS105	Programming for Problem Solving-II	3	-	4	5
19HS122	English Proficiency and Communication Skills	-	-	2	1
19HS124	Constitution of India	1	-	-	1
19ME103	Workshop	1	-	2	2
19HS123	Technical English Communication	2	-	2	3
19PC002	Physical Fitness, Sports & Games-II	-	-	3	1
	Total	**15**	**-**	**15**	**22**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

II Year I Semester

Course Code	Course Title	L	T	P	C
19HS203	Probability and Statistics	3	1	-	4
19CS202	Data Structures	3	-	2	4
19CS204	Digital Logic Design	3	-	-	3
19CS203	Database Management Systems	3	-	2	4
19IT201	OOPs through JAVA	3	-	4	5
19HS204	Environmental Studies	1	-	-	1
19PC003	Life Skills - I	-	-	2	-
19PC004	Technical Seminar - I	-	-	2	1
19PC005	Intra-Disciplinary Projects - I	-	-	2	1
19PC006	Physical Fitness, Sports & Games - 3	-	-	2	1
	Total	**16**	**1**	**16**	**24**

II Year II Semester

Course Code	Course Title	L	T	P	C
19IT212	Formal Languages & Automata Theory and Compiler Design	3	-	-	3
19CS214	Computer Organization & Architecture	3	-	-	3
19IT229	Operating Systems	3	-	2	4
19IT211	Python Programming	2	-	4	4
19IT213	Web Technologies	3	-	2	4
19MS304	Principles of Management & Organizational Behaviour	3	-	-	3
19PC007	Life Skills - II	-	-	2	1
19PC008	Technical Seminar - II	-	-	2	1
19PC009	Intra-Disciplinary Projects - II	-	-	2	1
	Total	**17**	**0**	**14**	**24**

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
19IT311	Data Communications and Networking	3	-	-	3
19CS302	Software Engineering	3	-	2	4
19IT302	Design & Analysis of Algorithms	2	-	4	4
	Departmental Elective-I	3	-	2	4
	Open Elective-I	3	-	-	3
19HS205	Soft Skills Lab	1	-	-	1
19PC010	Employability Skills - I	-	-	2	-
19PC011	Inter-Departmental Projects - I	-	-	4	2
19PC012	Modular Course	-	-	-	1
	Total	**15**	**0**	**14**	**22**

III Year II Semester

Course Code	Course Title	L	T	P	C
19CS301	Data Mining Techniques	3	-	2	4
19IT301	Internet of Things	3	-	2	4
19CS314	Competitive Coding	-	-	2	1
	Departmental Elective-II	3	-	2	4
	Open Elective-II	3	-	-	3
19HS206	Professional communications Lab	-	-	2	1
19HS301	Human Values, Professional Ethics & Gender Equity	2	-	-	2
19PC013	Employability Skills - II	-	-	2	1
19PC014	Inter-Departmental Projects - II	-	-	4	2
	Total	**14**	**0**	**16**	**22**

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

IV Year I Semester

Course Code	Course Title	L	T	P	C
19IT401	Cryptography & Network Security	3	-	2	4
19CS433	Bigdata Analytics	3	-	2	4
	Departmental Elective - III	3	-	2	4
	Departmental Elective - IV	3	-	2	4
	Open Elective -III	3	-	0	3
19PC015	Societal Centric and Industry Related Projects	-	-	6	3
	Total	**15**	**-**	**14**	**22**

IV Year II Semester

Course Code	Course Title	L	T	P	C
19PC016 /17	Internship / Project work	-	-	24	12
	Total	**-**	**-**	**24**	**12**

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA   : Writing Assignment / Reading Assignment

SSH/HSH : Self Study Hours / Home Study Hours

CS   : Case Study and Example

SA   : Skills Activity

S   : Seminar

BS   : Beyond Syllabus

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

DEPARTMENT ELECTIVES COURSES

Course Code	Course Title	L	T	P	C
19CS335	R PROGRAMMING	3	-	2	4
19IT331	MOBILE APPLICATION DEVELOPMENT	3	-	2	4
19CS313	ARTIFICIAL INTELLIGENCE	3	-	2	4
19CS337	CLOUD COMPUTING	3	-	2	4
19CS332	EMBEDDED SYSTEMS	3	-	2	4
19CS336	NETWORK PROGRAMMING	3	-	2	4
19CS334	FUNDAMENTALS OF IMAGE PROCESSING	3	-	2	4
19CS338	ADVANCED DATA MINING	3	-	2	4
19IT431	MULTIMEDIA COMPUTING	2	-	2	3
19CS333	OPEN SOURCE WEB TECHNOLOGIES	3	-	2	4
19IT438	MACHINE LEARNING	3	-	2	4
19IT432	BLOCK CHAIN TECHNOLOGIES	3	-	2	4

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19AE521	Basic Automobile Engineering	3	-	-	3
19AE531	On Road and Off-road Vehicles	3	-	-	3
19AE532	Safety systems in Automobiles	3	-	-	3
19AE541	Vehicle Maintenance and pollution Norms	3	-	-	3
19BI521	Community Informatics	3	-	-	3
19BI531	Health Informatics	3	-	-	3
19BI532	Software Tools for Sustainable Biodiversity	3	-	-	3
19BM521	Basic Clinical Sciences	3	-	-	3
19BM522	Assist Devices and Implant Technology	3	-	-	3
19BM531	Clinical Instrumenatation	3	-	-	3
19BM532	Biomaterial and Artificial Organs	3	-	-	3
19BM533	Biomedical Equipments	3	-	-	3
19BM541	Medical Imaging Techniques	3	-	-	3
19BM542	Medical Physics	3	-	-	3
19BT521	Elements of Biotechnology	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19BT531	Community Medicine and Public Health	3	-	-	3
19BT532	Biodiversity Economics, Trade and Commerce	3	-	-	3
19BT533	Bioplastics and Biocomposites engineering	3	-	-	3
19CE521	Environmental Pollution & Control	3	-	-	3
19CE522	Building Technology	3	-	-	3
19CE531	Disaster Management	3	-	-	3
19CE532	Solid Waste Management	3	-	-	3
19CE533	Remote Sensing & Geographical Information System	3	-	-	3
19CE541	Environmental Impact Assessment	3	-	-	3
19CS531	Python Programming	3	-	-	3
19CS532	R Programming	3	-	-	3
19CS533	Data Structures	3	-	-	3
19CS534	Database Management Systems	3	-	-	3
19CS535	Operating Systems	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19CS541	Data Mining Techniques	3	-	-	3
19CS542	Internet of Things	3	-	-	3
19EC521	Embedded Linux	3	-	-	3
19EC531	Embedded Systems and RTOS	3	-	-	3
19EC532	Microcontrollers for Embedded Systems	3	-	-	3
19EC541	Design of IOT Systems (IOT)	3	-	-	3
19EE521	Solar PV Technologies-I	3	-	-	3
19EE531	Solar PV Technologies-II	3	-	-	3
19EE532	Design & Economics of PV plants	3	-	-	3
19EE541	Solar Thermal Conversion Systems	3	-	-	3
19FT521	Introduction of Food Laws and Regulation	3	-	-	3
19FT531	Food Quality and Evaluation	3	-	-	3
19FT532	Subjective and Objective Evaluation in Food Products	3	-	-	3
19FT541	Food Safety and Public Health	3	-	-	3
19HS521	Modern Indian History and Indian Culture	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19HS531	Polity and Governance in India	2	-	-	2
19HS532	Economic and Social Development in India	2	-	-	2
19HS541	Geography of India	2	-	-	2
19IT521	OOPs through JAVA	3	-	-	3
19IT541	Data Science using Python	3	-	-	3
19MS521	Business Environment and Ethics	3	-	-	3
19MS522	Managerial Economics	3	-	-	3
19MS531	Marketing and HR Management	3	-	-	3
19MS532	Finance for Engineers	3	-	-	3
19MS541	Production and Operations Management	3	-	-	3
19ME521	Biomechanics & Kinesiology	3	-	-	3
19ME522	Basics in Robotics	3	-	-	3
19ME531	Advances in Robotics	3	-	-	3
19ME532	Reliability Engineering	3	-	-	3
19ME533	Field and Service Robots	3	-	-	3
19ME534	Energy Audit & Management	3	-	-	3
19ME535	Supply Chain Management	3	-	-	3
19TT531	Fashion Product Development	3	-	-	3
19TT532	Costing of Fashion and Apparel Production	3	-	-	3
19TT541	Fashion Marketing and Visual Merchandising	3	-	-	3

Note : Students should not choose open electives offered by their branch.

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I YEAR

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

I Year I Semester

Course Code	Course Title	L	T	P	C
19HS106	Engineering Mathematics - I (F)	3	1	2	5
19HS114	Engineering Physics (B)	3	-	2	4
19EE101	Basics of Electrical and Electronics Engineering	3	-	2	4
19EE102	Basic Engineering Products	2	-	2	3
19ME101	Engineering Graphics and Design	2	-	2	3
19HS124	Constitution of India	1	-	-	1
19PC001	Physical fitness, Sports & Games - I	-	-	3	1
	Total	**14**	**1**	**13**	**21**

I Year II Semester

Course Code	Course Title	L	T	P	C
19HS112	Engineering Mathematics - II (F)	3	1	2	5
19HS119	Engineering Chemistry (B)	3	-	2	4
19CS107	C Programming for Problem Solving - I	3	-	2	4
19HS123	Technical English Communication	2	-	2	3
19ME103	Workshop	1	-	2	2
19ME102	Engineering Mechanics	3	1	-	4
19HS122	English Proficiency and Communication skills	-	-	2	1
19PC002	Physical fitness, Sports & Games - II	-	-	3	1
	Total	**15**	**2**	**15**	**24**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

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II YEAR

II Year I Semester

Course Code	Course Title	L	T	P	C
19CS109	C Programming for Problem Solving - II	3	-	2	4
19ME201	Manufacturing Technology	3	-	2	4
19ME202	Materials Science and Metallurgy	3	-	2	4
19ME203	Engineering Thermodynamics	3	1	-	4
19ME204	Mechanisms and Machines	3	-	2	4
19ME205	Machine Drawing	-	-	3	2
19PC003	Life Skills - I	-	-	2	-
19PC004	Technical Seminar - I	-	-	2	1
19PC005	Intra-Disciplinary Projects - I	-	-	2	1
19PC006	Physical fitness, Sports & Games - III	-	-	2	1
	Total	15	1	19	25

II Year II Semester

Course Code	Course Title	L	T	P	C
19ME211	Machining Technology	3	-	2	4
19ME212	Solid Mechanics	3	-	2	4
19ME213	Mechanics of Fluids and Hydraulic Machines	3	-	2	4
19HS204	Environmental Studies	1	-	-	1
19MS302	Management Science	3	-	-	3
19PC007	Life Skills	-	-	2	1
19PC008	Technical Seminar - II	-	-	2	1
19PC009	Intra-Disciplinary Projects - II	-	-	2	1
	Open Elective - I	3	-	-	3
	Total	16	-	12	22

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III YEAR

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
19ME301	Design and Modeling of Machine Elements	3	-	2	4
19ME302	Automation in Manufacturing	3	-	2	4
19ME303	Applied Thermodynamics	3	-	2	4
19HS205	Soft Skills Lab	1	-	-	1
19PC010	Employability Skills - I	-	-	2	-
19PC011	Inter - Departmental Projects - I	-	-	4	2
19PC012	Modular Course	-	-	-	1
	Department Elective - I	3	-	-	3
	Open Elective - II	3	-	-	3
	Total	**16**	**-**	**12**	**22**

III Year II Semester

Course Code	Course Title	L	T	P	C
19ME311	Heat and Mass Transfer	3	-	2	4
19ME312	Advanced Materials and Characterization	3	-	-	3
19ME313	Computer Aided Engineering	3	-	2	4
19HS206	Professional Communications Lab	-	-	2	1
19HS301	Human Values, Professional Ethics & Gender Equity	2	-	-	2
19PC013	Employability Skills - II	-	-	2	1
19PC014	Inter-Departmental Projects - II	-	-	4	2
	Department Elective - II	3	-	-	3
	Open Elective - III	3	-	-	3
	Total	**17**	**-**	**12**	**23**

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

B.Tech.

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IV YEAR

IV Year I Semester

Course Code	Course Title	L	T	P	C
19ME401	Operations Research	3	-	-	3
19ME402	Robotics	3	-	2	4
19ME403	Industrial Engineering and Production Management	3	-	-	3
19ME404	Product Performance Analysis Using Software Packages	-	-	3	2
19PC015	Societal - Centric and Industry Related Projects	-	-	6	3
	Department Elective - III	3	-	-	3
	Department Elective - IV	3	-	-	3
	Total	**15**	**-**	**11**	**21**

IV Year II Semester

CourseCode	Course Title	L	T	P	C
19PC016/17	Internship / Project work	-	-	24	12
	Total	-	-	24	12

In addition to L, T, P, C the following information in hours/semester is also provided for each course

WA/RA : Writing Assignment / Reading Assignment

SSH/HSH : Self Study Hours / Home Study Hours

CS : Case Study and Example

SA : Skills Activity

S : Seminar

BS : Beyond Syllabus

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ELECTIVES

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

DEPARTMENT ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19ME331	Internal Combustion Engines	3	-	-	3
19ME332	3D Printing and Design	3	-	-	3
19ME333	Ceramics and Polymers	3	-	-	3
19ME334	Industrial Engineering & Estimating and Costing	3	-	-	3
19ME355	Artificial Intelligence for Mechanical Engineering	3	-	-	3
19ME336	Tribology in Design	3	-	-	3
19ME337	Jet and Rocket Propulsions	3	-	-	3
19ME338	Metrology and Surface Engineering	3	-	-	3
19ME433	Micro-Electro Mechanical Systems	3	-	-	3
19ME434	Refrigeration & Air-Conditioning	3	-	-	3
19ME435	Computational Fluid Dynamics	3	-	-	3
19ME436	Cryogenics	3	-	-	3
19ME431	Composite Materials Technology	3	-	-	3
19ME437	Nano Technology	3	-	-	3
19ME438	Lean Manufacturing	3	-	-	3
19ME432	Maintenance Engineering	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

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OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19AE521	Basic Automobile Engineering	3	-	-	3
19AE531	On Road and Off-road Vehicles	3	-	-	3
19AE532	Safety systems in Automobiles	3	-	-	3
19AE541	Vehicle Maintenance and pollution Norms	3	-	-	3
19BI521	Community Informatics	3	-	-	3
19BI531	Health Informatics	3	-	-	3
19BI532	Software Tools for Sustainable Biodiversity	3	-	-	3
19BM521	Basic Clinical Sciences	3	-	-	3
19BM522	Assist Devices and Implant Technology	3	-	-	3
19BM531	Clinical Instrumenatation	3	-	-	3
19BM532	Biomaterial and Artificial Organs	3	-	-	3
19BM533	Biomedical Equipments	3	-	-	3
19BM541	Medical Imaging Techniques	3	-	-	3
19BM542	Medical Physics	3	-	-	3
19BT521	Elements of Biotechnology	3	-	-	3

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R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19BT531	Community Medicine and Public Health	3	-	-	3
19BT532	Biodiversity Economics, Trade and Commerce	3	-	-	3
19BT533	Bioplastics and Biocomposites engineering	3	-	-	3
19CE521	Environmental Pollution & Control	3	-	-	3
19CE522	Building Technology	3	-	-	3
19CE531	Disaster Management	3	-	-	3
19CE532	Solid Waste Management	3	-	-	3
19CE533	Remote Sensing & Geographical Information System	3	-	-	3
19CE541	Environmental Impact Assessment	3	-	-	3
19CS531	Python Programming	3	-	-	3
19CS532	R Programming	3	-	-	3
19CS533	Data Structures	3	-	-	3
19CS534	Database Management Systems	3	-	-	3
19CS535	Operating Systems	3	-	-	3

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(Applicable for students admitted into First Year from academic year 2019-20 onwards)

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ELECTIVES

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19CS541	Data Mining Techniques	3	-	-	3
19CS542	Internet of Things	3	-	-	3
19EC521	Embedded Linux	3	-	-	3
19EC531	Embedded Systems and RTOS	3	-	-	3
19EC532	Microcontrollers for Embedded Systems	3	-	-	3
19EC541	Design of IOT Systems (IOT)	3	-	-	3
19EE521	Solar PV Technologies-I	3	-	-	3
19EE531	Solar PV Technologies-II	3	-	-	3
19EE532	Design & Economics of PV plants	3	-	-	3
19EE541	Solar Thermal Conversion Systems	3	-	-	3
19FT521	Introduction of Food Laws and Regulation	3	-	-	3
19FT531	Food Quality and Evaluation	3	-	-	3
19FT532	Subjective and Objective Evaluation in Food Products	3	-	-	3
19FT541	Food Safety and Public Health	3	-	-	3
19HS521	Modern Indian History and Indian Culture	3	-	-	3

B.Tech.
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ELECTIVES

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19HS531	Polity and Governance in India	2	-	-	2
19HS532	Economic and Social Development in India	2	-	-	2
19HS541	Geography of India	2	-	-	2
19IT521	OOPs through JAVA	3	-	-	3
19IT541	Data Science using Python	3	-	-	3
19MS521	Business Environment and Ethics	3	-	-	3
19MS522	Managerial Economics	3	-	-	3
19MS531	Marketing and HR Management	3	-	-	3
19MS532	Finance for Engineers	3	-	-	3
19MS541	Production and Operations Management	3	-	-	3
19ME521	Biomechanics & Kinesiology	3	-	-	3
19ME522	Basics in Robotics	3	-	-	3
19ME531	Advances in Robotics	3	-	-	3
19ME532	Reliability Engineering	3	-	-	3
19ME533	Field and Service Robots	3	-	-	3
19ME534	Energy Audit & Management	3	-	-	3
19ME535	Supply Chain Management	3	-	-	3
19TT531	Fashion Product Development	3	-	-	3
19TT532	Costing of Fashion and Apparel Production	3	-	-	3
19TT541	Fashion Marketing and Visual Merchandising	3	-	-	3

Note : Students should not choose open electives offered by their branch.

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I YEAR

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

I Year I Semester

Course Code	Course Title	L	T	P	C
19HS106	Engineering Mathematics - I (A)	3	1	2	5
19HS114	Engineering Physics (B)	3	-	2	4
19EE101	Basics of Electrical and Electronics Engineering	3	-	2	4
19ME101	Engineering Graphics and Design	2	-	2	3
19ME102	Engineering Mechanics	4	-	-	4
19PC001	Physical fitness, Sports & Games - I	-	-	3	1
	Total	**15**	**1**	**11**	**21**

I Year II Semester

Course Code	Course Title	L	T	P	C
19HS112	Engineering Mathematics - II (F)	3	1	2	5
19HS119	Engineering Chemistry (B)	3	-	2	4
19CS101	Programming for Problem Solving	3	-	2	4
19HS122	English Proficiency and communication skills	-	-	2	1
19ME103	Workshop	1	-	2	2
19HS124	Constitution of India	1	-	-	1
19HS123	Technical English communication	2	-	2	3
19EE102	Basic Engineering Products	2	-	2	3
19PC002	Physical Fitness & Sports & Games - II	-	-	3	1
	Total	**15**	**1**	**17**	**24**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course ;

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

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II YEAR

II Year I Semester

Course Code	Course Title	L	T	P	C
19HS203	Probability & Statistics	3	1	-	4
19AE201	Automotive Chassis	3	-	2	4
19AE202	Strength of Materials for Automobiles	3	-	2	4
19AE203	Materials for Automotive Components	3	-	2	4
19AE204	Theory of Machines	3	-	-	3
19HS301	Professional Ethics, Human Values and Gender Equity	2	-	-	2
19PC003	Life Skills - I	-	-	2	1
19PC004	Technical Seminar - I	-	-	2	1
19PC005	Intra disciplinary Project - I	-	-	3	1
19PC006	Physical fitness, Sports & Games - III	-	-	2	1
	Total	17	1	15	25

II Year II Semester

Course Code	Course Title	L	T	P	C
19AE211	Engineering Thermodynamics and Heat Transfer	3	-	2	4
19AE212	Manufacturing Processes for Automotive Components	3	-	2	4
19AE213	Fundamentals of IC Engines	3	-	2	4
19MS302	Management Science	3	-	-	3
19HS204	Environmental Studies	2	-	-	1
	Department Elective - I	3	-	-	3
	Open Elective - I	3	-	-	3
19PC007	Life Skills - II	-	-	2	1
19PC008	Technical Seminar - II	-	-	2	1
19PC009	Intra-disciplinary Project - II	-	-	2	1
	Total	20	-	12	25

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III YEAR

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
19AE301	Automotive Transmission	3	-	2	4
19AE302	Fluid Mechanics and Machinery	3	-	2	4
19AE303	Automotive Component Design	3	-	2	4
19HS205	Soft Skills Lab	2	-	-	1
19PC010	Employability Skills - I	-	-	2	1
19PC011	Inter-Departmental Project - I	-	-	4	2
19PC012	Modular Course	-	-	-	1
	Department Elective - II	3	-	-	3
	Open Elective - II	3	-	-	3
	Total	17	-	12	23

III Year II Semester

Course Code	Course Title	L	T	P	C
19AE311	Vehicle Body Engineering	3	-	-	3
19AE312	Automotive Engine Components Design	3	-	2	4
19AE313	Automotive Electrical and Electronics	3	-	2	4
19HS206	Professional communications Lab	-	-	2	1
19PC013	Employability skills - II	-	-	2	1
19PC014	Inter-Departmental Project-II	-	-	4	2
	Department Elective - II	3	-	-	3
	Open Elective - III	3	-	-	3
	Total	15	-	12	21

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

B.Tech.

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IV YEAR

IV Year I Semester

Course Code	Course Title	L	T	P	C
19AE401	Automotive Emissions and Control	3	-	2	4
19AE402	Two and Three Wheelers	3	-	2	4
19AE403	Electric and Hybrid Vehicles	3	-	-	3
19AE404	Vehicle Dynamics	3	-	-	3
19PC015	Societal Centric Project and Industry Related Projects	-	-	6	3
	Department Elective -IV	3	-	-	3
	Total	**15**	**-**	**10**	**20**

IV Year II Semester

Course Code	Course Title	L	T	P	C
19PC016/19PC017	Internship/Project work(Internship oriented projects)	-	-	24	12
	Total	**-**	**-**	**24**	**12**

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA   : Writing Assignment / Reading Assignment

SSH/HSH : Self Study Hours / Home Study Hours

CS   : Case Study and Example

SA   : Skills Activity

S   : Seminar

BS   : Beyond Syllabus

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ELECTIVES

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

DEPARTMENT ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19AE331	Intelligent Vehicle Technology	3	-	-	3
19AE431	Nano Technology for Automobiles	3	-	-	3
19AE332	Modern Vehicle Technology	3	-	-	3
19AE438	Robotics	3	-	-	3
19AE340	Super Charging and Turbo Charging	3	-	-	3
19AE433	3D Printing for Automobile Components	3	-	-	3
19AE232	Engineering Metrology and Instrumentation	3	-	-	3
19AE432	Finite Element Method	3	-	-	3
19AE231	Fundamentals of Motorsport Engineering	3	-	-	3
19AE233	Vehicle Evaluation and Manintenance	3	-	-	3
19AE341	Automotive Fuels, Lubricants and Coolants	3	-	-	3
19AE342	Operations Research Management	3	-	-	3
19AE335	Special Purpose Vehicles	3	-	-	3
19AE336	Automotive Electronics and Micro Controllers	3	-	-	3
19AE435	Automotive Air-Conditioning	3	-	-	3
19AE338	Transport Management	3	-	-	3
19AE436	Automotive Aerodynamics	3	-	-	3
19AE334	New Generation and Hybrid Vehicles	3	-	-	3
19AE234	Unconventional Manufacturing Processes	3	-	-	3
19AE434	Automotive Safety	3	-	-	3
19AE337	Advanced Theory of IC Engines	3	-	-	3
19AE333	Racing Two and Four Wheelers	3	-	-	3
19AE339	Noise, Vibration and Harshness	3	-	-	3
19AE437	Modelling of Electric and Hybrid Vehicles	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

B.Tech.
AM
ELECTIVES

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19AE521	Basic Automobile Engineering	3	-	-	3
19AE531	On Road and Off-road Vehicles	3	-	-	3
19AE532	Safety systems in Automobiles	3	-	-	3
19AE541	Vehicle Maintenance and pollution Norms	3	-	-	3
19BI521	Community Informatics	3	-	-	3
19BI531	Health Informatics	3	-	-	3
19BI532	Software Tools for Sustainable Biodiversity	3	-	-	3
19BM521	Basic Clinical Sciences	3	-	-	3
19BM522	Assist Devices and Implant Technology	3	-	-	3
19BM531	Clinical Instrumentation	3	-	-	3
19BM532	Biomaterial and Artificial Organs	3	-	-	3
19BM533	Biomedical Equipments	3	-	-	3
19BM541	Medical Imaging Techniques	3	-	-	3
19BM542	Medical Physics	3	-	-	3
19BT521	Elements of Biotechnology	3	-	-	3

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ELECTIVES

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19BT531	Community Medicine and Public Health	3	-	-	3
19BT532	Biodiversity Economics, Trade and Commerce	3	-	-	3
19BT533	Bioplastics and Biocomposites engineering	3	-	-	3
19CE521	Environmental Pollution & Control	3	-	-	3
19CE522	Building Technology	3	-	-	3
19CE531	Disaster Management	3	-	-	3
19CE532	Solid Waste Management	3	-	-	3
19CE533	Remote Sensing & Geographical Information System	3	-	-	3
19CE541	Environmental Impact Assessment	3	-	-	3
19CS531	Python Programming	3	-	-	3
19CS532	R Programming	3	-	-	3
19CS533	Data Structures	3	-	-	3
19CS534	Database Management Systems	3	-	-	3
19CS535	Operating Systems	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

B.Tech.

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ELECTIVES

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19CS541	Data Mining Techniques	3	-	-	3
19CS542	Internet of Things	3	-	-	3
19EC521	Embedded Linux	3	-	-	3
19EC531	Embedded Systems and RTOS	3	-	-	3
19EC532	Microcontrollers for Embedded Systems	3	-	-	3
19EC541	Design of IOT Systems (IOT)	3	-	-	3
19EE521	Solar PV Technologies-I	3	-	-	3
19EE531	Solar PV Technologies-II	3	-	-	3
19EE532	Design & Economics of PV plants	3	-	-	3
19EE541	Solar Thermal Conversion Systems	3	-	-	3
19FT521	Introduction of Food Laws and Regulation	3	-	-	3
19FT531	Food Quality and Evaluation	3	-	-	3
19FT532	Subjective and Objective Evaluation in Food Products	3	-	-	3
19FT541	Food Safety and Public Health	3	-	-	3
19HS521	Modern Indian History and Indian Culture	3	-	-	3

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ELECTIVES

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19HS531	Polity and Governance in India	2	-	-	2
19HS532	Economic and Social Development in India	2	-	-	2
19HS541	Geography of India	2	-	-	2
19IT521	OOPs through JAVA	3	-	-	3
19IT541	Data Science using Python	3	-	-	3
19MS521	Business Environment and Ethics	3	-	-	3
19MS522	Managerial Economics	3	-	-	3
19MS531	Marketing and HR Management	3	-	-	3
19MS532	Finance for Engineers	3	-	-	3
19MS541	Production and Operations Management	3	-	-	3
19ME521	Biomechanics & Kinesiology	3	-	-	3
19ME522	Basics in Robotics	3	-	-	3
19ME531	Advances in Robotics	3	-	-	3
19ME532	Reliability Engineering	3	-	-	3
19ME533	Field and Service Robots	3	-	-	3
19ME534	Energy Audit & Management	3	-	-	3
19ME535	Supply Chain Management	3	-	-	3
19TT531	Fashion Product Development	3	-	-	3
19TT532	Costing of Fashion and Apparel Production	3	-	-	3
19TT541	Fashion Marketing and Visual Merchandising	3	-	-	3

Note : Students should not choose open electives offered by their branch.

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I YEAR

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

I Year I Semester

Course Code	Course Title	L	T	P	C
19HS104	Engineering Mathematics-I(D)	3	1	2	5
19HS114	Engineering Physics (B)	3	-	2	4
19CS101	Programming for Problem Solving	3	-	2	4
19ME101	Engineering Graphics & Design	2	-	2	3
19HS123	Technical English Communication	2	-	2	3
19HS124	Constitution of India	1	-	-	1
19EE102	Basics of Engineering Products	2	-	2	3
19PC001	Physical Fitness, Sports & Games - I	-	-	3	1
	Total	**19**	**1**	**15**	**24**

I Year II Semester

Course Code	Course Title	L	T	P	C
19HS110	Engineering Mathematics-II(D)	3	1	2	5
19HS119	Engineering Chemistry (B)	3	-	2	4
19EE101	Basics of Electrical & Electronics Engineering	3	-	2	4
19HS122	English Proficiency and Communication Skills	-	-	2	1
19ME103	Workshop	1	-	2	2
19TT101	Textile Fibers	3	-	2	4
199PC002	Physical Fitness, Sports & Games - II	-	-	3	1
	Total	**13**	**1**	**15**	**21**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course ;

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II YEAR

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

II Year I Semester

Course Code	Course Title	L	T	P	C
19HS203	Probability and Statistics	3	1	-	4
19TT201	Technology of Manufactured Fibres	3	-	-	3
19TT202	Yarn Manufacturing	3	-	-	3
19TT203	Fabric Manufacturing	3	-	-	3
19TT204	Fashion Theory	3	-	2	4
19MS303	Principles of Management and Organizational Behaviour	3	-	-	3
19PC003	Life Skills - I	-	-	2	0
19PC004	Technical Seminar - I	-	-	2	1
19PC005	Intra Disciplinary Project - I	-	-	3	1
19PC006	Physical Fitness, Sports & Games - III	-	-	2	1
	Total	**18**	**1**	**11**	**23**

II Year II Semester

Course Code	Course Title	L	T	P	C
19TT211	Testing of Fibers and Yarns	3	-	2	4
19TT212	Technology of Knits and Nonwovens	3	-	-	3
19TT213	Textile Wet Processing	3	-	2	4
19TT214	Pattern Engineering Laboratory	-	-	4	2
19HS204	Enviornmental Studies	1	-	-	1
19PC007	Life Skills - II	-	-	2	1
19PC008	Technical Seminar - II	-	-	2	1
19PC009	Intra Disciplinary Project - II	-	-	2	1
	Department Elective - I	3	-	-	3
	Open Elective - I	3	-	-	3
	Total	**16**	**-**	**14**	**23**

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III YEAR

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
19TT301	Testing of Fabrics and Garments	3	-	2	4
19TT302	Apparel Production Technology	3	-	2	4
19TT303	Technical Textiles	3	-	-	3
19HS205	Soft Skills Lab	-	-	2	1
19PC010	Employability Skills - I	-	-	2	0
19HS301	Human Values, Professional Ethics & Gender Equity	2	-	-	2
19PC011	Inter Departmental Project - I	-	-	4	2
19PC012	Modular Course	-	-	-	1
	Department Elective - II	3	-	-	3
	Open Elective - II	3	-	-	3
	Total	**17**	**-**	**12**	**23**

III Year II Semester

Course Code	Course Title	L	T	P	C
19TT311	Fabric Structure and Design	3	-	2	4
19TT312	Apparel Merchandising	3	1	-	4
19TT313	Structural Mechanics of Fiber, Yarn and Fabric	3	1	-	4
19TT314	Fundamentals of Textiles 4.0	2	-	-	2
19HS206	Professional Communication Lab	-	-	2	1
19PC013	Employability Skills - II	-	-	2	1
19PC014	Inter Departmental Project - II	-	-	4	2
	Department Elective - III	3	-	-	3
	Open Elective - III	3	-	-	3
	Total	**17**	**2**	**10**	**24**

B.Tech.
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IV YEAR

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

IV Year I Semester

Course Code	Course Title	L	T	P	C
19TT401	Industrial Engineering for Textiles and Apparels	3	-	2	4
19TT402	Textile Mechanics and Calculations	3	-	-	3
19TT403	Clothing Comfort	3	-	-	3
19TT404	Textile Product Design and Development	3	1	-	4
19PC015	Societal Centric and Industry related Projects	-	-	6	3
	Department Elective - IV	3	-	-	3
	Total	**15**	**1**	**8**	**20**

IV Year II Semester

Course Code	Course Title	L	T	P	C
19PC016/19PC017	Internship / Project work	-	-	24	12
	Total	-	-	**24**	**12**

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA : Writing Assignment / Reading Assignment

SSH/HSH : Self Study Hours / Home Study Hours

CS : Case Study and Example

SA : Skills Activity

S : Seminar

BS : Beyond Syllabus

B.Tech.
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ELECTIVES

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

DEPARTMENT ELECTIVE COURSES

DEPARTMENT ELECTIVE - I

Course Code	Course Title	L	T	P	C
19TT231	Blow Room and Carding	3	-	-	3
19TT232	Preparatory Aspects of Fabric Formation	3	-	-	3
19TT233	Hand Knitting and Flat Knitting	3	-	-	3
19TT234	Dyes and Pigment	3	-	-	3
19TT235	Fashion Product Development	3	-	-	3

DEPARTMENT ELECTIVE - II

Course Code	Course Title	L	T	P	C
19TT331	Drawing, Comber and Simplex	3	-	-	3
19TT332	Technology of Fabric Forming	3	-	-	3
19TT333	Knitting Technology	3	-	-	3
19TT334	Technology of Dyeing and Printing	3	-	-	3
19TT335	Costing of Fashion and Apparel Production	3	-	-	3

DEPARTMENT ELECTIVE - III

Course Code	Course Title	L	T	P	C
19TT336	Technology of Yarn Formation	3	-	-	3
19TT337	Advanced Fabric Formation	3	-	-	3
19TT338	Advancement in Knitting Technology	3	-	-	3
19TT339	Eco-Friendly Wet Processing	3	-	-	3
19TT340	Fashion Marketing and Visual Merchandising	3	-	-	3

DEPARTMENT ELECTIVE - IV

Course Code	Course Title	L	T	P	C
19TT431	Operations Research for Engineers	3	-	-	3
19TT432	Lean and Six Sigma for Textile and Apparels	3	-	-	3
19TT433	Retailing and Branding of Textiles and Apparels	3	-	-	3
19TT434	Process Control and Quality Management in Textiles	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19AE521	Basic Automobile Engineering	3	-	-	3
19AE531	On Road and Off-road Vehicles	3	-	-	3
19AE532	Safety systems in Automobiles	3	-	-	3
19AE541	Vehicle Maintenance and pollution Norms	3	-	-	3
19BI521	Community Informatics	3	-	-	3
19BI531	Health Informatics	3	-	-	3
19BI532	Software Tools for Sustainable Biodiversity	3	-	-	3
19BM521	Basic Clinical Sciences	3	-	-	3
19BM522	Assist Devices and Implant Technology	3	-	-	3
19BM531	Clinical Instrumenatation	3	-	-	3
19BM532	Biomaterial and Artificial Organs	3	-	-	3
19BM533	Biomedical Equipments	3	-	-	3
19BM541	Medical Imaging Techniques	3	-	-	3
19BM542	Medical Physics	3	-	-	3
19BT521	Elements of Biotechnology	3	-	-	3

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ELECTIVES

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19BT531	Community Medicine and Public Health	3	-	-	3
19BT532	Biodiversity Economics, Trade and Commerce	3	-	-	3
19BT533	Bioplastics and Biocomposites engineering	3	-	-	3
19CE521	Environmental Pollution & Control	3	-	-	3
19CE522	Building Technology	3	-	-	3
19CE531	Disaster Management	3	-	-	3
19CE532	Solid Waste Management	3	-	-	3
19CE533	Remote Sensing & Geographical Information System	3	-	-	3
19CE541	Environmental Impact Assessment	3	-	-	3
19CS531	Python Programming	3	-	-	3
19CS532	R Programming	3	-	-	3
19CS533	Data Structures	3	-	-	3
19CS534	Database Management Systems	3	-	-	3
19CS535	Operating Systems	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

B.Tech.
TT
ELECTIVES

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19CS541	Data Mining Techniques	3	-	-	3
19CS542	Internet of Things	3	-	-	3
19EC521	Embedded Linux	3	-	-	3
19EC531	Embedded Systems and RTOS	3	-	-	3
19EC532	Microcontrollers for Embedded Systems	3	-	-	3
19EC541	Design of IOT Systems (IOT)	3	-	-	3
19EE521	Solar PV Technologies-I	3	-	-	3
19EE531	Solar PV Technologies-II	3	-	-	3
19EE532	Design & Economics of PV plants	3	-	-	3
19EE541	Solar Thermal Conversion Systems	3	-	-	3
19FT521	Introduction of Food Laws and Regulation	3	-	-	3
19FT531	Food Quality and Evaluation	3	-	-	3
19FT532	Subjective and Objective Evaluation in Food Products	3	-	-	3
19FT541	Food Safety and Public Health	3	-	-	3
19HS521	Modern Indian History and Indian Culture	3	-	-	3

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ELECTIVES

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19HS531	Polity and Governance in India	2	-	-	2
19HS532	Economic and Social Development in India	2	-	-	2
19HS541	Geography of India	2	-	-	2
19IT521	OOPs through JAVA	3	-	-	3
19IT541	Data Science using Python	3	-	-	3
19MS521	Business Environment and Ethics	3	-	-	3
19MS522	Managerial Economics	3	-	-	3
19MS531	Marketing and HR Management	3	-	-	3
19MS532	Finance for Engineers	3	-	-	3
19MS541	Production and Operations Management	3	-	-	3
19ME521	Biomechanics & Kinesiology	3	-	-	3
19ME522	Basics in Robotics	3	-	-	3
19ME531	Advances in Robotics	3	-	-	3
19ME532	Reliability Engineering	3	-	-	3
19ME533	Field and Service Robots	3	-	-	3
19ME534	Energy Audit & Management	3	-	-	3
19ME535	Supply Chain Management	3	-	-	3
19TT531	Fashion Product Development	3	-	-	3
19TT532	Costing of Fashion and Apparel Production	3	-	-	3
19TT541	Fashion Marketing and Visual Merchandising	3	-	-	3

Note : Students should not choose open electives offered by their branch.

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

B.Tech.
AG
I YEAR

I Year I Semester

Course Code	Course Title	L	T	P	C
19HS101	Engineering Mathematics - I (A)	2	0	2	3
19HS116	Engineering Physics (D)	2	0	2	3
19CS108	Computer Programing and Data Structures	1	0	4	3
19AG101	Principles of Agronomy	2	0	2	3
19CE101	Surveying and Levelling	1	0	4	3
19ME104	Engineering Mechanics	3	0	0	3
19ME105	Engineering Drawing	0	0	4	2
19HS125	Communication Skills and Personality Development	1	0	2	2
19PC001	Physical Fitness, Sports & Games - I / NCC/NSS/Yoga	0	0	3	1*
	Total	12	0	23	22

I Year II Semester

Course Code	Course Title	L	T	P	C
19HS107	Engineering Mathematics-II (A)	2	0	2	3
19HS126	Environmental Science and Disaster Management	2	0	0	2
19AG102	Principle of Soil Science	2	0	2	3
19AG103	Fluid Mechanics and Open Channel Hydraulics	2	0	2	3
19CE102	Strength of Materials	1	0	2	2
19ME106	Workshop Technology and Practices	1	0	4	3
19HS120	Engineering Chemistry (D)	2	0	2	3
19EC102	Applied Electronics and Instrumentation	2	0	2	3
19PC002	Physical Education, Sports & Games-I /NCC/NSS/Yoga	0	0	3	1*
	Total	14	0	19	**22**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

II Year I Semester

Course Code	Course Title	L	T	P	C
19HS201	Engineering Mathematics - III (A)	2	0	2	3
19AG203	Principles of Horticultural Crops and Plant Protection	1	0	2	2
19AG204	Heat and Mass Transfer	2	0	0	2
19AG205	Soil Mechanics	1	0	2	2
19AG201	Ground Water Wells and Pumps	2	0	2	3
19AG202	Watershed Hydrology	1	0	2	2
19AG206	Theory of Machines	2	0	0	2
19EE206	Electrical Machines and Power Utilization	2	0	2	3
19MS201	Entrepreneurship Development and Business Management	2	0	2	3
19HS207	Human Values, Professional Ethics and Gender Equity	1	0	0	1
	Total	16	0	14	**23**

II Year II Semester

Course Code	Course Title	L	T	P	C
19AG211	Tractor and Automotive Engines	2	0	2	3
19AG212	Engineering Properties of Agricultural Produce	1	0	2	2
19AG213	Irrigation Engineering	2	0	2	3
19AG214	Soil and Water Conservation Engineering	2	0	2	3
19AG215	Fundamentals of Renewable Energy Sources	2	0	2	3
19AG216	Thermodynamics, Refrigeration and Air-Conditioning	2	0	2	3
19AG217	Auto-CAD Applications	0	0	4	2
19AG218	Machine Design	2	0	0	2
	Total	13	0	16	**21**

Skill Development Training - I Summer break June - July after 4th Semester (Student READY Programme)

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
19AG301	Tractor Systems and Controls	2	0	2	3
19AG302	Farm Machinery and Equipment-I (Tillage and Sowing Operations)	2	0	2	3
19AG303	Agriculture Structures and Environmental Control	2	0	0	2
19AG304	Post-Harvest Engineering of Cereals, Pulses and Oil Seeds	2	0	2	3
19AG305	Sprinkler and Micro Irrigation Systems	1	0	2	2
19AG306	Watershed Planning and Management	1	0	2	2
19CE305	Building Construction and Cost Estimation	2	0	0	2
19AG307	Renewable Power Systems	1	0	2	2
19CE306	Design of Structures	1	0	2	2
19AG308	Skill Development Training-I (Student READY)	0	0	10	5
	Total	14	0	24	**26**

III Year II Semester

Course Code	Course Title	L	T	P	C
19CS315	Web Designing and Internet Applications	1	0	2	2
19AG311	Farm Machinery and Equipment-II	2	0	2	3
19AG312	Post-Harvest Engineering of Horticultural Crops	1	0	2	2
19AG313	Water Harvesting and Soil Conservation Structures	2	0	2	3
19AG314	Drainage Engineering	1	0	2	2
19AG315	Tractor and Farm Machinery Operation and Maintenance	0	0	4	2
19AG316	Dairy and Food Engineering	2	0	2	3
19AG317	Bio-energy Systems: Design and Applications	2	0	2	3
	Total	11	0	18	**20**

Skill Development Training - II Summer break June - July after 6th Semester (Student READY Programme)

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

B.Tech.

AG

IV YEAR

IV Year I Semester

Course Code	Course Title	L	T	P	C
19AG401	Industrial Attachment / Internship (Student READY)	0	0	20	10
19AG402	Experiential Learning On Campus (Student READY)	0	0	20	10
19AG403	Skill Development Training - II (Student READY)	0	0	10	5
19AG404	Educational Tour (2 - Weeks During January)	0	0	0	2
19AG405	Technical Seminar - I	0	0	2	1
	Total	0	0	52	**28**

IV Year II Semester

Course Code	Course Title	L	T	P	C
19AG411	Project Planning, Work and Report Writing (Student READY)	0	0	20	10
	Elective Course - I	2	0	2	3
	Elective Course - II	2	0	2	3
	Elective Course - III	2	0	2	3
	Total	6	0	26	19

In addition to L,T, P, C the following information in hours/semester is also provided for each course.

WA/RA   : Writing Assignment / Reading Assignment

SSH/HSH : Self Study Hours / Home Study Hours

CS   : Case Study and Example

SA   : Skills Activity

S   : Seminar

BS   : Beyond Syllabus

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

DEPARTMENT ELECTIVES

ELECTIVE - I

Course Code	Course Title	L	T	P	C
19AG431	Mechanics of Tillage and Traction	2	0	2	3
19AG432	Farm Machinery Design and Production	2	0	2	3
19AG433	Human Engineering and Safety	2	0	2	3
19AG434	Tractor Design and Testing	2	0	2	3
19AG435	Hydraulic Drives and Controls	2	0	2	3
19CS402	IoT Applications in Agriculture	3	0	0	3
19AG436	Photovoltaic Technology and Systems	2	0	2	3
19AG437	Mechatronics	2	0	2	3
19AG438	Precision Farming Techniques for Protected Cultivation	2	0	2	3

ELECTIVE - II

Course Code	Course Title	L	T	P	C
19AG439	Floods and Control Measures	2	0	2	3
19AG440	Wasteland Development	2	0	2	3
19AG441	Information Technology for Land and Water Management	2	0	2	3
19AG442	Remote Sensing and GIS Applications	2	0	2	3
19AG443	Management of Canal Irrigation System	2	0	2	3
19AG444	Minor Irrigation and Command Area Development	2	0	2	3
19AG445	Water Quality and Management Measures	2	0	2	3
19CS403	Artificial Intelligence	3	0	0	3
19AG446	Climate Change and Use of Geoinformatics	2	0	2	3

ELECTIVE - III

Course Code	Course Title	L	T	P	C
19AG447	Food Quality and Safety	2	0	2	3
19AG448	Food Plant Design and Management	2	0	2	3
19AG449	Food Packaging Technology	2	0	2	3
19AG450	Development of Processed Products	2	0	2	3
19AG451	Process Equipment Design	2	0	2	3
19AG452	Processing of Fish and Marine Products	2	0	2	3
19AG453	Processing of Spices and Plantation Crops	2	0	2	3
19AG454	Waste and By-Products Utilization	2	0	2	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

I Year I Semester

Course Code	Course Title	L	T	P	C
19HS102	Engineering Mathematics I(B)	3	1	2	5
19HS115	Engineering Physics I (C)	3	0	2	4
19EE101	Basics of Electrical & Electronics Engineering	2	0	2	3
19ME101	Engineering Graphics & Design	3	0	2	4
19CS103	Programming for Problem Solving - I	2	0	2	3
19CS104	Basics of Computer and Internet	3	1	0	4
19PC001	Physical Fitness, Sports & Games-I	0	0	3	1
	Total	**16**	**2**	**13**	**24**

I Year II Semester

Course Code	Course Title	L	T	P	C
16HS106	Engineering Mathematics II(B)	3	1	2	5
19HS121	Organic Chemistry	3	0	2	4
19CS105	Programming for Problem Solving – II	2	0	4	4
16HS106	English Proficiency and Communication Skills	0	0	2	1
19HS123	Technical English Communication	2	0	2	3
19HS124	Constitution of India	1	0	0	1
19ME103	Workshop	1	0	2	2
19PC002	Physical Fitness, Sports & Games-2	0	0	3	1
	Total	**12**	**1**	**17**	**21**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

II Year I Semester

Course Code	Course Title	L	T	P	C
19HS203	Probability and Statistics	3	1	0	4
19BI201	Unix Programming	3	0	0	3
19BI202	Molecular Genetics	3	0	2	4
19BI203	BioPerl	3	0	2	4
19CS202	Data Structures	3	0	2	4
19MS302	Management Science	3	0	0	3
19PC003	Life Skills-I	0	0	2	-
19PC004	Technical Seminar-I	0	0	4	1
19PC005	Intra-Disciplinary Project-I	0	0	3	1
19PC006	Physical Fitness, Sports & Games-III	0	0	2	1
	Total	**18**	**1**	**17**	**25**

* Courses and Progrmmes such as Foreign Languages, Summer Internship, NCC, NSS, Yoga, Music, Dance, Value Added Courses etc. for which credits and other details shall be defined by concerned coordinators.

II Year II Semester

Course Code	Course Title	L	T	P	C
19BT201	Biochemistry	3	0	2	4
19CS201	OOPs through JAVA	2	0	4	4
19CS203	Database Management Systems	3	0	2	4
19BI211	Immunoinformatics	3	0	2	4
19HS204	Environmental Science	1	0	0	1
19PC007	Life Skills -II	0	0	2	1
19PC008	Technical Seminar-II	0	0	2	1
19PC009	Intra-Disciplinary Project-II	0	0	2	1
	Open Elective-I	3	0	0	3
	Total	**15**	**0**	**16**	**23**

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
19BI301	Computational Biology	3	0	2	4
19CS335	R Programming	3	0	2	4
19CS331	Python Programming	3	0	2	4
19HS205	Soft Skills Lab	1	0	0	1
19PC010	Employability Skills-I	0	0	2	-
19PC011	Inter-Departmental Project-I	0	0	4	2
19PC012	Modular Course	0	0	0	1
	Department Elective-I	3	0	0	3
	Open Elective-II	3	0	0	3
	Total	16	0	12	22

III Year II Semester

Course Code	Course Title	L	T	P	C
19BT303	Enzyme technology	3	0	2	4
19BT335	Data Science	3	0	2	4
19BI312	Algorithms in Computational Biology	3	1	0	4
19HS206	Professional Communications Lab	0	0	2	1
19HS301	Human Values, Professional Ethics & Gender Equity	2	0	0	2
19PC013	Employability Skills-II	0	0	2	1
19PC014	Inter-Departmental Project-II	0	0	4	2
	Department Elective-II	3	0	0	3
	Open Elective-III	3	0	0	3
	Total	17	1	12	24

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

IV Year I Semester

Course Code	Course Title	L	T	P	C
19CS215	Web Technologies	2	0	2	3
19CS431	Internet of Things	2	0	2	3
19BI401	Structural Bioinformatics	3	0	2	4
19PC015	Societal-Centric and Industry Related Project	0	0	6	3
	Department Electives-III	3	0	0	3
	Department Elective-IV	3	0	0	3
	Total	**13**	**0**	**12**	**19**

IV Year II Semester

Course Code	Course Title	L	T	P	C
19PC016/19PC017	Internship/Project work (Industry oriented projects)	-	-	24	12
	Total	**-**	**-**	**24**	**12**

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA   : Writing Assignment / Reading Assignment

SSH/HSH : Self Study Hours / Home Study Hours

CS   : Case Study and Example

SA   : Skills Activity

S   : Seminar

BS   : Beyond Syllabus

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I YEAR

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

DEPARTMENT ELECTIVE STREAMS AND COURSES

Course Code	Course Title	L	T	P	C
19BI331	Molecular Interactions	3	-	-	3
19BI332	Metabolomics	3	-	-	3
19BI333	Biological Database	2	-	2	3
19BI334	Drug Design	2	-	2	3
19BI335	Metabolic Pathways	3	-	-	3
19BI431	Systems Biology	2	-	2	3
19BI432	Neural Networks	3	-	-	3
19BI433	Molecular Phylogenetics	2	-	2	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19AE521	Basic Automobile Engineering	3	-	-	3
19AE531	On Road and Off-road Vehicles	3	-	-	3
19AE532	Safety Systems in Automobiles	3	-	-	3
19AE541	Vehicle Maintenance and pollution Norms	3	-	-	3
19BI521	Community Informatics	3	-	-	3
19BI531	Health Informatics	3	-	-	3
19BI532	Software Tools for Sustainable Biodiversity	3	-	-	3
19BM521	Basic Clinical Sciences	3	-	-	3
19BM522	Assist Devices and Implant Technology	3	-	-	3
19BM531	Clinical Instrumenatation	3	-	-	3
19BM532	Biomaterial and Artificial Organs	3	-	-	3
19BM533	Biomedical Equipments	3	-	-	3
19BM541	Medical Imaging Techniques	3	-	-	3
19BM542	Medical Physics	3	-	-	3
19BT521	Elements of Biotechnology	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19BT531	Community Medicine and Public Health	3	-	-	3
19BT532	Biodiversity Economics, Trade and Commerce	3	-	-	3
19BT533	Bioplastics and Biocomposites Engineering	3	-	-	3
19CE521	Environmental Pollution & Control	3	-	-	3
19CE522	Building Technology	3	-	-	3
19CE531	Disaster Management	3	-	-	3
19CE532	Solid Waste Management	3	-	-	3
19CE533	Remote Sensing & Geographical Information System	3	-	-	3
19CE541	Environmental Impact Assessment	3	-	-	3
19CS531	Python Programming	3	-	-	3
19CS532	R Programming	3	-	-	3
19CS533	Data Structures	3	-	-	3
19CS534	Database Management Systems	3	-	-	3
19CS535	Operating Systems	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19CS541	Data Mining Techniques	3	-	-	3
19CS542	Internet of Things	3	-	-	3
19EC521	Embedded Linux	3	-	-	3
19EC531	Embedded Systems and RTOS	3	-	-	3
19EC532	Microcontrollers for Embedded Systems	3	-	-	3
19EC541	Design of IOT Systems (IOT)	3	-	-	3
19EE521	Solar PV Technologies-I	3	-	-	3
19EE531	Solar PV Technologies-II	3	-	-	3
19EE532	Design & Economics of PV plants	3	-	-	3
19EE541	Solar Thermal Conversion Systems	3	-	-	3
19FT521	Introduction of Food Laws and Regulation	3	-	-	3
19FT531	Food Quality and Evaluation	3	-	-	3
19FT532	Subjective and Objective Evaluation in Food Products	3	-	-	3
19FT541	Food Safety and Public Health	3	-	-	3
19HS521	Modern Indian History and Indian Culture	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19HS531	Polity and Governance in India	2	-	-	2
19HS532	Economic and Social Development in India	2	-	-	2
19HS541	Geography of India	2	-	-	2
19IT521	OOPs through JAVA	3	-	-	3
19IT541	Data Science using Python	3	-	-	3
19MS521	Business Environment and Ethics	3	-	-	3
19MS522	Managerial Economics	3	-	-	3
19MS531	Marketing and HR Management	3	-	-	3
19MS532	Finance for Engineers	3	-	-	3
19MS541	Production and Operations Management	3	-	-	3
19ME521	Biomechanics & Kinesiology	3	-	-	3
19ME522	Basics in Robotics	3	-	-	3
19ME531	Advances in Robotics	3	-	-	3
19ME532	Reliability Engineering	3	-	-	3
19ME533	Field and Service Robots	3	-	-	3
19ME534	Energy Audit & Management	3	-	-	3
19ME535	Supply Chain Management	3	-	-	3
19TT531	Fashion Product Development	3	-	-	3
19TT532	Costing of Fashion and Apparel Production	3	-	-	3
19TT541	Fashion Marketing and Visual Merchandising	3	-	-	3

Note : Students should not choose open electives offered by their branch.

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I YEAR

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

I Year I Semester

Course Code	Course Title	L	T	P	C
19HS102	Engineering Mathematics - I (B)	3	1	2	5
19HS115	Engineering Physics	3	0	2	4
19EE101	Basics of Electrical & Electronics Engineering	3	0	2	4
19ME101	Engineering Graphics & Design	2	0	2	3
19HS121	Organic Chemistry	3	0	2	4
19PC001	Physical Fitness, Sports & Games-I	0	0	3	1
	Total	**14**	**1**	**11**	**21**

I Year II Semester

Course Code	Course Title	L	T	P	C
19HS108	Engineering Mathematics - II (B)	3	1	2	5
19FT101	Food Biochemistry and Nutrition	3	0	2	4
19CS101	Programming for Problem Solving	2	0	4	4
19HS122	English Proficiency and Communication Skills	0	0	2	1
19ME103	Workshop	1	0	2	2
19HS123	Technical English Communication	2	0	2	3
19HS124	Constitution of India	1	0	0	1
19EE102	Basic Engineering Products	2	0	2	3
19PC002	Physical Fitness, Sports & Games-II	0	0	3	1
	Total	**14**	**1**	**19**	**24**

L : Lecture Hours/week ; T : Tutorial Hours/week
P : Practical Hours/week ; C : Credits of the Course

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

II Year I Semester

Course Code	Course Title	L	T	P	C
19HS203	Probability and Statistics	3	1	0	4
19FT201	Food Chemistry and Toxicology	3	0	2	4
19FT202	Food Microbiology	3	0	2	4
19FT203	Fundamentals of Fluid Mechanics	3	0	2	4
19FT204	Thermodynamics and Heat Engines	3	0	0	3
19MS303	Principles of Management & Organizational Behaviour	3	0	0	3
19PC003	Life Skills-I	0	0	2	0
19PC004	Technical Seminar-I	0	0	2	1
19PC005	Intra-Disciplinary Projects-I	0	0	3	1
19PC006	Physical Fitness, Sports & Games-III	0	0	2	1
	Total	**18**	**1**	**15**	**25**

II Year II Semester

Course Code	Course Title	L	T	P	C
19FT211	Fundamentals of Heat and Mass Transfer	3	0	2	4
19FT212	Food Processing Operations	3	0	2	4
19FT213	Principles of Food Processing and Preservation	3	0	2	4
19FT214	Meat Fish and Polutry Process Technology	3	0	0	1
19HS204	Environmental Studies	1	0	0	3
19PC007	Life Skills-II	0	0	2	1
19PC009	Technical Seminar-II	0	0	2	1
19PC008	Intra Disciplinary Projects-II	-	-	2	1
***	Open Elective-I	3	0	0	3
	Total	**16**	**0**	**12**	**22**

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III YEAR

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
19FT301	Dairy Technology	3	0	2	4
19FT302	Fruits and Vegetable Processing	3	0	2	4
19FT303	Cereals Pulses and Oilseeds Process Technology	3	0	2	4
19HS205	Soft Skills Lab	0	0	2	1
19PC010	Employability Skills-I	0	0	2	0
19HS301	Professional Ethics, Human Values & Gender Equity	2	0	0	2
19PC011	Inter Departmental Projects-I	-	-	4	2
19PC012	Modular Course	-	-	-	1
***	Department Elective-I	3	0	0	3
***	Open Elective-II	3	0	0	3
	Total	**18**	**0**	**12**	**24**

III Year II Semester

Course Code	Course Title	L	T	P	C
19FT311	Spices and Plantation Crops Process Technology	3	0	2	4
19FT311	Bakery and Confectionery Technology	3	0	2	4
19FT313	Food Additives	3	1	0	4
19HS206	Professional Communications Lab	0	0	2	1
19PC013	Employability Skills-II	0	0	2	1
19PC014	Inter Departmental Projects-II	-	-	4	2
***	Department Elective-II	3	0	0	3
***	Open Elective-III	3	0	0	3
	Total	**15**	**1**	**12**	**22**

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

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IV YEAR

IV Year I Semester

Course Code	Course Title	L	T	P	C
19FT401	Food Quality Safety and Standards	3	0	0	3
19FT402	Food Plant Layout and Equipment Design	3	0	2	4
19FT403	Food Packaging	3	0	2	4
19PC015	Societal Centric and Indstry Related Projects	-	-	6	3
***	Department Elective - III	3	0	0	3
***	Department Elective-IV	3	0	0	3
	Total	15	0	10	20

IV Year II Semester

Course Code	Course Title	L	T	P	C
19PC016/19PC017	Project Work / Internship	-	-	24	12
	Total	-	-	24	12

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA   : Writing Assignment / Reading Assignment

SSH/HSH : Self Study Hours / Home Study Hours

CS   : Case Study and Example

SA   : Skills Activity

S   : Seminar

BS   : Beyond Syllabus

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ELECTIVES

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

DEPARTMENT ELECTIVE COURSES

ELECTIVE - I

Course Code	Course Title	L	T	P	C
19FT331	Refrigeration Engineering and Cold Chain	3	-	-	3
19FT332	Engineering Properties of Food Materials	3	-	-	3
19FT333	Instrumental Methods of Food Analysis	3	-	-	3
19FT334	Introduction to Biochemical Engineering and Enzyme Technology	3	-	-	3
19FT335	Instrumentation and Process Control	3	-	-	3
19FT336	Emerging Trends in Food Processing	3	-	-	3

ELECTIVE - II

Course Code	Course Title	L	T	P	C
19FT337	Nutraceutical and Functional Foods	3	-	-	3
19FT338	Grain Storage Technology	3	-	-	3
19FT339	Maintenance of Food Equipment	3	-	-	3
19FT340	Food Toxicology Agrochemical Residues in Food	3	-	-	3
19FT341	Strategy and Marketing of Food Products	3	-	-	3
19FT342	Extrusion Technology	3	-	-	3

ELECTIVE - III

Course Code	Course Title	L	T	P	C
19FT430	Food Biotechnology	3	-	-	3
19FT431	Bioprocess Engineering	3	-	-	3
19FT432	Food Plant Layout Management and Utilities	3	-	-	3
19FT433	Post Harvest Management of Fruits and Vegetables	3	-	-	3

ELECTIVE - IV

Course Code	Course Title	L	T	P	C
19FT434	Project Planing Preparation and Management	3	-	-	3
19FT435	Waste Management and by Product Utilization	3	-	-	3
19FT436	Dairy and Food Processes	3	-	-	3
19FT437	Nano Technology	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

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ELECTIVES

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19AE521	Basic Automobile Engineering	3	-	-	3
19AE531	On Road and Off-road Vehicles	3	-	-	3
19AE532	Safety Systems in Automobiles	3	-	-	3
19AE541	Vehicle Maintenance and pollution Norms	3	-	-	3
19BI521	Community Informatics	3	-	-	3
19BI531	Health Informatics	3	-	-	3
19BI532	Software Tools for Sustainable Biodiversity	3	-	-	3
19BM521	Basic Clinical Sciences	3	-	-	3
19BM522	Assist Devices and Implant Technology	3	-	-	3
19BM531	Clinical Instrumenatation	3	-	-	3
19BM532	Biomaterial and Artificial Organs	3	-	-	3
19BM533	Biomedical Equipments	3	-	-	3
19BM541	Medical Imaging Techniques	3	-	-	3
19BM542	Medical Physics	3	-	-	3
19BT521	Elements of Biotechnology	3	-	-	3

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ELECTIVES

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19BT531	Community Medicine and Public Health	3	-	-	3
19BT532	Biodiversity Economics, Trade and Commerce	3	-	-	3
19BT533	Bioplastics and Biocomposites Engineering	3	-	-	3
19CE521	Environmental Pollution & Control	3	-	-	3
19CE522	Building Technology	3	-	-	3
19CE531	Disaster Management	3	-	-	3
19CE532	Solid Waste Management	3	-	-	3
19CE533	Remote Sensing & Geographical Information System	3	-	-	3
19CE541	Environmental Impact Assessment	3	-	-	3
19CS531	Python Programming	3	-	-	3
19CS532	R Programming	3	-	-	3
19CS533	Data Structures	3	-	-	3
19CS534	Database Management Systems	3	-	-	3
19CS535	Operating Systems	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

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ELECTIVES

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19CS541	Data Mining Techniques	3	-	-	3
19CS542	Internet of Things	3	-	-	3
19EC521	Embedded Linux	3	-	-	3
19EC531	Embedded Systems and RTOS	3	-	-	3
19EC532	Microcontrollers for Embedded Systems	3	-	-	3
19EC541	Design of IOT Systems (IOT)	3	-	-	3
19EE521	Solar PV Technologies-I	3	-	-	3
19EE531	Solar PV Technologies-II	3	-	-	3
19EE532	Design & Economics of PV plants	3	-	-	3
19EE541	Solar Thermal Conversion Systems	3	-	-	3
19FT521	Introduction of Food Laws and Regulation	3	-	-	3
19FT531	Food Quality and Evaluation	3	-	-	3
19FT532	Subjective and Objective Evaluation in Food Products	3	-	-	3
19FT541	Food Safety and Public Health	3	-	-	3
19HS521	Modern Indian History and Indian Culture	3	-	-	3

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ELECTIVES

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19HS531	Polity and Governance in India	2	-	-	2
19HS532	Economic and Social Development in India	2	-	-	2
19HS541	Geography of India	2	-	-	2
19IT521	OOPs through JAVA	3	-	-	3
19IT541	Data Science using Python	3	-	-	3
19MS521	Business Environment and Ethics	3	-	-	3
19MS522	Managerial Economics	3	-	-	3
19MS531	Marketing and HR Management	3	-	-	3
19MS532	Finance for Engineers	3	-	-	3
19MS541	Production and Operations Management	3	-	-	3
19ME521	Biomechanics & Kinesiology	3	-	-	3
19ME522	Basics in Robotics	3	-	-	3
19ME531	Advances in Robotics	3	-	-	3
19ME532	Reliability Engineering	3	-	-	3
19ME533	Field and Service Robots	3	-	-	3
19ME534	Energy Audit & Management	3	-	-	3
19ME535	Supply Chain Management	3	-	-	3
19TT531	Fashion Product Development	3	-	-	3
19TT532	Costing of Fashion and Apparel Production	3	-	-	3
19TT541	Fashion Marketing and Visual Merchandising	3	-	-	3

Note : Students should not choose open electives offered by their branch.

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

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I YEAR

I Year I Semester

Course Code	Course Title	L	T	P	C
19HS102	Engineering Mathematics - I (B)	3	1	2	5
19HS115	Engineering Physics (C)	3	-	2	4
19EE101	Basic Electrical and Electronics Engineering	3	-	2	4
19ME101	Engineering Graphics & Design	2	-	2	3
19CS101	Programming for Problem Solving	2	-	4	4
19PC001	Physical Fitness, Sports & Games - I	-	-	2	1
	Total	**13**	**1**	**14**	**21**

I Year II Semester

Course Code	Course Title	L	T	P	C
19HS108	Engineering Mathematics - II (B)	3	1	2	5
19HS118	Engineering Chemistry (C)	2	-	2	3
19BM101	Fundamentals of Anatomy and Physiology	3	-	2	4
19HS122	English Proficiency and Communication Skills	-	-	2	1
19HS123	Technical English Communication	2	-	2	3
19HS124	Constitution of India	1	-	-	1
19EE102	Basic Engineering Products	2	-	2	3
19ME103	Workshop	1	-	2	2
19PC002	Physical Fitness, Sports & Games - II	-	-	2	1
	Total	**14**	**1**	**16**	**23**

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course ;

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

II Year I Semester

Course Code	Course Title	L	T	P	C
19HS203	Probability and Statistics	3	1	-	4
19BM201	Basic Clinical Sciences	3	-	-	3
19BM202	Clinical Biochemistry	3	-	2	4
19BM203	Analog Electronic Circuits	3	-	2	4
19BM204	Electric Circuit Theory	3	1	-	3
19HS204	Environmental Studies	1	-	-	1
19PC003	Life Skills - I	-	-	2	-
19PC004	Technical Seminar - I	-	-	2	1
19PC005	Intra-Disciplinary Projects - I	-	-	2	1
19PC006	Physical Fitness, Sports & Games - III	-	-	2	1
	Total	**16**	**2**	**12**	**22**

II Year II Semester

Course Code	Course Title	L	T	P	C
19BM211	Signals and Systems for Bioengineers	3	-	2	4
19BM212	Digital Electronic Circuits	3	-	2	4
19BM213	Biomedical Instrumentation	3	-	2	4
19BM214	Biomaterials and Artificial Organs	3	-	-	3
19MS302	Management Science	3	-	-	3
19PC007	Life Skills - II	-	-	2	1
19PC008	Technical Seminar - II	-	-	2	1
19PC009	Intra-Disciplinary Projects - II	-	-	2	1
	Open Elective - I	3	-	-	3
	Total	**18**	**-**	**12**	**24**

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

B.Tech.

BM

III YEAR

III Year I Semester

Course Code	Course Title	L	T	P	C
19BM301	Diagnostic and Therapeutic Equipments	3	-	2	4
19BM302	Microprocessors and Microcontrollers	3	-	2	4
19BM303	Biosensors and Transducers	3	-	2	4
19BM304	Biomechanics	3	-	-	3
19HS301	Human Values, Professional Ethics & Gender Equity	-	-	2	-
19HS205	Soft Skills Laboratory	3	-	-	3
19PC010	Employability Skills - I	-	-	2	-
19PC011	Inter-Departmental Projects - I	-	-	4	2
	Department Elective - I	3	-	-	3
	Open Elective - II	3	-	-	3
	Total	**21**	**-**	**14**	**26**

III Year II Semester

Course Code	Course Title	L	T	P	C
19BM311	Analog and Digital Communications	3	-	2	4
19BM312	Biomedical Signal Processing	3	-	2	4
19BM313	Medical Imaging Techniques	3	-	-	3
19BM314	Python Programming for Medical Applications	1	-	2	2
19HS206	Professional Communications Laboratory	-	-	2	1
19PC012	Modular Course	-	-	2	1
19PC013	Employability Skills - II	-	-	2	1
19PC014	Inter-Departmental Projects - II	-	-	4	2
	Short Industrial Tranining	-	-	4	2
	Professional Elective - II	3	-	-	3
	Open Elective - III	3	-	-	3
	Total	**16**	**0**	**20**	**26**

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

IV Year I Semester

Course Code	Course Title	L	T	P	C
19BM401	Medical Image Processing	3	-	2	4
19PC015	Societal - Centric and Industry Related Projects	-	-	6	3
	Department Electives - III	3	-	-	3
	Department Electives - IV	3	-	-	3
	Department Electives - V	3	-	-	3
	Total	**12**	**-**	**8**	**16**

IV Year II Semester

Course Code	Course Title	L	T	P	C
19PC016/19PC017	Internship / Project work	-	-	24	12
	Total	**-**	**-**	**24**	**12**

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA   : Writing Assignment / Reading Assignment

SSH/HSH : Self Study Hours / Home Study Hours

CS   : Case Study and Example

SA   : Skills Activity

S   : Seminar

BS   : Beyond Syllabus

B.Tech.

B M

ELECTIVES

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

DEPARTMENT ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19BM331	Hospital Management	3	-	-	3
19BM332	Medical Informatics	3	-	-	3
19BM333	Telemedicine	3	-	-	3
19BM334	Assist Devices and Implant Technology	3	-	-	3
19BM335	Biofluids and Dynamics	3	-	-	3
19BM336	Rehabilitation Engineering	3	-	-	3
19BM337	Embedded Systems for Medical Devices	3	-	-	3
19BM431	Fiber Optics and Lasers in Medicine	3	-	-	3
19BM432	Machine Vision in Medical Technology	3	-	-	3
19BM433	Medical Physics	3	-	-	3
19BM434	Physiological Control Systems	3	-	-	3
19BM435	Robotics and Automation in Medicine	3	-	-	3
19BM436	Virtual Bio-Instrumentation	3	-	-	3
19BM437	VLSI	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19AE521	Basic Automobile Engineering	3	-	-	3
19AE531	On Road and Off-road Vehicles	3	-	-	3
19AE532	Safety Systems in Automobiles	3	-	-	3
19AE541	Vehicle Maintenance and pollution Norms	3	-	-	3
19BI521	Community Informatics	3	-	-	3
19BI531	Health Informatics	3	-	-	3
19BI532	Software Tools for Sustainable Biodiversity	3	-	-	3
19BM521	Basic Clinical Sciences	3	-	-	3
19BM522	Assist Devices and Implant Technology	3	-	-	3
19BM531	Clinical Instrumenatation	3	-	-	3
19BM532	Biomaterial and Artificial Organs	3	-	-	3
19BM533	Biomedical Equipments	3	-	-	3
19BM541	Medical Imaging Techniques	3	-	-	3
19BM542	Medical Physics	3	-	-	3
19BT521	Elements of Biotechnology	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19BT531	Community Medicine and Public Health	3	-	-	3
19BT532	Biodiversity Economics, Trade and Commerce	3	-	-	3
19BT533	Bioplastics and Biocomposites Engineering	3	-	-	3
19CE521	Environmental Pollution & Control	3	-	-	3
19CE522	Building Technology	3	-	-	3
19CE531	Disaster Management	3	-	-	3
19CE532	Solid Waste Management	3	-	-	3
19CE533	Remote Sensing & Geographical Information System	3	-	-	3
19CE534	Geo - Informatics	3	-	-	3
19CE541	Environmental Impact Assessment	3	-	-	3
19CS531	Python Programming	3	-	-	3
19CS532	R Programming	3	-	-	3
19CS533	Data Structures	3	-	-	3
19CS534	Database Management Systems	3	-	-	3
19CS535	Operating Systems	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19CS541	Data Mining Techniques	3	-	-	3
19CS542	Internet of Things	3	-	-	3
19EC521	Embedded Linux	3	-	-	3
19EC531	Embedded Systems and RTOS	3	-	-	3
19EC532	Microcontrollers for Embedded Systems	3	-	-	3
19EC541	Design of IOT Systems (IOT)	3	-	-	3
19EE521	Solar PV Technologies-I	3	-	-	3
19EE531	Solar PV Technologies-II	3	-	-	3
19EE532	Design & Economics of PV plants	3	-	-	3
19EE541	Solar Thermal Conversion Systems	3	-	-	3
19FT521	Introduction of Food Laws and Regulation	3	-	-	3
19FT531	Food Quality and Evaluation	3	-	-	3
19FT532	Subjective and Objective Evaluation in Food Products	3	-	-	3
19FT541	Food Safety and Public Health	3	-	-	3
19HS521	Modern Indian History and Indian Culture	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19HS531	Polity and Governance in India	2	-	-	2
19HS532	Economic and Social Development in India	2	-	-	2
19HS541	Geography of India	2	-	-	2
19IT521	OOPs through JAVA	3	-	-	3
19IT541	Data Science using Python	3	-	-	3
19MS521	Business Environment and Ethics	3	-	-	3
19MS522	Managerial Economics	3	-	-	3
19MS531	Marketing and HR Management	3	-	-	3
19MS532	Finance for Engineers	3	-	-	3
19MS541	Production and Operations Management	3	-	-	3
19ME521	Biomechanics & Kinesiology	3	-	-	3
19ME522	Basics in Robotics	3	-	-	3
19ME531	Advances in Robotics	3	-	-	3
19ME532	Reliability Engineering	3	-	-	3
19ME533	Field and Service Robots	3	-	-	3
19ME534	Energy Audit & Management	3	-	-	3
19ME535	Supply Chain Management	3	-	-	3
19TT531	Fashion Product Development	3	-	-	3
19TT532	Costing of Fashion and Apparel Production	3	-	-	3
19TT541	Fashion Marketing and Visual Merchandising	3	-	-	3

Note : Students should not choose open electives offered by their branch.

B. Tech.

P E
I YEAR

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

I Year I Semester

Course Code	Course Title	L	T	P	C
19HS104	Engineering Mathematics - I (D)	3	1	2	5
19HS114	Engineering Physics - I (B)	3	0	2	4
19EE101	Basics of Electrical & Electronics Engineering	3	0	2	4
19ME101	Engineering Graphics & Design	2	0	2	3
19PE101	Basics of Petroleum Engineering	3	0	0	3
19PC001	Physical Fitness, Sports & Games-I	0	0	3	1
	Total	14	1	11	20

I Year II Semester

Course Code	Course Title	L	T	P	C
19HS110	Engineering Mathematics - II (D)	3	1	2	5
19HS119	Engineering Chemistry (B)	3	0	2	4
19CS101	Programming for Problem Solving	2	0	4	4
19HS122	English Proficiency and Communication Skills	0	0	2	1
19HS123	Technical English Communication	2	0	2	3
19HS124	Constitution of India	1	0	0	1
19ME103	Workshop	1	0	2	2
19CH102	Momentum Transfer	3	0	2	4
19PC002	Physical Fitness, Sports & Games-II	0	0	3	1
	Total	15	1	19	25

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course ;

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

B.Tech.

P E

II YEAR

II Year I Semester

Course Code	Course Title	L	T	P	C
19HS203	Probability & Statistics	3	1	0	4
19CH201	Chemical Process Calculations	3	1	0	4
19CH203	Process Heat Transfer	3	0	2	4
19PE201	Petroleum Geology	3	0	0	3
19PE202	Fundamentals of Geology	3	0	2	4
19PC003	Life Skills-I	-	-	1	0
19PC004	Technical Seminar-I	-	-	2	1
19PC005	Intra-disciplinary Project-I	-	-	3	1
19PC006	Physical Fitness, Sports & Games-III	-	-	2	1
	Total	15	2	12	22

II Year II Semester

Course Code	Course Title	L	T	P	C
19PE211	Petroleum Exploration	3	0	0	3
19PE212	Petroleum Engineering Thermodynamics	3	1	0	4
19PE213	Drilling Technology	3	1	0	4
19HS204	Environmental Studies	1	0	0	1
19MS302	Management Science	3	0	0	3
19PC007	Life Skills-II	0	0	2	1
19PC008	Technical Seminar-II	0	0	2	1
19PC009	Intra Disciplinary Project-II	0	0	2	1
	Department Elective-I	3	0	0	3
	Open Elective-I	3	0	0	3
	Total	19	2	6	24

B.Tech.

P E

III YEAR

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

III Year I Semester

Course Code	Course Title	L	T	P	C
19CH303	Instrumentation & Process Control	3	0	2	4
19PE301	Petroleum Reservior Engineering - I	3	1	0	4
19PE302	Well Logging and Formation Evaluation	3	0	2	4
19HS205	Soft Skills Lab	1	0	0	1
19PC010	Employability Skills - I	0	0	2	0
19HS301	Human Values, Professional Ethics & Gender Equity	2	0	0	2
19PC011	Inter Departmental Project - I	0	0	4	2
19PC012	Modular Course	0	0	0	1
	Department Elective - II	3	0	0	3
	Open Elective - II	3	0	0	3
	Total	18	1	10	24

III Year II Semester

Course Code	Course Title	L	T	P	C
19PE311	Well Completions, Testing & Servicing	3	0	0	3
19PE312	Petroleum Reservoir Engineering-II	3	0	2	4
19PE313	Petroleum Production Engineering	3	0	0	3
19PE314	Petroleum Refinery & Petrochemical Technology	3	0	2	4
19HS206	Professional Communications Lab	0	0	2	1
19PC013	Employability Skills-II	0	0	1	1
19PC014	Inter Departmental Project-II	0	0	2	1
	Department Elective-III	3	0	0	3
	Open Elective-III	3	0	0	3
	Total	18	0	9	23

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

B.Tech.

PE
IV YEAR

IV Year I Semester

Course Code	Course Title	L	T	P	C
19PE401	Health, Safety and Environmental Engineering	3	0	0	3
19PE402	Petroleum Engineering Equipment Design	3	0	2	4
19PE403	Enhanced Oil Recovery Techniques	3	0	2	4
19PE404	Surface Production Operations	3	0	0	3
19PC015	Societal Centric Project	-	-	6	3
	Department Elective-IV	3	0	0	3
	Total	15	0	10	20

IV Year II Semester

Course Code	Course Title	L	T	P	C
19PC016/017	Internship / Project work	-	-	24	12
	Total	-	-	24	12

In addition to L, T, P, C the following information in hours/semester is also provided for each course.

WA/RA : Writing Assignment / Reading Assignment

SSH/HSH : Self Study Hours / Home Study Hours

CS : Case Study and Example

SA : Skills Activity

S : Seminar

BS : Beyond Syllabus

B.Tech.

PE
ELECTIVE

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

DEPARTMENT ELECTIVE COURSES

DEPARTMENT ELECTIVE -I

Course Code	Course Title	L	T	P	C
19PE231	Petro Chemicals	3	-	-	3
19PE232	Waste Water & Effluent Treatment Methods	3	-	-	3
19PE233	Energy Engineering	3	-	-	3
19PE234	Material Science & Engineering	3	-	-	3
19PE235	Mathematical Methods & Application to Petroleum Engg.	3	-	-	3

DEPARTMENT ELECTIVE -II

Course Code	Course Title	L	T	P	C
19PE331	Solid Waste Management	3	-	-	3
19PE332	Fundamentals of LNG	3	-	-	3
19PE333	Natural Gas Processing	3	-	-	3
19PE334	Unconventional Hydrocarbon Resources	3	-	-	3
19PE335	Probability and Statistics	3	-	-	3
19PE336	Advanced Polymer Technology	3	-	-	3

DEPARTMENT ELECTIVE -III

Course Code	Course Title	L	T	P	C
19PE337	Operations Research	3	-	-	3
19PE338	Fluid Flow through Porous Media	3	-	-	3
19PE339	Advanced Natural Gas Engineering	3	-	-	3
19PE340	Artificial Lift Techniques	3	-	-	3
19PE341	Pipeline Engineering	3	-	-	3

DEPATMENT ELECTIVE -IV

Course Code	Course Title	L	T	P	C
19PE431	Reservior Stimulation	3	-	-	3
19PE432	Reservior Simulation	3	-	-	3
19PE433	Applied Mathematics for Reservior Engineering	3	-	-	3
19PE434	Petroleum Economics & Asset Management	3	-	-	3
19PE435	Oil & Gas Field Development	3	-	-	3
19PE436	Subsea Operations & Maintenance	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

B.Tech.

P E
ELECTIVE

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19AE521	Basic Automobile Engineering	3	-	-	3
19AE531	On Road and Off-road Vehicles	3	-	-	3
19AE532	Safety systems in Automobiles	3	-	-	3
19AE541	Vehicle Maintenance and pollution Norms	3	-	-	3
19BI521	Community Informatics	3	-	-	3
19BI531	Health Informatics	3	-	-	3
19BI532	Software Tools for Sustainable Biodiversity	3	-	-	3
19BM521	Basic Clinical Sciences	3	-	-	3
19BM522	Assist Devices and Implant Technology	3	-	-	3
19BM531	Clinical Instrumenatation	3	-	-	3
19BM532	Biomaterial and Artificial Organs	3	-	-	3
19BM533	Biomedical Equipments	3	-	-	3
19BM541	Medical Imaging Techniques	3	-	-	3
19BM542	Medical Physics	3	-	-	3
19BT521	Elements of Biotechnology	3	-	-	3

B.Tech.

P E ELECTIVE

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19BT531	Community Medicine and Public Health	3	-	-	3
19BT532	Biodiversity Economics, Trade and Commerce	3	-	-	3
19BT533	Bioplastics and Biocomposites engineering	3	-	-	3
19CE521	Environmental Pollution & Control	3	-	-	3
19CE522	Building Technology	3	-	-	3
19CE531	Disaster Management	3	-	-	3
19CE532	Solid Waste Management	3	-	-	3
19CE533	Remote Sensing & Geographical Information System	3	-	-	3
19CE541	Environmental Impact Assessment	3	-	-	3
19CS531	Python Programming	3	-	-	3
19CS532	R Programming	3	-	-	3
19CS533	Data Structures	3	-	-	3
19CS534	Database Management Systems	3	-	-	3
19CS535	Operating Systems	3	-	-	3

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

B.Tech.

P E
ELECTIVE

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19CS541	Data Mining Techniques	3	-	-	3
19CS542	Internet of Things	3	-	-	3
19EC521	Embedded Linux	3	-	-	3
19EC531	Embedded Systems and RTOS	3	-	-	3
19EC532	Microcontrollers for Embedded Systems	3	-	-	3
19EC541	Design of IOT Systems (IOT)	3	-	-	3
19EE521	Solar PV Technologies-I	3	-	-	3
19EE531	Solar PV Technologies-II	3	-	-	3
19EE532	Design & Economics of PV plants	3	-	-	3
19EE541	Solar Thermal Conversion Systems	3	-	-	3
19FT521	Introduction of Food Laws and Regulation	3	-	-	3
19FT531	Food Quality and Evaluation	3	-	-	3
19FT532	Subjective and Objective Evaluation in Food Products	3	-	-	3
19FT541	Food Safety and Public Health	3	-	-	3
19HS521	Modern Indian History and Indian Culture	3	-	-	3

B.Tech.

P E
ELECTIVE

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

OPEN ELECTIVE COURSES

Course Code	Course Title	L	T	P	C
19HS531	Polity and Governance in India	2	-	-	2
19HS532	Economic and Social Development in India	2	-	-	2
19HS541	Geography of India	2	-	-	2
19IT521	OOPs through JAVA	3	-	-	3
19IT541	Data Science using Python	3	-	-	3
19MS521	Business Environment and Ethics	3	-	-	3
19MS522	Managerial Economics	3	-	-	3
19MS531	Marketing and HR Management	3	-	-	3
19MS532	Finance for Engineers	3	-	-	3
19MS541	Production and Operations Management	3	-	-	3
19ME521	Biomechanics & Kinesiology	3	-	-	3
19ME522	Basics in Robotics	3	-	-	3
19ME531	Advances in Robotics	3	-	-	3
19ME532	Reliability Engineering	3	-	-	3
19ME533	Field and Service Robots	3	-	-	3
19ME534	Energy Audit & Management	3	-	-	3
19ME535	Supply Chain Management	3	-	-	3
19TT531	Fashion Product Development	3	-	-	3
19TT532	Costing of Fashion and Apparel Production	3	-	-	3
19TT541	Fashion Marketing and Visual Merchandising	3	-	-	3

Note : Students should not choose open electives offered by their branch.

Bachelor of Computer Applications (BCA) (2015-18)
Course Structure

I Semester

S.No	Name of the subject	L	P	To	C	Internal	External	Total
1	BC101- Digital Computer Fundamentals	4		4	4	40	60	100
2	BC103- Computer Programming	4		4	4	40	60	100
3	BC105- Principles and practice of Management	4		4	4	40	60	100
4	BC107- Mathematics - I	4		4	4	40	60	100
5	BC109- Technical communication Skills Lab		3	3	2	50	50	100
6	BC111- Office Automation Lab - I		3	3	2	50	50	100
7	BC113- Computer Programming Lab		3	3	2	50	50	100
		16	9	25	22	310	390	700

II Semester

S.No	Name of the subject	L	P		To	C	Internal	External	Total
1	BC102- Data Structures	4			4	4	40	60	100
2.	BC104- Internet and Web Technologies	4			4	4	40	60	100
3	BC106- Accounting and Financial Management	4			4	4	40	60	100
4	BC108- Mathematics – II	4			4	4	40	60	100
5	BC110- Soft Skills Lab		3		3	2	50	50	100
6	BC112- Data Structures Lab		3		3	2	50	50	100
7	BC114- Internet and Web Technologies Lab		3		3	2	50	50	100
		16	9		25	22	310	390	700

III Semester

S.No	Name of the subject	L	P	To	C	Internal	External	Total
1	BC201- Object Oriented	4		4	4	40	60	100

S.No	Name of the subject	L	P	To	C	Internal	External	Total
	Programming with Java							
2	BC203- Database Management Systems	4		4	4	40	60	100
3	BC205- Software Engineering	4		4	4	40	60	100
4	BC207- Organization Behavior	4		4	4	40	60	100
5	BC209- Statistical Techniques Lab		3	3	2	50	50	100
6	BC211- Object Oriented Programming through Java lab		3	3	2	50	50	100
7	BC213- Database Management Systems Lab		3	3	2	50	50	100
		16	9	25	22	310	390	700

IV Semester

S.No	Name of the subject	L	P	To	C	Internal	External	Total
1	BC202- Multimedia Systems	4		4	4	40	60	100
2	BC204- Computer Networks	4		4	4	40	60	100
3	BC206- Operating Systems	4		4	4	40	60	100
4	BC208- E- Commerce	4		4	4	40	60	100
5	BC210- Multimedia Systems Lab		3	3	2	50	50	100
6	BC212- Computer Networks Lab		3	3	2	50	50	100
7	BC214- Linux basics and shell programming lab		3	3	2	50	50	100
		16	9	25	22	310	390	700

V Semester

S.No	Name of the subject	L	P	To	C	Internal	External	Total
1	BC301- Open source Systems	4		4	4	40	60	100

2	**BC303**- Data warehousing and Mining	4		4	4	40	60	100
3	**BC305**- Software Testing Methodologies	4		4	4	40	60	100
4	**BC307**- Embedded Systems	4		4	4	40	60	100
5	**BC309**- Open source systems Lab		3	3	2	50	50	100
6	**BC311**- Data warehousing & Mining Lab		3	3	2	50	50	100
7	**BC313**- Professional Communications Lab		3	3	2	50	50	100
		16	9	25	22	310	390	700

VI Semester

S.No	Name of the subject	L	P	To	C	Internal	External	Total
1	**BC302**- Information Security	4		4	4	40	60	100
2	**BC304**- Big data Analytics	4		4	4	40	60	100
3	**BC306**- Seminar	2		2	1	50	50	100
4	**BC308**- Project				15	40	60	100

BC101-DIGITAL COMPUTER FUNDAMENTALS

Course Description and Objective: The student should learn the Fundamental components used in a Digital Computer which is essential for the programme.

Course Outcomes: After Completion of the subject student should able to
- Identify the logic gates and their functionality

Bachelor of Computer Applications (BCA)
R18 CURRICULUM

(Applicable for students admitted into First Year from Academic Year 2018-19 onwards)

I Year I Semester

Code	Course Title	L	T	P	C
18BC101	Digital Computer Fundamentals	3	-	-	3
18BC103	Problem Solving through C	3	-	3	5
18BC105	Technical Communication English	3	-	2	4
18BC107	Discrete Mathematical Structures	2	1	-	3
18BC109	IT Workshop Laboratory	-	-	3	2
18BC111	Linux Basics and Shell Scripting Laboratory	-	-	3	2
	Total	11	1	11	19

I Year II Semester

Code	Course Title	L	T	P	C
18BC102	Data Structures	3	-	3	5
18BC104	Object Oriented Programming through JAVA	3	-	3	5
18BC106	Operating Systems	3	-	-	3
18BC108	Probability and Statistics	2	1	-	3
18BC110	Soft Skills Laboratory	-	-	3	2
	Total	11	1	9	18

L: Lecture Hours/Week; **T**: Tutorial Hours/Week;
P: Practical Hours/Week; **C**: Credits of the Course;

Bachelor of Computer Applications (BCA)

R18 CURRICULUM

(Applicable for students admitted into First Year from Academic Year 2018-19 onwards)

II Year III Semester

Code	Course Title	L	T	P	C
18BC201	Programming through Python	3	-	3	5
18BC203	Database Management Systems	3	-	3	5
18BC205	Web Technology	3	-	3	5
18BC207	Management Science	3	-	-	3
18BC209	Seminar	-	-	1	1
	Total	12	-	10	19

II Year IV Semester

Code	Course Title	L	T	P	C
18BC202	Web Scripting through PHP & MYSQL	3	-	3	5
18BC204	Computer Networks	3	-	3	5
18BC206	Software Engineering	3	-	-	3
18BC208	Organizational Behavior	3	-	-	3
18BC210	Mini Project-I	-	-	3	2
	Total	12	-	9	18

L: Lecture Hours/Week; **T**: Tutorial Hours/Week;
P: Practical Hours/Week; **C**: Credits of the Course;

Bachelor of Computer Applications (BCA)

R18 CURRICULUM

(Applicable for students admitted into First Year from Academic Year 2018-19 onwards)

III Year V Semester

Code	Course Title	L	T	P	C
18BC301	Information Security	3	-	-	3
18BC303	Data Mining	3	-	3	5
	Elective – I	4	-	-	4
18BC305	Internet of Things				
18BC307	Cloud Computing				
	Elective – II	4	-	-	4
18BC309	Mobile Application Development				
18BC311	Statistical Programming in R				
18BC313	Mini Project-II	-	-	3	2
	Total	14	-	6	18

III Year VI Semester

Code	Course Title	L	T	P	C
	Elective – III	4	-	-	4
18BC302	Network Programming				
18BC304	Advanced Mobile Application Development				
	Elective – IV	4	-	-	4
18BC306	Big data Analytics				
18BC308	Multimedia Systems				
18BC310	Project	-	-	20	10
	Total	8	-	20	18

L: Lecture Hours/Week; **T**: Tutorial Hours/Week;
P: Practical Hours/Week; **C**: Credits of the Course;

BACHELOR OF BUSINESS ADMINISTRATION
Course Structure (Teaching Scheme: Hrs per week)

I Year I Semester

Code	Subject	L	T	P	To	C	Internal	External	Total Marks
BB101	Business English Communication	4	-	-	4	4	40	60	100
BB103	Fundamentals of Mathematics	4	-	-	4	4	40	60	100
BB105	Financial Accounting	4	-	-	4	4	40	60	100
BB107	Business Economics	4	-	-	4	4	40	60	100
BB109	Computers & IT in Business	4	-	-	4	4	40	60	100
Labs									
BB111	English Proficiency course –I	-	-	4	4	2	20	30	50
	Total	20	-	4	24	22	220	330	550

I Year II Semester

Code	Subject	L	T	P	To	C	Internal	External	Total Marks
BB102	Business Communication	4	-	-	4	4	40	60	100
BB104	Business Statistics	4	-	-	4	4	40	60	100
BB106	Principles and Practice of Management	4	-	-	4	4	40	60	100
BB108	Business Psychology	4	-	-	4	4	40	60	100
BB110	Geography and Environmental Studies	4	-	-	4	4	40	60	100
Labs									
BB112	English Proficiency course –II	-	-	4	4	2	20	30	50
	Total	20	-	4	24	22	220	330	550

II Year I Semester

Code	Subject	L	T	P	To	C	Internal	External	Total Marks
BB201	Indian Economy	4	-	-	4	4	40	60	100
BB203	Cost Accounting	4	-	-	4	4	40	60	100
BB205	Management Information System	4	-	-	4	4	40	60	100
BB207	Business Laws	4	-	-	4	4	40	60	100
BB209	Organizational Behaviour	4	-	-	4	4	40	60	100
Labs									
BB211	Soft Skills Lab	-	-	4	4	2	20	30	50
	Total	20	-	4	24	22	220	330	550

L = Lecture ; T = Tutorial ; P = Practicals ; To = Total ; C = Credits

II Year II Semester

Code	Subject	L	T	P	To	C	Internal	External	Total Marks
BB202	Financial Management	4	-	-	4	4	40	60	100
BB204	Marketing Management	4	-	-	4	4	40	60	100
BB206	Human Resource Management	4	-	-	4	4	40	60	100
BB208	Operations Management	4	-	-	4	4	40	60	100
BB210	Business Environment	4	-	-	4	4	40	60	100
Labs									
BB212	Professional Communication Lab	-	-	4	4	2	20	30	50
Total		20	-	4	24	22	220	330	550

III Year I Semester

Code	Subject	L	T	P	To	C	Internal	External	Total Marks
BB301	Indian banking and Insurance	4	-	-	4	4	40	60	100
BB303	Business Ethics and values	4	-	-	4	4	40	60	100
BB305	Entrepreneurship	4	-	-	4	4	40	60	100
BB307	Operations Research	4	-	-	4	4	40	60	100
BB309	Strategic Management	4	-	-	4	4	40	60	100
Labs									
BB311	SIP Review	-	-	4	4	2	20	30	50
BB313	Seminar	-	-	4	4	2	20	30	50
Total		20	-	4	24	22	240	360	600

III Year II Semester

Code	Subject	L	T	P	To	C	Internal	External	Total Marks
BB302	Industrial Laws	4	-	-	4	4	40	60	100
BB304	Management Accounting	4	-	-	4	4	40	60	100
BB306	Taxation	4	-	-	4	4	40	60	100
BB308	International Business	4	-	-	4	4	40	60	100
BB310	Project Management	4	-	-	4	4	40	60	100
Labs									
BB312	Project Work	-	-	4	4	2	20	30	50
BB314	Report and Viva	-	-	4	4	2	20	30	50
Total		20	-	4	24	22	240	360	600

L = Lecture ; T = Tutorial ; P = Practicals ; To = Total ; C = Credits

R-17 CURRICULUM

(Applicable for students admitted into First Year from academic year 2017-18 onwards)

BBA
I YEAR

I YEAR I Semester

Course Code	Course Title	L	T	P	To	C	Int	Ext	Total
17BB101	Business Communication-I	4	-	-	4	4	40	60	100
17BB103	Business Mathematics	4	-	-	4	4	40	60	100
17BB105	Financial Accounting	4	-	-	4	4	40	60	100
17BB107	Micro Economics	4	-	-	4	4	40	60	100
17BB109	IT Tools for Business	4	-	-	4	4	40	60	100
17BB111	Principles and Practice of Management	4	-	-	4	4	40	60	100
Labs									
17BB113	English Proficiency course –I	-	-	4	4	2	20	30	50
	Total	24	-	4	28	26	260	390	650

I YEAR II Semester

Course Code	Course Title	L	T	P	To	C	Int	Ext	Total
17BB102	Business Communication-II	4	-	-	4	4	40	60	100
17BB104	Cost Accounting	4	-	-	4	4	40	60	100
17BB106	Business Psychology	4	-	-	4	4	40	60	100
17BB108	Macro Economics	4	-	-	4	4	40	60	100
17BB110	Business Statistics	4	-	-	4	4	40	60	100
17BB112	Geography and Environmental Studies	4	-	-	4	4	40	60	100
Labs									
17BB114	English Proficiency course –II	-	-	4	4	2	20	30	50
	Total	24	-	4	28	26	260	390	650

L : Lecture Hours/week ; T : Tutorial Hours/week ;
P : Practical Hours/week ; C : Credits of the Course ;

R-17 CURRICULUM

(Applicable for students admitted into First Year from academic year 2017-18 onwards)

BBA
II YEAR

II YEAR I Semester

Course Code	Course Title	L	T	P	To	C	Int	Ext	Total
17BB201	Business Environment	4	-	-	4	4	40	60	100
17BB203	Management Accounting	4	-	-	4	4	40	60	100
17BB205	Indian Banking & Insurance	4	-	-	4	4	40	60	100
17BB207	Business Laws	4	-	-	4	4	40	60	100
17BB209	Business Research Methods	4	-	-	4	4	40	60	100
17BB211	Business Ethics & Corporate Governance	4	-	-	4	4	40	60	100
Labs									
17BB213	Soft Skills Lab	-	-	4	4	2	20	30	50
	Total	**24**	**-**	**4**	**28**	**26**	**260**	**390**	**650**

*   Courses and Programmes such as Foreign Languages, Summer Internship, NCC, NSS, Yoga, Music, Dance, Value Added Courses etc. for which credits and other details shall be defined by concerned coordinators.

II YEAR II Semester

Course Code	Course Title	L	T	P	To	C	Int	Ext	Total
17BB202	Marketing Management	4	-	-	4	4	40	60	100
17BB204	Business Finance	4	-	-	4	4	40	60	100
17BB206	Human Resource Management	4	-	-	4	4	40	60	100
17BB208	Operations Management	4	-	-	4	4	40	60	100
17BB210	Direct Taxation	4	-	-	4	4	40	60	100
17BB212	Company Law	4	-	-	4	4	40	60	100
Labs									
17BB214	Professional Communication Lab	-	-	4	4	2	20	30	50
	Total	**24**	**-**	**4**	**28**	**26**	**260**	**390**	**650**

BBA
III YEAR

R-17 CURRICULUM
(Applicable for students admitted into First Year from academic year 2017-18 onwards)

III YEAR I Semester

Course Code	Course Title	L	T	P	To	C	Int	Ext	Total
17BB301	Strategic Management	4	-	-	4	4	40	60	100
17BB303	Goods & Service Tax(GST)	4	-	-	4	4	40	60	100
17BB305	Entrepreneurship Development	4	-	-	4	4	40	60	100
17BB307	Organizational Behavior	4	-	-	4	4	40	60	100
	Specialization-I	4	-	-	4	4	40	60	100
	Specialization-II	4	-	-	4	4	40	60	100
Labs									
17BB337	SIP Review	-	-	4	4	2	20	30	50
17BB339	Analytical Skills for Managers-I	-	-	4	4	2	50	-	50
	Total	**24**	**-**	**8**	**32**	**28**	**310**	**390**	**700**

III YEAR II Semester

Course Code	Course Title	L	T	P	To	C	Int	Ext	Total
17BB302	Enterprise Resource planning	4	-	-	4	4	40	60	100
17BB304	Project Management	4	-	-	4	4	40	60	100
17BB306	Operations Research	4	-	-	4	4	40	60	100
17BB308	Digital Marketing	4	-	-	4	4	40	60	100
	Specialization- III	4	-	-	4	4	40	60	100
	Specialization- IV	4	-	-	4	4	40	60	100
Labs									
17BB338	Management Thesis	-	-	4	4	2	50	-	50
17BB340	Analytical skills for Managers-II	-	-	4	4	2	50	-	50
	Total	**24**	**-**	**8**	**32**	**28**	**340**	**360**	**700**

R-17 CURRICULUM
(Applicable for students admitted into First Year from academic year 2017-18 onwards)

BBA
ELECTIVES

V - SEMESTER ELECTIVES

Course Code	Electives - Marketing
17BB309	Marketing Research
17BB311	Retailing Management
17BB313	Consumer Behavior
17BB315	Sales & Distribution Management

Course Code	Electives - Finance
17BB317	Security Analysis and Portfolio Management
17BB319	International Financial Management
17BB321	Banking and Financial Services
17BB323	Financial Markets and Institutions
17BB325	Project Finance

Course Code	Electives - HR
17BB327	Industrial Relations and Labour Laws
17BB329	Talent Planning and Acquisition
17BB331	Learning and Development
17BB333	Talent Management & Succession Planning
17BB335	Industrial and Organizational Psychology

BBA
ELECTIVES

R-17 CURRICULUM
(Applicable for students admitted into First Year from academic year 2017-18 onwards)

VI - SEMESTER ELECTIVES

Course Code	Electives - Marketing
17BB310	Innovation and Product Development
17BB312	Advertising and Brand Management
17BB314	Services Marketing
17BB316	Tourism Marketing

Course Code	Electives - Finance
17BB318	Financial Derivatives
17BB320	Mergers & Acquisitions
17BB322	Strategic Financial Management
17BB324	Foreign Exchange & Risk Management
17BB326	Commodities Market

Course Code	Electives - HR
17BB328	Performance and Compensation Management
17BB330	Strategic and International HRM
17BB332	HR Analytics and Metrics
17BB334	Organization Development and Change
17BB336	Leadership & People Management

R-17 CURRICULUM
(Applicable for students admitted into First Year from academic year 2017-18 onwards)

BBA

ELECTIVES

SKILL ENHANCEMENT COURSES INCORPORATED IN THE STRUCTURE

SEC I	IT Tools for Business
SEC II	English Proficiency course –I
SEC III	English Proficiency course –II
SEC IV	Business Communication-I
SEC V	Business Communication-II
SEC VI	Soft Skills Lab
SEC VII	Professional Communication Lab
SEC VIII	Analytical Skills for Managers- I
SEC IX	Analytical Skills for Managers- II
SEC X	Summer Internship (8 weeks)

List of Subjects

Semester – I

Course Code	Course Title	L	T	P	C
17HS001	English I	3			3
17HS002	English Proficiency and Communication Skills I	3			3
17HS003	Environmental Studies	2			2
17HS004	Fundamentals of Computer Science I	2			2
17HS004A	Fundamentals of Computer Science I Lab			2	1
17HS005	Differential Equations	5			5
17HS006	Descriptive Statistics and Probability	4			4
17HS007	Descriptive Statistics and Probability Lab			2	1
17HS008	Computer Fundamentals and Photoshop	4			4
17HS009	Computer Fundamentals and Photoshop Lab			2	1

Semester II

Course Code	Course Title	L	T	P	C
17HS011	English II	3			3
17HS012	English Proficiency Communication Skills II	3			3
17HS013	General Studies I	2			2
17HS014	Fundamentals of Computer Science II	2			2
17HS015	Geometry	5			5
17HS016	Mathematical Expectations and Probability Distributions	4			4
17HS017	Mathematical Expectations and Probability Distributions Lab			2	1
17HS018	Programming in C	4			4
17HS019	Programming in C Lab			2	1

Semester III

Course Code	Course Title	L	T	P	C
17HS020	Business English Communication I	3			3
17HS021	Business English Communication II	3			3
17HS022	Analytical Skills I	2			2
17HS023	General Studies II	2			2
17HS024	Group Theory	5			5
17HS025	Statistical Methods	4			4
17HS027	Statistical Methods Lab			2	1
17HS026	Data Structures	4			4
17HS028	Data Structures Lab			2	1

Semester IV

Course Code	Course Title	L	T	P	C
17HS029	Analytical Skills II	2			2
17HS030	General Studies III	2			2
17HS031	Employability Skills	2			2
17HS032	Human Values / Professional Ethics	2			2
17HS033	Real Analysis	5			5
17HS034	Statistical Inference	4			4
17HS035	Statistical Inference Lab			2	1
17HS036	Object Oriented Programming using Java	4			4
17HS037	Object Oriented Programming using Java Lab			2	1

Semester V

Course Code	Course Title	L	T	P	C
17HS038	Ring Theory and Vector Calculus	5			5
17HS039	Linear Algebra	5			5
17HS040	Sampling Techniques and Design of Experiments	4			4
17HS041	Sampling Techniques and Design of Experiments Lab			2	1
17HS042	Quality, Reliability	4			4
17HS043	Quality, Reliability Lab			2	1
17HS044	DBMS	4			4
17HS045	DBMS Lab			2	1
17HS046	Software Engineering	4			4
17HS047	Software Engineering Lab			2	1

.
Semester VI

Course Code	Course Title	L	T	P	C
17HS048 17HS049 17HS050	**Paper – 7*** Laplace Transformations Numerical Analysis Number Theory	5			5
17HS051 17HS052 17HS099 17HS053 17HS054 17HS099 17HS055 17HS056 17HS099	**Cluster Electives**** **Cluster (A)** Integral Transformations Advanced Numerical Analysis Project Work **Cluster (B)** Mechanics Fluid Mechanics Project Work **Cluster (C)** Graph Theory Applied Graph Theory Project Work	5+5			5+5+6
17HS057 17HS058	**Paper – 7*** Applied Statistics Computer Programming and Data Analytics	5			5
17HS059 17HS060 17HS070 17HS071 17HS099	**Cluster Electives** **Cluster (D)** Operations Research Econometrics Linear Programming Problems and Applications Game Theory and Network Problems Project work	5+5			5+5+6
17HS061 17HS062 17HS063	**Paper – 7*** Operating Systems Computer Network Web Technologies	5			5
17HS064 17HS065 17HS066 17HS099 17HS067 17HS068 17HS069 17HS099	**Cluster Electives** **Cluster (E)** Foundations of Data Science Big Data Technology Computing for Data Analysis Project Work **Cluster (F)** Distributed Systems Cloud Computing Grid Computing Project Work	5+5			5+5+6

*Candidate will choose one paper from paper 7 in each subject

I

YEAR

B.Pharmacy

B PHARMACY

COURSE CONTENTS
I SEM AND II SEM

II

YEAR

B PHARMACY

B.Pharmacy

COURSE CONTENTS

I SEM AND II SEM

III
YEAR

B.Pharmacy

B PHARMACY

COURSE CONTENTS
I SEM AND II SEM

IV
Y E A R

B PHARMACY

B.Pharmacy

COURSE CONTENTS
I SEM AND II SEM

ELECTIVE COURSES

S. No	Sub Code	Sub Name
1.	16BI250	Biopharmaceutical technology
2.	16BI350	Molecular modeling
3.	19BT332	Handling of animals for experiments
4.	19BT433	Medicinal plants and ethnobotany
5.	17BT010	Immunotechnology
6.	19BI331	Molecular interaction
7.	19BT334	Plant tissue culture
8.	16BT251	Physiology and histology
9.	16BT451	Drug toxicity evaluation
10.	19BI335	Metabolic pathway
11.	19BM314	Python programming for medical applications
12.	16EL103	Professional communication laboratory
13.	19BM213	Biomedical equipment
14.	16BM308	Medical imaging technique
15.		Programming for problem solving
16.		GXP
17.		Supply chain management
18.		Scale up and tech transfer
19.		Method transfer, quality control and assurance
20.		Clinical data management
21.		Health care management

■M.Tech. BIOTECHNOLOGY & BIOPROCESS ENGINEERING■

Course Structure
(Teaching Scheme: Hrs per week)

I Year   Semester - I

Code	Subject	L	T	P	To	C
BT527	Advanced Bioprocess Engineering	3	1	-	4	4
BT529	Enzyme Technology	3	1	-	4	4
BT531	Advanced Biochemical Reaction Engineering	3	1	-	4	4
BT533	r-DNA Technology	3	1	-	4	4
Elective – 1		3	1	-	4	4
BT535	Advanced Process Engineering Principles - I					
BT537	Bioinformatics and Molecular Modelling					
BT539	Bio Analytical Techniques					
Elective – 2		3	1	-	4	4
BT541	Advanced Plant and Animal Biotechnology					
BT543	Microbiology and Biochemistry					
BT545	Mass Transfer Separations					
Labs:						
BT547	r-DNA Technology Laboratory	-	-	3	3	2
BT549	Bioprocess Engineering Laboratory	-	-	3	3	2
TOTAL		**18**	**6**	**6**	**30**	**28**

I Year   Semester - II

Code	Subject	L	T	P	To	C
BT528	Upstream & Downstream Processing.	3	1	-	4	4
BT530	Advanced Fermentation Technology	3	1	-	4	4
BT532	Plant Design & Economics for Bio-Technologists	3	1	-	4	4
BT534	Bioprocess Modeling Control and Simulation	3	1	-	4	4
Elective – 3		3	1	-	4	4
BT536	Immunotechnology					
BT538	Computational Biology					
BT540	Environmental Biotechnology					
Elective – 4		3	1	-	4	4
BT542	Industrial Biotechnology and Metabolic Engineering					
BT544	Advanced Process Engineering Priciples - II					
BT546	Cancer Biology & Therapy					
Labs						
BT548	Mini Design Project	-	-	3	3	2
BT550	Down Stream Processing Laboratory	-	-	3	3	2
TOTAL		**18**	**6**	**6**	**30**	**28**

II Year   Semester - III & IV

Code	Subject	L	T	P	To	C
BT551	Seminar	-	-	-	-	4
BT552	Project	-	-	10	10	10
TOTAL		**-**	**-**	**10**	**10**	**14**

L = Lecture ;   **T =** Tutorial ; **P =** Practicals ;   **To =** Total ;   **C =** Credits

I Year					Semester - I	
S.Code	Subject	L	T	P	To	C
CS601	Advanced Database management Systems	3	1	-	4	4
CS603	Advanced Operating Systems	3	1	-	4	4
CS621	Data Structure & Algorithms	3	1	-	4	4
CS507	Advanced Computer Architecture	3	1	-	4	4
	Elective-I					
CS609	Computer Networking	3	1	-	4	4
CS611	Real Time Systems & Software	3	1	-	4	4
CS613	Natural Networks	3	1	-	4	4
	Elective-II					
CS615	Mobile Computing	3	1	-	4	4
CS617	E - Commerce	3	1	-	4	4
CS619	Computer Graphics	3	1	-	4	4
CS625	Performance Evaluation of Computer Systems	3	1	-	4	4
	Labs:					
CS623	Data Structures and Algorithms Lab	-	-	3	3	2
CS523	Advanced Database Management Systems lab	-	-	3	3	2
TOTAL		33	11	6	50	48

I Year					Semester - II	
S.Code	Subject	L	T	P	To	C
CS502	Data werehousing & Mining	3	1	-	4	4
CS504	Network Security & Cryptography	3	1	-	4	4
CS506	Object Oriented Analysis and Design	3	1	-	4	4
CS508	Embedded Systems	3	1	-	4	4
	Elective- III					
CS510	Digital Image Processing	3	1	-	4	4
CS602	Modern Compiler Design	3	1	-	4	4
CS604	Cluster and Grid Computing	3	1	-	4	4
CS606	Big Data Analytics	3	1	-	4	4
	Elective- IV					
CS608	Adwanced Software Engineering	3	1	-	4	4
CS610	Adhoc Sensor Networks	3	1	-	4	4
CS612	Internet Technologies	3	1	-	4	4
CS626	Could Computing	3	1	-	4	4
	Labs:					
CS522	UML Lab	-	-	3	3	2
CS524	ES Lab	-	-	3	3	2
TOTAL		33	11	6	50	48

I YEAR - M.TECH
SYLLABUS

I SEM & II SEM

M.Tech-Embedded Systems

FIRST SEMESTER

Code	Subject	L	T	P	To	C
EC509	Digital System Design	3	1	-	4	4
EC511	Microcontrollers and Applications	3	1	-	4	4
EC515	Embedded System Design Concepts	4	-	-	4	4
EC531	Software For Embedded Systems	3	1	-	4	4

ELECTIVE-I

EC539	VLSI Technology and Design	4	-	-	4	4
EC541	Neural Networks & Fuzzy Systems	4	-	-	4	4
EC543	Digital Image & Video Processing	4	-	-	4	4

ELECTIVE-II

EC545	DSP Processors &Architechtures	3	1	-	4	4
EC547	Computer Architectures & Parallel Processing	4	-	-	4	4
EC549	Data Communication	4	-	-	4	4

LAB

EC553	Microcontrollers Lab	-	-	3	3	2
EC555	HDL & FPGA Synthesis Lab	-	-	3	3	2

M.Tech-Embedded Systems

SECOND SEMESTER

Code	Subject	L	T	P	To	C
EC510	Real Time Operating Systems	4	-	-	4	4
EC518	RISC Processors Architecture and Programming	3	1	-	4	4
EC520	Wireless Communications And Networks	4	-	-	4	4
EC522	Smart Instrumentation	4	-	-	4	4

ELECTIVE-III

Code	Subject	L	T	P	To	C
EC530	Embedded Linux	3	1	-	4	4
EC532	Robotics Design and Control	4	-	-	4	4
EC546	Adaptive Signal Processing	4	-	-	4	4

ELECTIVE-IV

Code	Subject	L	T	P	To	C
EC548	Micro Electro Mechanical Systems	4	-	-	4	4
EC550	VLSI Signal Processing	4	-	-	4	4
EC552	ADHOC And Sensor Networks	4	-	-	4	4

LAB

Code	Subject	L	T	P	To	C
EC554	Instrumentation Lab	-	-	3	3	2
EC556	Real Time Operating Systems Lab	-	-	3	3	2

M.Tech-Embedded Systems

SECOND YEAR FIRST SEMESTER

Subject	L	T	P	To	C
PROJECT PART-I	-	-	20	20	20
SEMINAR	-	-	2	2	2

SECOND SEMESTER

Subject	L	T	P	To	C
PROJECT PART-II	-	-	20	20	20

VIGNAN UNIVERSITY:: VADLAMUDI

School of Mechanical Engineering
M.Tech.
MACHINE DESIGN

SEMESTER – I		L	T	T	O	C
1. ME501	Advanced Mechanisms	3	1	-	4	4
2. ME503	Advanced Mechanics of Solids	3	1	-	4	4
3. ME505	Creep, Fatigue &Fracture Mechanics	3	1	-	4	4
4. ME555	Advanced Finite Element Analysis	3	1	-	4	4
5. **Elective – I**		3	1	-	4	4
ME509	Mechanics of Composite Materials					
ME511	Pressure Vessel Design					
ME513	Theory of Plasticity					
6. **Elective – II**		3	1	-	4	4
ME527	Advanced Numerical Methods in Engineering					
ME517	Realibility Engineering					
ME519	Industrial Hydraulics & Pneumatics					
Labs						
1. ME523	Simulation lab.	-	-	3	3	2
1. ME525	Modelling lab	-	-	3	3	2
SEMESTER - II						
1. ME502	Advanced Mechanical Engineering Design	3	1	-	4	4
2. ME568	Mechanical Vibrations	3	1	-	4	4
3. ME506	Design Synthesis	3	1	-	4	4
4. ME508	Optimization Techniques	3	1	-	4	4
5. **Elective – III**		3	1	-	4	4
ME510	Computational Fluid Dynamics					
ME512	Industrial Tribology					
ME514	Gear Engineering					
Elective – IV 3		3	1	-	4	4
ME516	Experimental Stress Analysis					
ME518	Nanotechnology					
ME520	Condition Monitoring & Fault Diagnosis of Machines					
Labs						
1. ME522	Machine Dynamics Lab.	-	-	3	3	2
2. ME524	Hydraulics &Pneumatics Lab.	-	-	3	3	2
SEMESTER - III						
1. ME	Project Work Part - I	-	-	10	10	14
SEMESTER - IV						
1. ME	Project Work Part - II	-	-	10	10	14

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals; **To =** Total **;** **C =** Credits

M.Tech. Power Electronics & Drives
Course Structure
(Teaching Scheme: Hrs per week)

I Year   **Semester - I**

Code	Subject	L	T	P	To	C
EE501	Machine Modelling & Analysis	4	0	-	4	4
EE503	Analysis of Power Electronic Converters	4	0	-	4	4
EE505	Microprocessors & Microcontrollers	4	0	-	4	4
EE507	Power Electronic Control of DC Drives	4	0	-	4	4
	Elective - I	4	0	-	4	4
EE509	Digital Control Systems					
EE511	Optimization Techniques					
	Elective - II	4	0	-	4	4
EE513	Neural & Fuzzy Systems					
EE515	Energy Conversion Systems					
	Labs:					
EE517	Power Converters Lab	0	0	3	3	2
EE533	Power Electronics Simulation Lab - I	0	0	3	3	2
TOTAL		**18**	**6**	**6**	**30**	**28**

L = Lecture ; **T** = Tutorial ; **P** = Practicals ; **To** = Total ; **C** = Credits

M.Tech. Power Electronics & Drives
Course Structure

(Teaching Scheme: Hrs per week)

I Year **Semester - II**

Code	Subject	L	T	P	To	C
EE502	Power Electronics Control of AC Drives	4	0	-	4	4
EE504	High Voltage DC Transmission	4	0	-	4	4
EE506	Dynamics of Electrical Machines	4	0	-	4	4
EE508	Flexible of AC Transmission Systems	4	0	-	4	4
	Elective - III	**4**	**0**	**-**	**4**	**4**
EE510	Reliability Engineering					
EE512	Power Quality					
	Elective - IV	**4**	**0**	**-**	**4**	**4**
EE514	Programmable Logic Controller and their Applications					
EE516	Advanced Digital Signal Processing					
	Labs:					
EE518	Electrical Systems Simulation Lab	0	0	3	3	2
EE534	Power Electronics Application Lab	0	0	3	3	2
TOTAL		**18**	**6**	**6**	**30**	**28**

L = Lecture ; **T** = Tutorial ; **P** = Practicals ; **To** = Total ; **C** = Credits

■■■■■■ **M.Tech. Power Electronics & Drives** ■■■■■■
Course Structure

(**Teaching Scheme: Hrs per week**)

II Year   **Semester - III & IV**

Code	Subject	L	T	P	To	C
	Seminar	0	0	2	2	2
	Project work thesis & Viva Voce	0	0	0	0	40
TOTAL		**0**	**0**	**2**	**2**	**42**

| **TOTAL Number of Credits for the Programme** | | | | | | **98** |

L = Lecture ; **T** = Tutorial ; **P** = Practicals ; **To** = Total ; **C** = Credits

M.Tech-VLSI Syllabus

I YEAR **SEMESTER-I**

Code	Subject	L	T	P	To	C
EC557	VLSI Technology	3	1	-	4	4
EC559	Digital IC Design	3	1	-	4	4
EC561	Anolog IC Design	3	1	-	4	4
EC563	Programming and Scripting Languages For VLSI Design Automation	4	-	-	4	4

ELECTIVE-I

Code	Subject	L	T	P	To	C
EC565	Advanced Digital System Design	3	1	-	4	4
EC567	Semiconductor Device Modeling	4	-	-	4	4
EC545	DSP Processors & Architectures	4	-	-	4	4

ELECTIVE-II

Code	Subject	L	T	P	To	C
EC550	VLSI Signal Processing	3	1	-	4	4
EC569	Verification Methodologies	3	1	-	4	4
EC571	System On Chip Design	3	1	-	4	4

LAB

Code	Subject	L	T	P	To	C
EC575	Digital IC Design Lab	-	-	3	3	2
EC577	Analog IC Design Lab	-	-	3	3	2
	Total					**28**

M.Tech-VLSI

I YEAR   SEMESTER-II

Code	Subject	L	T	P	To	C
EC558	CAD VLSI	4	-	-	4	4
EC560	VLSI Testing and Validation	3	1	-	4	4
EC562	Mixed Signal Design	3	1	-	4	4
EC564	Chip Design	4	-	-	4	4

ELECTIVE-III

EC566	FPGA & CPLD Architectures and Applications	4	-	-	4	4
EC568	Low Power VLSI	4	-	-	4	4
EC570	RFIC Design	3	1	-	4	4

ELECTIVE-IV

EC548	Micro Electro Mechanical Systems	4	-	-	4	4
EC572	Nano Electronics	4	-	-	4	4
EC574	Semiconductor Memory Design	3	1	-	4	4

LAB

EC576	Mixed Signal Design Laboratory	-	-	3	3	2
EC580	Advanced Digital IC Design Lab	-	-	3	3	2
Total						**28**

M.Tech-VLSI

II YEAR   SEMESTER-III

S.No	Subject	L	T	P	To	C
EC605	PROJECT PART-I	-	-	-	-	-
EC607	SEMINAR	-	-	2	2	2

II YEAR   SEMESTER-IV

S.No	Subject	L	T	P	To	C
EC605	PROJECT PART-II	-	-	40	40	40

M.Tech. FOOD PROCESSING TECHNOLOGY

I Year

Semester - I

1. CH551   Unit Operations in Food Processing Engineering
2. CH553   Plant Food Technology
3. CH555   Food Quality and Food Safety Engineering
4. CH557   Food Microbiology
5. **Elective – 1**
      CH559   Equipment Design and Process Control
      CH561   Food Bio-Chemistry and Nutrition
      CH563   Refrigeration and Cold Storage Construction
      CH565   Nutraceuticals and Health Foods
6. **Elective – 2**
      CH567   Industrial Biotechnology
      CH569   Traditional and Convenience Food Technology
      CH571   Plantation Crops., Spices & Condiment Technology
      CH573   Automation in Food Processing

Labs

1. CH575   Food Process Engineering Lab-I
2. CH577   Food Microbiology and Enzymology Lab

Semester - II

1. CH552   Food Quality Systems and Management
2. CH554   Animal Product Technology
3. CH556   Emerging Technologies in Food Processing
4. CH558   Food Packings Technology
5. **Elective – 3**
      CH560   Separation Techniques in Food Processing
      CH562   Environmental Food Technology
      CH564   Plant Layout and Process Economics
      CH566   Heat & Mass Transfer Operations in Food Processing
6. **Elective – 4**
      CH568   Dairy Technology
      CH570   Sugar and Confectionary Technology
      CH572   Bevarages Technology
      CH574   Lipid Science and Technology

Labs

1. CH576   Food Process Engineering Lab-II
2. CH578   Food Quality Assurance Lab

II Year

Semester III

1. CH611   Seminar
2. CH613   Project Work - I

Semester - IV

1. CH602   Project Work - II

VIGNAN'S UNIVERSITY :: VADLAMUDI -522 213
DEPARTMENT OF CIVIL ENGINEERING
M.Tech:- Two-year Structural Engineering Degree Program
Proposed Course Structure For The Academic Year 2014-2015

FIRST YEAR
(I Semester)

S.NO	Subject Code & Title	Periods per week		Maximum Marks			Credits
		L	P	Int	Ext	Total	
1	CE501 Theory of Elasticity	4		40	60	100	4
2	CE503 Plasticity and Limit State Design of Steel Structures	4		40	60	100	4
3	CE505 Structural Dynamics	4		40	60	100	4
4	CE521 Numerical methods	4		40	60	100	4
5	Electives-I	4		40	60	100	4
6	Electives-II	4		40	60	100	4
7	CE519 Structural Engg. Lab		3	50	50	100	2
8	CE521 Computational Laboratory		3	50	50	100	2
	Total	24	6	340	460	800	28

L:Lecture,   P:Practical
Duration of Internal Examination: 2 Hours   Duration of External Examination:3 Hours

II Semester

S.NO	Subject Code & Title	Periods per week		Maximum Marks			Credits
		L	P	Int	Ext	Total	
1	CE502 Finite Element analysis	4		40	60	100	4
2	CE504 Earthquake Resistant Design of Structures	4		40	60	100	4
3	CE506 Theory of Plates and Shells	4		40	60	100	4
4	CE524 Applied Mathematics	4		40	60	100	4
5	Electives-III	4		40	60	100	4
6	Electives-IV	4		40	60	100	4
7	CE520 Structural Design Project(Mini Project)		3	50	50	100	2
8	CE522 Introduction to Ansys Lab		3	50	50	100	2
	Total	24	3	340	460	800	28

L:Lecture,   P:Practical

Duration of Internal Examination: 2 Hours   Duration of External Examination:3 Hours

SECOND YEAR

I Semester

S.NO	Subject Code & Title	Maximum Marks			Credits
		Int	Ext	Total	
1	CE601 Seminar	100	00	100	2
	Total			100	2

II Semester

S.NO	Subject Code & Title	Maximum Marks			Credits
		Int	Ext	Total	
1	CE602 Project Phase-2	50	50	100	40
	Total			100	40

List of electives:

Electives-I
CE507   Advanced Reinforced Concrete Design
CE509   Fracture Mechanics
CE511   Construction Planning and Project Management

Electives-II
CE513   Advanced Foundation Engineering
CE515   Matrix Methods of Structural Analysis
CE517   Mechanics of composite materials

Electives-III
CE508   Ground Improvement Techniques
CE510   Bridge Engineering
CE512   Wind Analysis and Design of Tall Structures

Electives-IV
CE514   Advanced Prestressed Concrete
CE516   Stability of Structures
CE518   Repair and Rehabilitation of Structures

VFSTR UNIVERSITY

M.Tech. I Year - Course Structure
SEMESTER - I

Code	Subject	L	T	P	To	C
AG501	Machinery Systems for Precision Agriculture	4	0	-	4	4
AG503	Design of Farm Machinery Systems	4	0	-	4	4
AG505	Soil Dynamics in Tillage and Traction	4	0	-	4	4
	Elective-I	4	0	-	4	4
	Elective-II	4	0	-	4	4
	Elective-III	4	0	-	4	4
	Practicals					
AG525	Tractor Systems Laboratory	-	-	3	3	2
AG527	Farm Machinery Design Laboratory	-	-	3	3	2
	Total	24	00	06	30	28

SEMESTER - II

Code	Subject	L	T	P	To	C
AG502	Alternative Energy Sources	4	0	-	4	4
AG504	Tractor Systems Design	4	0	-	4	4
AG506	Computer Aided Analysis and Design of Farm Machinery	4	0	-	4	4
	Elective-IV	4	0	-	4	4
	Elective-V	4	0	-	4	4
	Elective-VI	4	0	-	4	4
	Practicals					
AG526	CAD Design & Simulation Lab	-	-	3	3	2
AG528	Farm Machinery Testing Laboratory	-	-	3	3	2
	Total	24	00	06	30	28

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

VFSTR UNIVERSITY

II M.Tech. COURSE STRUCTURE
SEMESTER - I

Code	Subject	L	T	P	To	C
	Seminar - I	0	0	1	1	1
	Project - I	0	0	20	20	20
	Total	**0**	**0**	**21**	**21**	**21**

SEMESTER - II

Code	Subject	L	T	P	To	C
	Seminar - I	0	0	1	1	1
	Project - I	0	0	20	20	20
	Total	**0**	**0**	**21**	**21**	**21**

List of subjects for electives – I, II & III

Code	Subject	L	T	P	To	C
AG507	Land Grading and Earth Moving Machinery	4	0	0	4	4
AG509	Internal Combustion Engine	4	0	0	4	4
AG511	Production Technology of Automotive Components	4	0	0	4	4
AG513	Instrumentation and Research Techniques	4	0	0	4	4
AG515	System Engineering and Productivity	4	0	0	4	4
ME508	Optimization Techniques	4	0	0	4	4
AG519	Agro-Energy Audit and Management	4	0	0	4	4
AG521	Finite Element Methods in Engineering	4	0	0	4	4
AG523	Ergonomics and Safety in Farm Operations	4	0	0	4	4

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

VIGNAN'S UNIVERSITY

List of subjects for electives – IV, V & VI

Code	Subject	L	T	P	To	C
AG508	Tractor Ergonomics	4	0	0	4	4
AG510	Research Methodology and Data Analysis	4	0	0	4	4
AG512	Simulation Modeling in Farm Machinery and Power Engineering	4	0	0	4	4
AG514	Energy Conservation and Management in Farm Machinery and Power Engineering	4	0	0	4	4
AG516	Advances in Hydraulics and Electro Pneumatic Controls	4	0	0	4	4
AG518	Introduction to Intellectual Property Law	4	0	0	4	4
AG520	Project Engineering and Management	4	0	0	4	4
ME504	Mechanical Vibrations	4	0	0	4	4
ME516	Experimental Stress Analysis	4	0	0	4	4

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

M.Tech.

2 YEAR

DEGREE PROGRAMME

I Year I Semester

Course Code	Course Title	L	T	P	C
17BT001	Advanced Bioprocess Engineering	3	-	2	5
17BT003	Enzyme Technology	3	1	-	4
17BT005	Advanced Biochemical Reaction Engineering	3	1	-	4
17BT007	r-DNA Technology	3	-	2	5

I Year II Semester

Course Code	Course Title	L	T	P	C
17HS001	Research Methods	3	-	-	3
17HS002	Employment Orientation Program (EOP)	2	-	-	2
17BT002	Upstream and Downstream Processing	3	-	2	5
17BT004	Bio Analytical Techniques	3	-	2	5
17BT006	Plant Design and Economics for Biotechnologists	3	1	-	4
17BT008	Bioprocess Modeling Control & Simulation	3	1	-	4

II Year I & II Semester

Course Code	Course Title	L	T	P	C
	I Semester				
17PR001	Project/ Internship Phase - I				15
	II Semester				
17PR001	Project/ Internship Phase - II				15

Pool of Electives

Course Code	Course Title	L	T	P	C
17BT009	Advanced Process Engineering Principles-I	3	-	-	3
17BT011	Bioinformatics and Molecular Modeling	3	-	-	3
17BT013	Microbiology and Biochemistry	3	-	-	3
17BT015	Advanced Plant and Animal Biotechnology	3	-	-	3
17BT017	Mass Transfer Separations	3	-	-	3
17BT019	Advanced Fermentation Technology	3	-	-	3
17BT010	Immunotechnology	3	-	-	3
17BT012	Computational Biology	3	-	-	3
17BT014	Environmental Biotechnology	3	-	-	3
17BT016	Industrial Biotechnology and Metabolic Engineering	3	-	-	3
17BT018	Advanced Process Engineering Principles-II	3	-	-	3
17BT020	Cancer Biology and Therapy	3	-	-	3

M.Tech.

2 **YEAR**

DEGREE PROGRAMME

Detailed Course Structure

I Year

Course Code	Course Title	L	T	P	C
I Semester					
17CS001	Advanced Database Management Systems	3	-	3	5
17CS003	Data Structures & Algorithms	3	-	3	5
17CS005	Embedded Systems	3	1	-	4
17CS007	Cloud Computing	3	1	-	4
II Semester					
17HS001	Research Methods	3	-	-	3
17HS002	Employment Orientation Program (EOP)	2	-	-	2
17CS002	Data Warehousing & Data Mining	3	-	3	5
17CS004	Cryptography and Network Security	3	-	3	5
17CS006	Internet of Things	3	1	-	4
17CS008	Big Data Analytics	3	-	3	5
Pool of Electives					
17CS009	Wireless Computer Network	3	1	-	4
17CS010	Artificial Intelligence	3	1	-	4
17CS011	Advanced Computer Architecture	3	1	-	4
17CS012	Artificial Neural Networks	3	1	-	4
17CS013	Biometrics	3	1	-	4
17CS014	Computer Vision	3	1	-	4
17CS015	Cyber Security	3	-	3	5
17CS016	Fundamentals of Image Processing	3	1	-	4
17CS017	Pattern Recognition	3	1	-	4
17CS018	Web Technologies	3	-	3	5
17CS019	Wireless Communication Networks	3	1	-	4

II Year

Course Code	Course Title	L	T	P	C
I Semester					
17PR001	Project/ Internship Phase - I				15
II Semester					
17PR001	Project/ Internship Phase - II				15

Detailed Course Structure
I Year

Course Code	Course Title	L	T	P	C
I Semester					
17ES001	Microcontrollers for Embedded System	3	-	3	5
17ES003	Embedded System Design Concepts	3	1		4
17ES005	Embedded Programming	3	-	3	5
17ES007	Embedded Networking	3	1	-	4
II Semester					
17ES002	Ad-hoc Sensor Networks	3	-	3	5
17ES004	Design of IoT systems	3	-	3	5
17ES006	Embedded Linux	3	1	-	4
17ES008	Embedded System Design with FPGA	3	1		4
17HS001	Research Methods	2	-	-	2
17HS002	Employment Orientation Program	2	-	-	2
Pool of Electives					
17ES009	Introduction To Internet Of Things	3	1	-	4
17ES011	Soft Computing	3	1	-	4
17ES013	Adaptive Signal Processing	3	1	-	4
17ES015	System On Chip Design	3	1	-	4
17ES017	Digital Image And Video Processing	3	1	-	4
17ES019	Data Communications	3	1	-	4
17ES021	Neural Networks & Fuzzy Systems	3	1	-	4
17ES023	Scripting Languages(Common To Vlsi)	3	1	-	4
17ES010	Risc Processors Architecture And Programming	3	1	-	4
17ES012	Micro Electro Mechanical System	3	1	-	4
17ES014	Dsp Processors	3	1	-	4
17ES016	Computer Architecture And Parallel Processing	3	1	-	4
17ES018	Robotics And Automation	3	1	-	4
17ES020	Cryptography And Network Security	3	1	-	4
17ES022	Smart Instrumentation	3	1	-	4
17ES024	Wireless Communications And Networks	3	1	-	4

II Year

Course Code	Course Title	L	T	P	C
I Semester					
17PR001	Project/ Internship Phase - I				15
II Semester					
17PR001	Project/ Internship Phase - II				15

I

Y E A R

MACHINE DESIGN

M. Tech.

I SEMESTER

- 17MD001 - Advanced Mechanisms
- 17MD003 - Advanced Mechanics of Solids
- 17MD005 - Creep, Fatigue and Fracture Mechanics
- 17MD007 - Advanced Finite Element Analysis
- Elective Course - I
- Elective Course - II

II SEMESTER

- 17HS001 - Research Methods
- 17HS002 - Employment Orientation Program (EOP)
- 17MD002 - Computer Aided Design
- 17MD004 - Mechanical Vibrations
- 17MD006 - Design synthesis
- 17MD008 - Optimization techniques
- Elective Course - III
- Elective Course - IV

COURSE CONTENTS

I SEM & II SEM

I
Y E A R

M.Tech.

POWER ELECTRONICS & DRIVES

I SEMESTER

▶	17PE001	- Analysis of Power Electronic Converters
▶	17PE003	- Electric Drives-I
▶	17PE005	- Flexible AC Transmission Systems
▶	17PE007	- Modeling & Dynamics of Electrical Machines
▶		- Elective Course - I
▶		- Elective Course - II

II SEMESTER

▶	17HS001	- Research Methods
▶	17HS002	- Employment Orientation Program
▶	17PE002	- Digital Control of Power Electronics
▶	17PE004	- Electric Drives-II
▶	17PE006	- HVDC Transmission System
▶	17PE008	- Design of Power electronic Systems
▶		- Elective Course - III
▶		- Elective Course - IV

COURSE CONTENTS
I SEM & II SEM

M.Tech.

2 YEAR

DEGREE PROGRAMME

I Year I Semester

Course Code	Course Title	L	T	P	C
17VL001	Analog IC Design	3	-	3	5
17VL003	Digital IC Design	3	-	3	5
17VL005	VLSI Technology	4	-	-	4
17VL007	Semiconductor Device Modeling	3	1	-	4

I Year II Semester

Course Code	Course Title	L	T	P	C
17VL002	Mixed Signal Design	3	-	3	5
17VL004	VLSI Testing and Validation	3	-	2	4
17VL006	Low power VLSI Design	3	1	-	4
17VL008	Modelling and Synthesis with Verilog HDL	3	-	3	5
17HS001	Research Methods	3	-	-	3
17HS002	Employment Orientation Program	2	-	-	2

II Year I & II Semester

Course Code	Course Title	L	T	P	C
	I Semester				
17PR001	Project/ Internship Phase - I				15
	II Semester				
17PR001	Project/ Internship Phase - II				15

M.Tech.

2 **YEAR**

DEGREE
PROGRAMME

Pool of Electives

Course Code	Course Title	L	T	P	C
17VL009	Scripting languages	3	1	2	5
17VL011	VLSI Signal Processing	3	1	-	4
17VL013	Verification Methodologies	4	-	-	4
17ES015	System On-chip Design	4	-	-	4
17VL015	CAD VLSI	3	1	-	4
17VL017	Advanced digital system design	3	1	-	4
17VL010	Nano Electronics	4	-	-	4
17VL012	ASIC	4	-	-	4
17VL014	MEMS	3	1	-	4
17VL016	Semiconductor Memory Design	4	-	-	4
17VL018	Nano Sensors and its Applications	4	-	-	4
17VL020	RF integrated circuit design	3	1	-	4

M.Tech.

2 **YEAR**

DEGREE PROGRAMME

I Year I Semester

Course Code	Course Title	L	T	P	C
17FT001	Plant Food Technology	3	1	0	4
17FT003	Unit Operations in Food Processing Engineering	3	0	3	5
17FT005	Food Quality And Safety Engineering	3	1	0	4
17FT007	Food Microbiology	3	0	3	5

I Year II Semester

Course Code	Course Title	L	T	P	C
17HS001	Research Methods	3	-	-	3
17FT002	Emerging Technologies Systems and Managemetn	3	1	0	4
17FT004	Food Quality Systems and Management	3	0	3	5
17FT006	Animal Product Training	3	1	0	4
17FT008	Food Packing Technology	3	0	3	5
17HS102	Employment Orientation Programme	3	-	-	3

II Year I & II Semester

Course Code	Course Title	L	T	P	C
	I Semester				
17PR001	Project/ Internship Phase - I				15
	II Semester				
17PR002	Project/ Internship Phase - II				15

Pool of Electives

Course Code	Course Title	L	T	P	C
17FT009	Equipment Design And Process Control	3	1	-	4
17FT011	Food Biochemistry And Nutrition	3	1	-	4
17FT013	Refrigeration And Coldstorage Construction	3	1	-	4
17FT015	Nutraceuticals And Health Foods	3	1	-	4
17FT017	Plantation Crops, Spices & Condiment Technology	3	1	-	4
17FT019	Industrila Biotechnology	3	1	-	4
17FT021	Traditional And Convenience Food Technolgy	3	1	-	4
17FT023	Automation In Food Processing	3	1	-	4
17FT012	Separation Techniques in Food Processing	3	1	-	4
17FT014	Environmental Food Processing	3	1	-	4
17FT016	Plant Layout And Process Economics	3	1	-	4
17FT018	Heat & Mass Transfer Operations in Food Processing	3	1	-	4
17FT020	Sugar And Confectionary Technology	3	1	-	4
17FT022	Bevarages Technology	3	1	-	4
17FT024	Lipid Science And Technology	3	1	-	4
17FT026	Dairy Technology	3	1	-	4

DETAILED COURSE STRUCTURE

I YEAR I SEMESTER					
Course Code	**Course Title**	**L**	**T**	**P**	**C**
17CE001	Theory of Elasticity	3	1	0	4
17CE003	Structural Dynamics	3	0	3	5
17CE005	Advanced Reinforced concrete Design	3	0	3	5
17CE007	Mathematical Methods	4	0	0	4
		Total Core Credits			19
	Elective -1	3	0	0	3
	Elective -2	3	0	0	3
		Total Elective Credits			6
		Total Semester Credits			24

I YEAR II SEMESTER					
Course Code	**Course title**	**L**	**T**	**P**	**C**
17HS001	Research Methods	3	0	0	3
17HS002	Employment Orientation Program (EOP)	2	0	0	2
17CE002	Matrix methods & Finite Element Analysis	3	1	2	5
17CE004	Earthquake Resistant Design of Structures	3	1	2	5
17CE006	Theory of Plates and Shells	3	1	0	4
17CE008	Repair and Rehabilitation of Structures	3	1	0	4
		Total Core Credits			23
	Elective -3	3	0	0	3
	Elective -4	3	0	0	3
		Total Elective Credits			6
		Total Semester Credits			29

POOL OF ELECTIVES			
S. No	**Course Code**	**Course Title**	**Credits**
1	17CE009	Plastic and Limit State Design of Steel Structures	3
2	17CE010	Fracture Mechanics	3
3	17CE012	Construction Planning and Project management	3
4	17CE014	Advanced Foundation Engineering	3
5	17CE015	Mechanics of Composite Materials	3
6	17CE016	Ground Improvement Techniques	3
7	17CE017	Bridge Engineering	3
8	17CE018	Design of Tall Structures	3
9	17CE011	Advanced Pre-stressed Concrete	3
10	17CE019	Stability of structures	3
11	17CE020	Structural Optimization	3
12	17CE013	Advanced Concrete Technology	3
13	17CE021	Smart Structures and Applications	3
14	17CE022	Pre Engineered Buildings	3
15	17CE023	Experimental Stress Analysis	3
16	17CE024	Soil Structure Interaction	3
17	17CE025	Advanced steel and Concrete Composite Structures	3

II YEAR I SEMESTER					
Course Code	**Course title**	**L**	**T**	**P**	**C**
17PR001	Project/ Internship Phase 1				15
			Total Semester Credits		15

II YEAR I SEMESTER					
Course Code	**Course title**	**L**	**T**	**P**	**C**
17PR002	Project/ Internship Phase 2				15
			Total Semester Credits		15

L= Lecture;   T= Tutorial;   P= Practical;   C= Credits

Total Number of Credits   : 83

POOL OF ELECTIVES

S. No	Course Code	Course Title
1	17CE009	Plastic and Limit State Design of Steel Structures
2	17CE010	Fracture Mechanics
3	17CE012	Construction Planning and Project management
4	17CE014	Advanced Foundation Engineering
5	17CE015	Mechanics of Composite Materials
6	17CE016	Ground Improvement Techniques
7	17CE017	Bridge Engineering
8	17CE018	Design of Tall Structures
9	17CE011	Advanced Pre-stressed Concrete
10	17CE019	Stability of structures
11	17CE020	Structural Optimization
12	17CE013	Advanced Concrete Technology
13	17CE021	Smart Structures and Applications
14	17CE022	Pre Engineered Buildings
15	17CE023	Experimental Stress Analysis
16	17CE024	Soil Structure Interaction
17	17CE025	Advanced steel and Concrete Composite Structures

I YEAR

Y E A R

FARM MACHINERY (FM)

M.Tech.

I SEMESTER

17AG501	-	Design of Farm Power Machinery System
17AG502	-	Tractor Systems Design
17AG503	-	Alternative Energy Design
17AG504	-	Computer Aided Design and Manufacturing
	-	Elective Course - I
	-	Elective Course - II

II SEMESTER

17HS001	-	Research Methods
17HS002	-	Employement Orientation Program (EOP)
17AG506	-	Soil dynamics in Tillage and Traction
17AG507	-	Ergonomics in Agro Systems
17AG508	-	Testing of Tractors and Agricultural Machinery
17AG509	-	Credit Seminar
	-	Elective Course - III
	-	Elective Course - IV

COURSE CONTENTS
I SEM & II SEM

Master of Business Administration
TWO-YEAR POST GRADUATE PROGRAMME

**ACADEMIC REGULATIONS
COURSE STRUCTURE
AND
DETAILED SYLLABUS**
(Applicable for the batches admitted from 2015-16)

VIGNAN'S UNIVERSITY
Vignan's Foundation For Science, Technology And Research (VFSTR)
Vadlamudi, Guntur Dist. - 522 213, A.P, India. Phone:0863-2534646
e-mail: info@univignan.org, www.vignanuniversity.org

MBA Course Structure

I Year I Semester (I Year)

Subject Code	Title of the Paper	External Marks	Internal Marks	Total Marks	Lecture	Credits
MS149	Principles and Practices of Management (PPM)	50	50	100	4	4
MS150	Managerial Economics (ME)	50	50	100	4	4
MS151	Business Environment & Ethics (BEE)	50	50	100	4	4
MS152	Accounting for Managers (AFM)	50	50	100	4	4
MS153	Operations Research (OR)	50	50	100	4	4
MS154	Organizational Behavior (OB)	50	50	100	4	4
MS155	Business Laws (BL)	50	50	100	4	4
MS156	Managerial Communication (MC)	50	50	100	4	4
	Total			800	32	32

I Year II Semester (I Year)

Subject Code	Title of the Paper	External Marks	Internal Marks	Total Marks	Lecture	Credits
MS157	Marketing Management (MM)	50	50	100	4	4
MS158	Corporate Finance (FM)	50	50	100	4	4
MS159	Human Resource Management (HRM)	50	50	100	4	4
MS160	Business Research Methods (BRM)	50	50	100	4	4
MS161	MIS & IT for Managers	50	50	100	4	4
MS162	Operations Management (OM)	50	50	100	4	4
MS163	E-Business (EB)	50	50	100	4	4
MS164	Project Management (PM)	50	50	100	4	4
	Total			800	32	32

II Year I Semester (II Year)

Subject Code	Title of the Paper	External Marks	Internal Marks	Total Marks	Lecture	Credits
MS165	Strategic Management (SM)	50	50	100	4	4
MS166	Entrepreneurship & Business Plan (EBP)	50	50	100	4	4
	Specialization-I Elective-1	50	50	100	4	4
	Specialization-I Elective-2	50	50	100	4	4
	Specialization-I Elective-3	50	50	100	4	4
	Specialization-II Elective-1	50	50	100	4	4
	Specialization-II Elective-2	50	50	100	4	4
	Specialization-II Elective-3	50	50	100	4	4
MS167	Summer Internship Assessment	50	50	100		4
	Total			900	32	36

II Year II Semester (II Year)

Subject Code	Title of the Paper	External Marks	Internal Marks	Total Marks	Lecture	Credits
MS188	International Business (IB)	50	50	100	4	4
	Specialization-I Elective-1	50	50	100	4	4
	Specialization-I Elective-2	50	50	100	4	4
	Specialization-I Elective-3	50	50	100	4	4
	Specialization-II Elective-1	50	50	100	4	4
	Specialization-II Elective-2	50	50	100	4	4
	Specialization-II Elective-3	50	50	100	4	4
MS189	Project Work	-	100	100		4
	Total			800	28	32

II Year I Semester Electives

Electives – Marketing
MS168 - Marketing Research
MS169 - Supply Chain Management
MS170 - Retailing Management
MS171 - Consumer Behavior
MS172 - Tourism Marketing

Electives – Finance
MS173 - Security Analysis and Portfolio Management
MS174 - International Financial Management
MS175 - Banking and Financial Services
MS176 - Financial Markets and Institutions
MS177 - Project Finance

Electives – HR
MS178 - Industrial Relations and Labour Laws
MS179 - Talent Planning and Acquisition
MS180 - Learning and Development
MS181 - Talent Management & Succession Planning
MS182 - Industrial and Organizational Psychology

Electives - Operations & Business Analytics
MS183 - Service Management
MS169 - Supply Chain Management
MS185 - Essentials of Business analytics
MS186 - Technology Management
MS187 - Operations Strategy

II Year II Semester Electives

Electives – Marketing
MS190 - Innovation and Product Development
MS191 - Advertising and Brand Management
MS192 - Services Marketing
MS193 - Sales & Distribution Management
MS194 - Integrated marketing Communication

Electives – Finance
MS251 - Financial Derivatives
MS252 - Fixed Income Securities
MS253 - Corporate Re-Structuring Finance
MS254 - Commodities Market
MS255 - Strategic Cost Management

Electives – HR
MS256 - Performance and Compensation Management
MS257 - Strategic and International HRM
MS258 - HR Analytics and Metrics
MS259 - Organization Development and Change
MS260 - Leadership & People Management

Electives - Operations & Business Analytics
MS190 - Innovation and Product Development
MS261 - Competitive Manufacturing Management
MS262 - Predictive Analytics for Managers
MS263 - Enterprise Resource Planning
MS264 - Productivity Improvement and Cost Control

MBA COURSE STRUCTURE R-17

(Applicable for students admitted into First Year from academic year 2017-18 onwards)

I Year I Semester

Subject Code	Title of the Paper	External Marks	Internal Marks	Total Marks	Lecture	Credits
17MB101	Principles of Management and Organizational Behavior (PMOB)	50	50	100	4	4
17MB103	Business Economics (BE)	50	50	100	4	4
17MB105	Accounting for Managers (AFM)	50	50	100	4	4
17MB107	Business Statistics (BS)	50	50	100	4	4
17MB109	Business Laws (BL)	50	50	100	4	4
17MB111	Business Environment & Ethics (BEE)	50	50	100	4	4
17MB113	Managerial Communication- I (MC I)	50	50	100	4	4
17MB115	Essential Skills for Managers- I (ESM-1)	-	50	50	2	2
	Total			**750**	**30**	**30**

I Year II Semester

Subject Code	Title of the Paper	External Marks	Internal Marks	Total Marks	Lecture	Credits
17MB102	Marketing Management (MM)	50	50	100	4	4
17MB104	Financial Management (FM)	50	50	100	4	4
17MB106	Human Resource Management (HRM)	50	50	100	4	4
17MB108	Business Research Methods (BRM)	50	50	100	4	4
17MB110	IT for Managers (ITM)	50	50	100	4	4
17MB112	Operations Management (OM)	50	50	100	4	4
17MB114	Managerial Communication- II (MCII)	50	50	100	4	4
17MB116	Essential Skills for Managers II (ESM-II)	-	50	50	2	2
	Total			**750**	**30**	**30**

MBA
I YEAR

MBA
II YEAR

R-17 CURRICULUM
(Applicable for students admitted into First Year from academic year 2017-18 onwards)

II Year I Semester

Subject Code	Title of the Paper	External Marks	Internal Marks	Total Marks	Lecture	Credits
17MB201	Strategic Management (SM)	50	50	100	4	4
17MB203	Entrepreneurship & Business Plan (EBP)	50	50	100	4	4
	Specialization-I Elective-1	50	50	100	4	4
	Specialization-I Elective-2	50	50	100	4	4
	Specialization-II Elective-1	50	50	100	4	4
	Specialization-II Elective-2	50	50	100	4	4
17MB241	Analytical Skills for Managers I	-	50	50	2	2
17MB243	Summer Internship Assessment	25	25	50	-	2
	Total			**700**	**26**	**28**

II Year II Semester

Subject Code	Title of the Paper	External Marks	Internal Marks	Total Marks	Lecture	Credits
17MB202	International Business (IB)	50	50	100	4	4
17MB204	Project Management (PM)	50	50	100	4	4
	Specialization-I Elective-3	50	50	100	4	4
	Specialization-I Elective-4	50	50	100	4	4
	Specialization-II Elective-3	50	50	100	4	4
	Specialization-II Elective-4	50	50	100	4	4
17MB242	Analytical Skills for Managers II	-	50	50	2	2
17MB244	Project Work	-	50	50	-	2
	Total			**700**	**26**	**28**

R-17 CURRICULUM

(Applicable for students admitted into First Year from academic year 2017-18 onwards)

MBA
ELECTIVES

II Year I Semester Electives

Subject Code	Electives - Marketing
17MB205	Marketing Research
17MB207	Retailing Management
17MB209	Consumer Behavior
17MB211	Sales & Distribution Management

Subject Code	Electives - Finance
17MB213	Security Analysis and Portfolio Management
17MB215	International Financial Management
17MB217	Management of Financial Services
17MB219	Project Finance

Subject Code	Electives - HR
17MB221	Industrial Relations and Labour Laws
17MB223	Talent Planning and Acquisition
17MB225	Learning and Development
17MB227	Talent Management & Succession Planning
17MB229	Industrial and Organizational Psychology

Subject Code	Electives - Operations
17MB231	Service Management
17MB233	Supply Chain Management
17MB235	Essentials of Business analytics
17MB237	Technology Management
17MB239	Operations Strategy

MBA
ELECTIVES

R-17 CURRICULUM
(Applicable for students admitted into First Year from academic year 2017-18 onwards)

II Year II Semester Electives

Subject Code	Electives - Marketing
17MB206	Innovation and Product Development
17MB208	Advertising & Brand Management
17MB210	Services Marketing
17MB212	Digital Marketing

Subject Code	Electives - Finance
17MB214	Financial Derivatives
17MB216	Financial Engineering
17MB218	Risk Management
17MB220	Strategic Financial Management

Subject Code	Electives - HR
17MB222	Performance & Compensation Management
17MB224	Strategic and International HRM
17MB226	HR Analytics and Metrics
17MB228	Organization Development and Change
17MB230	Leadership & People Management

Subject Code	Electives - Operations
17MB232	Innovation and Product Development
17MB234	Competitive Manufacturing Management
17MB236	Predictive Analytics for Managers
17MB238	Enterprise Resource Planning
17MB240	Productivity Improvement and Cost Control

MBA
I YEAR

R-19 CURRICULUM
(Applicable for students admitted into First Year from academic year 2019-20 onwards)

I Year I Semester

Course Code	Course Title	L	T	P	C
19MB101	Principles of Management and Organizational Behavior (PMOB)	4	-	-	4
19MB103	Managerial Economics (ME)	4	-	-	4
19MB105	Accounting for Managers (AFM)	4	-	-	4
19MB107	Business Statistics and Analytics for Decision Making(BSAD)	4	-	-	4
19MB109	Legal Environment for Business(LEB)	4	-	-	4
19MB111	Business Environment & Ethics (BEE)	4	-	-	4
19MB113	Business Communication(BC) - Lab	-	-	4	2
19MB115	Essential Skills for Managers- I - Lab (ESM-I)	-	-	4	2
19MB117	Analytical Skills for Managers –I -Lab (ASM-I)	-	-	4	2
	Total	**24**	**-**	**12**	**30**

I Year II Semester

Course Code	Course Title	L	T	P	C
19MB102	Marketing Management (MM)	4	-	-	4
19MB104	Corporate Finance (CF)	4	-	-	4
19MB106	Human Resource Management (HRM)	4	-	-	4
19MB108	Business Research Methods (BRM)	4	-	-	4
19MB110	Operations Management (OM)	4	-	-	4
	Online Course	-	-	2	2
19MB112	IT Lab	-	-	4	2
19MB116	Essential Skills for Managers II - Lab (ESM-II)	-	-	4	2
19MB118	Analytical Skills for Managers II - Lab (ASM-II)	-	-	4	2
	Total	**22**	**-**	**14**	**28**

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

MBA
II YEAR

II Year I Semester

Course Code	Course Title	L	T	P	C
19MB201	Corporate Strategy (CS)	4	-	-	4
19MB203	Entrepreneurship & Business Plan (EBP)	4	-	-	4
	Specialization-I Elective-1 (Online course)	3	-	-	3
	Specialization-I Elective-2	4	-	-	4
	Specialization-II Elective-1	4	-	-	4
	Specialization-II Elective-2	4	-	-	4
19MB233	Summer Internship Assessment	-	-	4	4
19MB235	Management Thesis	-	-	4	2
	Total	**23**	**-**	**8**	**29**

II Year II Semester

Course Code	Course Title	L	T	P	C
19MB202	International Business (IB)	4	-	-	4
19MB204	Project Management (PM)	4	-	-	4
	Specialization-I Elective-3	4	-	-	4
	Specialization-I Elective-4	4	-	-	4
	Specialization-II Elective-3 (Online Course)	3	-	-	3
	Specialization-II Elective-4	4	-	-	4
	Total	**23**	**-**	**-**	**23**

L - Lecture   T - Tutorial   P - Practical   C - Credits

MBA
ELECTIVES

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

DEPARTMENT ELECTIVE COURSES

II Year I Semester Electives

Subject Code	Electives - Marketing
19MB205	Marketing Research
19MB207	Retailng Management
19MB209	Consumer Behavior
19MB211	Sales & Distribution Management

Subject Code	Electives - Finance
19MB213	Investment Analysis and Portfolio Management
19MB215	International Financial Management
19MB217	Management of Financial Services

Subject Code	Electives - HR
19MB219	Industrial Relations and Labour Laws
19MB221	Talent Planning and Acquisition
19MB223	Talent Management & Succession Planning
19MB225	Learning and Development

Subject Code	Electives - Operations & Analytics
19MB227	Service Management
19MB229	Supply Chain Management
19MB231	Introduction to Business Analytics

R-19 CURRICULUM

(Applicable for students admitted into First Year from academic year 2019-20 onwards)

MBA
ELECTIVES

DEPARTMENT ELECTIVE COURSES

II Year II Semester Electives

Subject Code	Electives - Marketing
19MB206	Integrated Marketing Communications
19MB208	Advertising & Brand Management
19MB210	Services Marketing
19MB212	Digital Marketing

Subject Code	Electives - Finance
19MB214	Financial Derivatives
19MB216	Financial Engineering
19MB218	Strategic Financial Management

Subject Code	Electives - HR
19MB220	Compensation & Reward System
19MB222	HR Analytics and Metrics
19MB224	Organization Development and Change

Subject Code	Electives - Operations & Analytics
19MB226	Innovation and Product Development
19MB228	Competitive Manufacturing Management
19MB230	Predictive Analytics for Managers

MBA
ELECTIVES

R-19 CURRICULUM
(Applicable for students admitted into First Year from academic year 2019-20 onwards)

ADDITIONAL ELECTIVES

Course Code	Course Title
19MB301	Project Finance
19MB302	Risk Management
19MB303	Strategic Cost Management and Decision Making
19MB304	Internatioanal Marketing
19MB305	Tourism Marketing
19MB306	Strategic Marketing
19MB307	Industrial and Organizational Psychology
19MB308	Strategic and International HRM
19MB309	Leadership & People Management
19MB310	Productivity Improvement and Cost Control
19MB311	Technology Management
19MB312	Operations Strategy

Master of Computer Applications Course Structure for 2015 admitted batch

I Year		I Semester			
Code	Subject	L	P	To	C
MC115	Computer Programming and Problem Solving	4	-	4	4
MC117	Internet and Web Technologies	4	-	4	4
MC119	Computer Organization	4	-	4	4
MC121	Discrete Mathematical Structures	4	-	4	4
MC123	Accounting and Financial Management	4	-	4	4
Labs					
MC125	Computer Programming and Problem Solving Lab	-	3	3	2
MC127	Internet and Web Technologies Lab	-	3	3	2
MC129	Communication Skills Lab-I	-	3	3	2
		20	9	29	26

I Year		II Semester			
Code	Subject	L	P	To	C
MC116	Data Structures	4	-	4	4
MC118	Database Management Systems	4	-	4	4
MC120	Software Engineering	4	-	4	4
MC122	Probability and Statistics	4	-	4	4
MC124	Computer Based Optimization Techniques	4	-	4	4
Labs					
MC126	Data Structures Lab	-	3	3	2
MC128	Database Management Systems Lab	-	3	3	2
MC130	Statistical Techniques Lab	-	3	3	2
		20	9	29	26

II Year		I Semester			
Code	Subject	L	P	To	C
MC217	Object Oriented Programming	4	-	4	4
MC219	Operating Systems	4	-	4	4
MC221	Computer Networks	4	-	4	4
MC223	Design and Analysis of Algorithms	4	-	4	4
MC225	Principles of Management and Organization Behavior	4	-	4	4
Labs					
MC227	Object Oriented Programming Lab	-	3	3	2
MC229	Operating Systems Lab	-	3	3	2
MC231	Communication Skills Lab-2	-	3	3	2
		20	9	29	26

II Year		II Semester			
Code	Subject	L	P	To	C
MC226	Object Oriented Analysis and Design	4	-	4	4
MC228	Data Warehousing and Data Mining	4	-	4	4
MC230	Formal Languages and Automata Theory	4	-	4	4
	Elective – I	4	-	4	4
MC232	Embedded Systems				
MC234	Human Computer Interaction				
MC236	Open System for Web Technologies				
	Elective – II	4	-	4	4
MC238	Enterprise Resource Planning				
MC240	Software Project Management				
MC242	E – Commerce				
MC244	Seminar	2		2	1
Labs					
MC246	Object Oriented Analysis and Design Lab	-	3	3	2
MC248	Open System for Web Technologies Lab	-	3	3	2
MC250	Mini Project – I	-	3	2	2
		22	9	31	27

III Year		I Semester			
Code	Subject	L	P	To	C
MC325	Middleware Technologies	4	-	4	4
MC327	Multimedia Systems	4	-	4	4
MC329	Cryptography and Network Security	4	-	4	4
	Elective – III	4	-	4	4
MC331	Big Data Analytics				
MC333	Distributed Systems				
MC335	Script Programming				
	Elective – IV	4	-	4	4
MC337	Cloud Computing				
MC339	Soft Computing				
MC341	Mobile Computing				
MC343	Seminar	2		2	1
Labs					
MC345	Middleware Technologies Lab	-	3	3	2
MC347	Multimedia Systems Lab	-	3	3	2
MC349	Mini Project – II	-	3	3	2
		22	9	31	27

III Year		I Semester			
Code	Subject	L	P	To	C
PR004	Project Work	-	-	-	24

L = Lecture; **P** = Practicals;   **To** = Total; **C**= Credits; **Int** = Internal Marks; **Ext.** = External Marks;

Master of Computer Applications Course Structure for 2015 admitted batch

I Year		I Semester			
Code	Subject	L	P	To	C
MC115	Computer Programming and Problem Solving	4	-	4	4
MC117	Internet and Web Technologies	4	-	4	4
MC119	Computer Organization	4	-	4	4
MC121	Discrete Mathematical Structures	4	-	4	4
MC123	Accounting and Financial Management	4	-	4	4
Labs					
MC125	Computer Programming and Problem Solving Lab	-	3	3	2
MC127	Internet and Web Technologies Lab	-	3	3	2
MC129	Communication Skills Lab-I	-	3	3	2
		20	9	29	26

I Year		II Semester			
Code	Subject	L	P	To	C
MC116	Data Structures	4	-	4	4
MC118	Database Management Systems	4	-	4	4
MC120	Software Engineering	4	-	4	4
MC122	Probability and Statistics	4	-	4	4
MC124	Computer Based Optimization Techniques	4	-	4	4
Labs					
MC126	Data Structures Lab	-	3	3	2
MC128	Database Management Systems Lab	-	3	3	2
MC130	Statistical Techniques Lab	-	3	3	2
		20	9	29	26

II Year		I Semester			
Code	Subject	L	P	To	C
MC217	Object Oriented Programming	4	-	4	4
MC219	Operating Systems	4	-	4	4
MC221	Computer Networks	4	-	4	4
MC223	Design and Analysis of Algorithms	4	-	4	4
MC225	Principles of Management and Organization Behavior	4	-	4	4
Labs					
MC227	Object Oriented Programming Lab	-	3	3	2
MC229	Operating Systems Lab	-	3	3	2
MC231	Communication Skills Lab-2	-	3	3	2
		20	9	29	26

II Year		II Semester			
Code	Subject	L	P	To	C
MC226	Object Oriented Analysis and Design	4	-	4	4
MC228	Data Warehousing and Data Mining	4	-	4	4
MC230	Formal Languages and Automata Theory	4	-	4	4
	Elective – I	4	-	4	4
MC232	Embedded Systems				
MC234	Human Computer Interaction				
MC236	Open System for Web Technologies				
	Elective – II	4	-	4	4
MC238	Enterprise Resource Planning				
MC240	Software Project Management				
MC242	E – Commerce				
MC244	Seminar	2		2	1
Labs					
MC246	Object Oriented Analysis and Design Lab	-	3	3	2
MC248	Open System for Web Technologies Lab	-	3	3	2
MC250	Mini Project – I	-	3	2	2
		22	9	31	27

III Year		I Semester			
Code	Subject	L	P	To	C
MC325	Middleware Technologies	4	-	4	4
MC327	Multimedia Systems	4	-	4	4
MC329	Cryptography and Network Security	4	-	4	4
	Elective – III	4	-	4	4
MC331	Big Data Analytics				
MC333	Distributed Systems				
MC335	Script Programming				
	Elective – IV	4	-	4	4
MC337	Cloud Computing				
MC339	Soft Computing				
MC341	Mobile Computing				
MC343	Seminar	2		2	1
Labs					
MC345	Middleware Technologies Lab	-	3	3	2
MC347	Multimedia Systems Lab	-	3	3	2
MC349	Mini Project – II	-	3	3	2
		22	9	31	27

III Year		I Semester			
Code	Subject	L	P	To	C
PR004	Project Work	-	-	-	24

L = Lecture; **P** = Practicals;   **To** = Total; **C**= Credits; **Int** = Internal Marks; **Ext.** = External Marks;

Master of Computer Applications (MCA)
R18 CURRICULUM

(Applicable for students admitted into First Year from Academic Year 2018-19 onwards)

I Year I Semester

Code	Course Title	L	T	P	C
18MC101	Computer Programming and Problem Solving	3	-	3	5
18MC103	Internet and Web Technologies	3	-	3	5
18MC105	Digital Computer Fundamentals	3	1	-	4
18MC107	Discrete Mathematical Structures	3	1	-	4
18MC109	Technical English Communication	3	-	3	5
18MC111	IT Workshop	-	-	3	2
	Total	15	2	11	25

I Year II Semester

Code	Course Title	L	T	P	C
18MC102	Data Structures	3	-	3	5
18MC104	Object Oriented Programming through Java	3	-	3	5
18MC106	Computer Organization	3	-	-	3
18MC108	Probability and Statistics	3	1	-	4
18MC110	Principles and Practices of Management	3	-	-	3
18MC120	Soft Skills Lab	-	-	3	2
	Total	15	1	9	22

L: Lecture Hours/Week; **T**: Tutorial Hours/Week;
P: Practical Hours/Week; **C**: Credits of the Course;

Master of Computer Applications (MCA)

R18 CURRICULUM

(Applicable for students admitted into First Year from Academic Year 2018-19 onwards)

II Year III Semester

Code	Course Title	L	T	P	C
18MC201	Programming through Python	3	-	3	5
18MC203	Database Management Systems	3	-	3	5
18MC205	Software Engineering	3	1	-	4
18MC207	Operating Systems	3	1	-	4
18MC209	Formal Languages and Automata Theory	3	-	-	3
18MC211	Linux Basics and Shell Programming Lab	-	-	3	2
18MC213	Seminar	-	-	1	1
	Total	15	2	10	24

II Year IV Semester

Code	Course Title	L	T	P	C
18MC202	Computer Networks	3	-	-	3
18MC204	Data Mining	3	-	3	5
18MC206	Web Scripting through PHP & MYSQL	3	-	3	5
18MC216	Mini Project – I	-	-	3	2
	Elective – I	3	-	-	3
18MC208	Mobile Application Development				
18MC210	Cloud Computing				
	Elective – II	3	-	-	3
18MC212	Statistical Programming in R				
18MC214	Embedded Systems				
	Total	15	-	9	21

L: Lecture Hours/Week; **T**: Tutorial Hours/Week;
P: Practical Hours/Week; **C**: Credits of the Course;

Master of Computer Applications (MCA)

R18 CURRICULUM

(Applicable for students admitted into First Year from Academic Year 2018-19 onwards)

III Year V Semester

Code	Course Title	L	T	P	C
18MC301	Big Data Analytics	3	-	-	3
18MC303	Cryptography and Network Security	3	-	3	5
18MC305	Multimedia Systems	3	-	3	5
18MC315	Mini Project -II	-	-	3	2
	Elective – III	3	-	-	3
18MC307	Advanced Mobile Application development				
18MC309	Software Project Management				
	Elective – IV	3	-	-	3
18MC311	Network Programming				
18MC313	Internet of Things				
	Total	15	-	9	21

III Year VI Semester

Code	Course Title	L	T	P	C
18MC302	Internship/Project Work	-	-	-	15
	Total	-	-	-	15

*MOOC Courses / Life Skills / CRT (Total 2 credits)

A student has to complete two courses from MOOC platform in the programme duration. One credit will be given for each course.

L: Lecture Hours/Week; **T**: Tutorial Hours/Week;
P: Practical Hours/Week; **C**: Credits of the Course;

I B.Tech. CURRICULUM
SEMESTER - I

Code	Subject	L	T	P	To	C
HS112	Mathematics for Biotechnologist-I	4	-	-	4	4
HS113	Engineering Physics	4	-	-	4	4
ME101	Engineering Mechanics	4	-	-	4	4
HS114	Technical English Communication	5	-	-	5	5
CS101	Problem Solving&Computer Programming	5	-	-	5	5
CS105	Network Security	2	-	-	2	-
	Practical Course :					
CS107	Computer Programming Lab	-	-	3	3	2
ME105	Workshop Practice	-	-	3	3	2
HS120	Engineering Physics Lab	-	-	3	3	2
TOTAL		**24**	**-**	**9**	**33**	**28**

SEMESTER - II

Code	Subject	L	T	P	To	C
HS116	Mathematics for Biotechnologists-II	4	-	-	4	4
HS118	Environmental Studies	3	-	-	3	3
EE111	Fundamental of Electrical Engineering	4	-	-	4	4
HS117	Engineering Chemistry	4	-	-	4	4
BT101	Elements of Biology & Biotechnology	4	-	-	4	4
HS119	Professional Ehics Values & Human Rights	2		-	-	2
	Practical Course :					
HS121	Engineering Chemistry Lab	-	-	3	3	2
ME103	Engineering Graphics	1	-	3	4	3
EE113	Fundamental of Electrical Engg. Lab	-	-	3	3	2
TOTAL		**22**	**-**	**9**	**31**	**26**

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

II B.Tech. CURRICULUM
SEMESTER - I

Code	Subject	L	T	P	To	C
BT215	Microbiology	4	-	-	4	4
BT217	Biochemistry	4	-	-	4	4
BT219	Cell Biology	4	-	-	4	4
BT221	Process Engineering Principles	4	-	-	4	4
HS213	Probability & Statistics	4	-	-	4	4
SR002	Seminar	-	-	1	1	1
	Minor - I	4	-	-	4	4
	Practical Course :					
BT209	Microbiology Lab	-	-	3	3	2
BT211	Biochemistry Lab	-	-	3	3	2
HS217	Soft Skills Laboratory	-	-	3	3	2
TOTAL		**24**	**-**	**10**	**34**	**31**

SEMESTER - II

Code	Subject	L	T	P	To	C
CS218	Data Structures	4	-	-	4	4
BT214	Genetics	4	-	-	4	4
BT216	Industrial Biotechnology	4	-	-	4	4
BT218	Heat & Mass Transfer	4	-	-	4	4
BT220	Instrumental Methods of Analysis	4	-	-	4	4
SR003	Seminar		-	1	1	1
	Minor - II	4	-	-	4	4
	Practical Course :					
BT222	Instrumental Methods of Analysis Lab	-	-	3	3	2
BT224	Heat Mass & Momentoem Transfer Lab	-	-	3	3	2
HS304	Professional Communication Laboratory	1	-	2	3	2
TOTAL		**25**	**-**	**9**	**34**	**31**

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

III B.Tech. CURRICULUM
SEMESTER - I

Code	Subject	L	T	P	To	C
BT301	Molecular Biology	4	-	-	4	4
BT303	Biochemical Reaction Engineering	4	-	-	4	4
BT305	Genetic Engineering	4	-	-	4	4
MS310	Managerial Economics	4	-	-	4	4
BT307	Plantl Biotechnology **(Elective-I)**	4	-	-	4	4
BT309	Plant Metabolism **(Elective-I)**					
BT311	Plant Physiology **(Elective-I)**					
	Minor - I II	4	-	-	4	4
SR004	Seminar		-	1	1	1
	Practical Course :					
BT313	Biochemical Reaction Engineering Lab	-	-	3	3	2
BT329	Cell & Tissue Culture Lab	-	-	3	3	2
BT331	Biological Database Lab	-	-	3	3	2
TOTAL		**24**	**-**	**10**	**34**	**31**

SEMESTER - II

Code	Subject	L	T	P	To	C
BT304	Thermodynamics for Biotechnologists	4	-	-	4	4
BT306	Bioprocess Engineering	4	-	-	4	4
BT308	Enzyme Technology	4	-	-	4	4
BT310	Bioethics, Safety & IPR	4	-	-	4	4
BT302	Animal Biotechnology **(Elective-II)**	4	-	-	4	4
BT312	Stem Cell Biology **(Elective-II)**	-	-	-	-	-
BT330	Animal Cell Science Technology **(Elective-II)**	-	-	-	-	-
	Minor - IV	4	-	-	4	4
SR005	Seminar		-	1	1	1
	Practical Course :					
BT332	Molecular Biology & Genetic Engg. Lab	-	-	3	3	2
BT334	Bioprocess Engineering Lab	-	-	3	3	2
BT336	Mini Project		3	3	2	2
TOTAL		**24**	**3**	**10**	**33**	**31**

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

IV B.Tech. CURRICULUM
SEMESTER - I

Code	Subject	L	T	P	To	C
BT401	Bioinformatics	4	-	-	4	4
BT403	Immunology	4	-	-	4	4
BT405	Down Stream Processing	4	-	-	4	4
	Elective - III	**4**	**-**	**-**	**4**	**4**
BT407	Biophysics					
BT409	Biosensors & Bioelectronics					
BT411	Nano Biotechnology					
BT413	Environmental Biotechnology					
	Elective - IV	4	-	-	4	4
BT415	Biopharmaceutical Technology					
BT417	Cancer Biology					
BT419	Fermentation Technology					
	Minor - V	4	-	-	4	4
	Practical Course :					
BT421	Immunology Lab	-	-	3	3	2
BT423	Down Stream Processing Lab	-	-	3	3	2
BT425	Bioinformatics Lab	-	-	3	3	2
TOTAL		**24**	**-**	**9**	**33**	**30**

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

SEMESTER - II

Code	Subject	L	T	P	To	C
	Minor - V	4	-	-	4	4
	Elective - V	4	-	-	4	4
BI402	Eco Informatics & Predictive Ecology					
BI404	Computational Epigenetics					
BI406	Metabolic Engineering					
	Elective - VI	4	-	-	4	4
BI408	Molecular Forensics					
BI410	Comparative Genomics					
BT409	Biosensors and Bioelectronics					
BI412	Project work	-	-	20	20	10
TOTAL		12	-	20	32	22

The students opting for semester-long industrial internship during 8th semester, carry out Minor – V in 7th semester itself as additional course. 18 credits are allotted to internship as given below:

SEMESTER - II

Code	Subject	L	T	P	To	C
BI414	Internship (6 months)	-	-	36	36	18
TOTAL		-	-	36	36	18

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

VFSTR UNIVERSITY

B.Tech. MINOR SPECIALIZATIONS

A. MANAGEMENT

Code	Subject	L	T	P	To	C
MS203	Principles of Management And Organizational Behavior	4	-	-	4	4
MS212	Business Environment And Ethics	4	-	-	4	4
MS303	Marketing and HR Management	4	-	-	4	4
MS310	Entrepreneurship and Project Management	4	-	-	4	4
MS409	Production and operations Management	4	-	-	4	4

B. HUMANITIES & SCIENCES

Code	Subject	L	T	P	To	C
HS219	Indian History and Culture	4	-	-	4	4
HS224	Polity and Governance of India	4	-	-	4	4
HS307	Economic and Social Development of india	4	-	-	4	4
HS308	Basic Numeracy, Mental Ability and Logical Reasoning	4	-	-	4	4
HS403	Geography and Environmental Concerns of India	4	-	-	4	4

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

VFSTR UNIVERSITY

B.Tech. MINOR SPECIALIZATIONS

C. INFORMATION TECHNOLOGY (IT)

Code	Subject	L	T	P	To	C
CS223	Object Oriented Programming Through Java	4	-	-	4	4
IT201	Internet and Web Technologies	4	-	-	4	4
CS315	Operating Systems	4	-	-	4	4
IT311	Unix and Shell Programming	4	-	-	4	4
CS222	Data Base Systems	4	-	-	4	4
CS434	Multimedia Systems	4	-	-	4	4
CS225	Software Engineering	4	-	-	4	4
CS425	Datawarehousing & Datamining	4	-	-	4	4
CS435	Software Testing Methodologies	4	-	-	4	4
CS322	Object Oriented Analysis & Design	4	-	-	4	4

D. ELECTRONICS & COMMUNICATION ENGINEERING (ECE)

Code	Subject	L	T	P	To	C
EC223	Electronic Devices	4	-	-	4	4
EC250	Electronic Circuits	4	-	-	4	4
EC228	Digital Electronics	4	-	-	4	4
EC333	Communication Systems – I	4	-	-	4	4
EC335	Liner IC Applications	4	-	-	4	4
EC336	Microprocessors and Interfacing	4	-	-	4	4
EC338	Communication System – II	4	-	-	4	4
E C461	Sensors and Transducers	4	-	-	4	4

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

VFSTR UNIVERSITY

I B.Tech. CHEMICAL ENGINEERING CURRICULUM
SEMESTER - I

Code	Subject	L	T	P	To	C
HS111	Engineering Mathematics - I	4	-	-	4	4
HS122	Engineering Materials	4	-	-	4	4
EE111	Fundamentals of Electrical Engineering	4	-	-	4	4
HS117	Engineering Chemistry	4	-	-	4	4
HS118	Environmantal Studies	3	-	-	3	3
HS119	Profissional Ethics, Values and Human Rights	2	-	-	2	-
	Practicals:					
EE113	Fundamentals of Electrical Engineering Lab	-	-	3	3	2
HS121	Engineering Chemistry Lab	-	-	3	3	2
ME103	Engineering Graphics Lab	1	-	3	4	3
	TOTAL	22	-	9	31	26

SEMESTER - II

Code	Subject	L	T	P	To	C
HS115	Engineering Mathematics - II	4	-	-	4	4
HS113	Engineering Physics	4	-	-	4	4
ME101	Engineering Mechanics	4	-	-	4	4
HS114	Technical English Communication	3	-	-	2	5
CS101	Problem Solving and Computer Programming	5	-	-	5	5
CS105	Network Security	2	-	-	2	-
	Practicals:					
CS107	Computer Programming Lab	-	-	3	3	2
ME105	Workshop Practice	-	-	3	3	2
HS120	Engineering Physics Lab	-	-	3	3	2
	TOTAL	22	0	9	30	28

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

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VFSTR UNIVERSITY

II B.Tech. CHEMICAL ENGINEERING CURRICULUM
SEMESTER - I

Code	Subject	L	T	P	To	C
HS213	Probability and Statistics	4	0	-	4	4
HS223	Phsical & Analytical Chemistry	4	0	-	4	4
CH215	Momentum Transfer	4	0	-	4	4
CH217	Chemical Process Calculations	4	0	-	4	4
HS221	Organic Chemistry	4	0	-	4	4
	Minor-I	4	0	-	4	4
SR002	Seminar	-	-	1	1	1
	Practicals:					
HS205	Physical & Analytical Chemistry Lab	-	-	3	3	2
CH205	Momentum Transfer Lab	-	-	3	3	2
HS217	Soft Skills Lab	-	-	3	3	2
	TOTAL	24	0	10	34	31

SEMESTER - II

Code	Subject	L	T	P	To	C
CS218	Data Structures	4	0	-	4	4
CH216	Process Instrumentation	4	0	-	4	4
CH218	Chemical Engineering Thermodynamics-I	4	0	-	4	4
CH220	Mechanical Unit Operations	4	0	-	4	4
CH222	Chemical Technology	4	0	-	4	4
	Minor- II	4	0	-	4	4
SR003	Seminar	-	-	1	1	1
	Practicals:					
CH224	Mechanical Unito Operations Lab	-	-	3	3	2
CH226	Chemical Analysis Lab	-	-	3	3	2
HS304	Professional Communication Lab	-	-	3	3	2
	TOTAL	24	0	10	34	31

VFSTR UNIVERSITY

III B.Tech. CHEMICAL ENGINEERING CURRICULUM
SEMESTER - I

Code	Subject	L	T	P	To	C
CH301	Process Heat Transfer	4	0	-	4	4
CH303	Mass Transfer Operations-I	4	0	-	4	4
CH305	Chemical Reaction Engineering-I	4	0	-	4	4
CH325	Process Dynamics & Control	4	0	-	4	4
	Dept. Elective - I	4	0	-	4	4
CH327	Energy Engineering					
CH329	Industrial Safety & Hazard Management					
CH331	Design of Analysis & Experiments					
	Minor - III	4	0	-	4	4
SR004	Seminar	-	-	1	1	1
	Practicals:					
CH333	Proces Heat Transfer Lab	-	-	3	3	2
CH335	Chemical Technology Lab	-	-	3	3	2
CH337	Process Dynamics & Control Lab	-	-	3	3	2
	Total	24	0	10	34	31

SEMESTER - II

Code	Subject	L	T	P	To	C
MS310	Managerial Economics	4	0	-	4	4
CH302	Mass Transfer Operations-II	4	0	-	4	4
CH304	Chemical Reaction Engineering-II	4	0	-	4	4
CH306	Chemical Engineering Thermodynamics-II	4	0	-	4	4
	Dept. Elective - II	4	0	-	4	4
CH308	Membrane Technology					
CH310	Mathematical Methods for Chemical Engineering					
CH312	Biochemical Engineering					
	Minor - IV	4	0	-	4	4
SR005	Seminar	-	-	1	1	1
	Practicals:					
CH314	Chemical Reaction Engineering Lab	-	-	3	3	2
CH334	Mass Transfer Operations Lab	-	-	3	3	2
CH336	Mini Project	-	-	3	3	2
	Total	24	0	10	34	31

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

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VFSTR UNIVERSITY

IV B.Tech. CHEMICAL ENGINEERING CURRICULUM
SEMESTER - I

Code	Subject	L	T	P	To	C
CH401	Chemical Engg. Plant Design & Equipment	4	0	-	4	4
CH403	Chemical Process Equipment Design	4	0	-	4	4
CH405	Process Modeling & Simulation	4	0	-	4	4
CH407	Industrial Pollution Control Engineering	4	0	-	4	4
	Dept. Elective - III	4	0	-	4	4
CH409	Transport Phenomena					
CH411	Petrochemical Engineering					
CH413	Process Intensification					
	Dept. Elective - IV	4	0	-	4	4
CH415	Optimization of Chemical Processes					
CH417	Polymer Technology					
CH419	Colloidal & Interfacial Science					
	Practicals:					
CH421	Chemical Process Equipment Design Lab	-	-	3	3	2
CH423	Chemical Process Simulation Lab	-	-	3	3	2
CH449	Industrial Pollution Control Engineering Lab	-	-	3	3	2
	Total	24	0	9	33	30

SEMESTER - II

Code	Subject	L	T	P	To	C
	Minor-V	4	0	-	4	4
	Dept. Elective - V	4	0	-	4	4
CH402	Technology of Pharmaceutical and Fine Chemicals					
CH404	Mineral Process Engineering					
CH406	Food Processing Technology					
	Dept. Elective - VI	4	0	-	4	4
CH408	Nano Technology					
CH410	Computer Applications in Chemical Engineering					
CH412	Fluidization Engineering					
TT426	Project Work	-	-	20	20	10
	Total	12	0	20	32	22

The students opting for semester-long industrial internship during 8th semester, carry out Minor – V in 7th semester itself as additional course. 18 credits are allotted to internship as given below:

Code	Subject	L	T	P	To	C
CH416	Internship (6 months)	-	-	36	36	18
	TOTAL	0	0	36	36	18

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

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VFSTR UNIVERSITY

B.Tech. MINOR SPECIALIZATIONS

A. MANAGEMENT

Code	Subject	L	T	P	To	C
MS203	Principles of Management And Organizational Behavior	4	-	-	4	4
MS212	Business Environment And Ethics	4	-	-	4	4
MS303	Marketing and HR Management	4	-	-	4	4
MS310	Entrepreneurship and Project Management	4	-	-	4	4
MS409	Production and operations Management	4	-	-	4	4

B. HUMANITIES & SCIENCES

Code	Subject	L	T	P	To	C
HS219	Indian History and Culture	4	-	-	4	4
HS224	Polity and Governance of India	4	-	-	4	4
HS307	Economic and Social Development of india	4	-	-	4	4
HS308	Basic Numeracy, Mental Ability and Logical Reasoning	4	-	-	4	4
HS403	Geography and Environmental Concerns of Indian Basics	4	-	-	4	4

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

C. INFORMATION TECHNOLOGY (IT)

Code	Subject	L	T	P	To	C
CS223	Object Oriented Programming Through Java	4	-	-	4	4
IT201	Internet and Web Technologies	4	-	-	4	4
CS315	Operating Systems	4	-	-	4	4
IT311	Unix and Shell Programming	4	-	-	4	4
CS222	Data Base Systems	4	-	-	4	4
CS434	Multimedia Systems	4	-	-	4	4
CS225	Software Engineering	4	-	-	4	4
CS425	Datawarehousing & Datamining	4	-	-	4	4
CS435	Software Testing Methodologies	4	-	-	4	4
CS322	Object Oriented Analysis & Design	4	-	-	4	4

VFSTR UNIVERSITY

B.Tech. MINOR SPECIALIZATIONS

C. INFORMATION TECHNOLOGY (IT)

Code	Subject	L	T	P	To	C
CS223	Object Oriented Programming Through Java	4	-	-	4	4
IT201	Internet and Web Technologies	4	-	-	4	4
CS315	Operating Systems	4	-	-	4	4
IT311	Unix and Shell Programming	4	-	-	4	4
CS222	Data Base Systems	4	-	-	4	4
CS434	Multimedia Systems	4	-	-	4	4
CS225	Software Engineering	4	-	-	4	4
CS425	Datawarehousing & Datamining	4	-	-	4	4
CS435	Software Testing Methodologies	4	-	-	4	4
CS322	Object Oriented Analysis & Design	4	-	-	4	4

D. ELECTRONICS & COMMUNICATION ENGINEERING (ECE)

Code	Subject	L	T	P	To	C
EC223	Electronic Devices	4	-	-	4	4
EC250	Electronic Circuits	4	-	-	4	4
EC228	Digital Electronics	4	-	-	4	4
EC333	Communication Systems – I	4	-	-	4	4
EC335	Liner IC Applications	4	-	-	4	4
EC336	Microprocessors and Interfacing	4	-	-	4	4
EC338	Communication System – II	4	-	-	4	4
E C461	Sensors and Transducers	4	-	-	4	4

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

I B.Tech. CE COURSE STRUCTURE
SEMESTER - I

Code	Subject	L	T	P	To	C
HS111	Engineering Mathematics I	4	-	-	4	4
HS113	Engineering Physics	4	-	-	4	4
ME101	Engineering Mechanics	4	-	-	4	4
HS114	Technical English Communication	3	2	-	5	5
CS101	Problem Solving and Computer Programming	5	-	-	5	5
CS105	Network Security	2	-	-	2	-
	Practicals:					
HS120	Engineering Physics Lab	-	-	3	3	2
CS107	Computer Programming Lab	-	-	3	3	2
ME105	Workshop Practice	-	-	3	3	2
	TOTAL	22	2	9	33	28

SEMESTER - II

Code	Subject	L	T	P	To	C
HS115	Engineering Mathematics-II	4	-	-	4	4
HS118	Environmantal Studies	3	-	-	3	3
EE111	Fundamentals of Electrical Engineering	4	-	-	4	4
HS117	Engineering Chemistry	4	-	-	4	4
CS103	Data Structures	4	-	-	4	4
HS119	Profissional Ethics, Values and Human Rights	2	-	-	2	-
	Practicals:					
CS108	Data Structures Lab	-	-	3	3	2
ME103	Engineering Graphics	1	-	3	4	3
EE113	Fundamentals of Electrical Engineering Lab	-	-	3	3	2
	TOTAL	22	0	9	31	26

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

VFSTR UNIVERSITY

II B.Tech CE COURSE STRUCTURE
SEMESTER - I

Code	Subject	L	T	P	To	C
HS213	Probability & Statistics	3	1	-	4	4
CE217	Surveying - I	3	1	-	4	4
CE219	Solid Mechanics	3	1	-	4	4
CE221	Fluid Mechanics	3	1	-	4	4
CE223	Building Materials and Concrete Technology	3	1	-	4	4
	Minor - I	**3**	**1**	**-**	**4**	**4**
SR002	Seminar	-	1	-	1	1
	Labs:					
CE209	Material Testing Lab	-	-	3	3	2
CE211	Surveying Field Work - I	-	-	3	3	2
HS217	Soft Skills Lab	-	-	3	3	2
	TOTAL	**18**	**7**	**9**	**34**	**31**

SEMESTER - II

Code	Subject	L	T	P	To	C
CS218	Data Structures	3	1	-	4	4
CE218	Structural Analysis - I	3	1	-	4	4
CE220	Building Construction and Planning	3	1	-	4	4
CE222	Hydraulics and Hydraulic Machines	3	1	-	4	4
CE224	Surveying - II	3	1	-	4	4
	Minor - II	**3**	**1**	**-**	**4**	**4**
SR003	Seminar	-	1	-	1	1
	Labs:					
CE226	Surveying Field Work - II	-	-	3	3	2
CE228	Fluid Mechanics & Hydraulic Machinery Lab	-	-	3	3	2
HS304	Professional Communication Lab	-	-	3	3	2
	TOTAL	**18**	**7**	**9**	**34**	**31**

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

VFSTR UNIVERSITY

III B.Tech CE COURSE STRUCTURE
SEMESTER - I

Code	Subject	L	T	P	To	C
CE317	Design of Reinforced Concrete Structures	3	1	-	4	4
CE319	Structural Analysis - II	3	1	-	4	4
CE321	Geotechnical Engineering - I	3	1	-	4	4
CE323	Environmental Engineering - I	3	1	-	4	4
	Department Elective - I	3	1	-	4	4
	Minor - III	**3**	**1**	**-**	**4**	**4**
SR004	Seminar	-	-	1	1	1
	Practicals:					
CE331	Geotechnical Engineering Lab	-	-	3	3	2
CE333	Computer Applications in Civil Engg.	-	-	3	3	2
CE335	Building Drawing using AUTOCAD	-	-	3	3	2
	TOTAL	18	6	10	34	31

SEMESTER - II

Code	Subject	L	T	P	To	C
CE320	Design of Steel Structures	3	1	-	4	4
CE322	Structural Analysis - III	3	1	-	4	4
CE324	Geotechnical Engineering - II	3	1	-	4	4
CE326	Environmental Engineering - II	3	1	-	4	4
	Department Elective - II	3	1	-	4	4
	Minor- IV	**3**	**1**	**-**	**4**	**4**
SR005	Seminar	-	-	1	1	1
	Practicals:					
CE334	Computer Aided Analysis & Design of Structures Lab			3	3	2
CE336	Environmental Engineering Lab	-	-	3	3	2
CE338	Mini Project	-	-	3	3	2
	TOTAL	18	6	10	34	31

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

IV B.Tech. CE COURSE STRUCTURE
SEMESTER - I

Code	Subject	L	T	P	To	C
CE425	Estimating & Construction Planning	3	1	-	4	4
CE427	Transportation Engineering	3	1	-	4	4
CE429	Engineering Gelogy	3	1	-	4	4
	Department Elective - III	3	1	-	4	4
	Department Elective - IV	3	1	-	4	4
	Managerial Economics	3	1	-	4	4
	Practicals:					
CE443	Engineering Geology Lab	-	-	3	3	2
CE445	Quantity Estimation & Project Mgnt. Lab	-	-	3	3	2
CE447	Transportation Engineering Lab	-	-	3	3	2
	Total	18	6	9	33	30

SEMESTER - II

Code	Subject	L	T	P	To	C
	Minor- V	**3**	**1**	**-**	**4**	**4**
	Department Elective - V	3	1	-	4	4
	Department Elective - VI	3	1	-	4	4
	Practicals:					
CE428	Project Work	-	-	20	20	10
	TOTAL	**9**	**3**	**20**	**32**	**22**

Code	Subject	L	T	P	To	C
CE430	Internship (6 months)	**--**	**--**	**36**	**36**	**18**

The students opting for semester- long industrial internship during eighth semester, carry out Minor – V in seventh semester itself as additional course. 18 credits are allotted to internship as given below:

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

VFSTR UNIVERSITY

DEPARTMENT ELECTIVES

Code	Subject
	Elective I
CE325	Water Resources Engineering - I
CE327	Operation Research
CE329	Construction methods & Equipments
	Elective II
CE328	Water Resources Engineering - II
CE330	Advanced Design of Reinforced Concrete structures.
CE332	Prestressed Concrete
	Elective III
CE431	Finite element methods in Civil Engg.
CE433	Ground Water Development & Management
CE435	Remote Sensing & GIS
	Elective IV
CE437	Air Pollution & Control
CE439	GroundImprovement Techniques
CE441	Railway & Airport Engineering
	Elective V
CE416	Design & Drawing of Hydraulic Structures
CH418	Earthquake Resistant Design of Structures
CH420	Traffic Engineering
	Elective VI
CE422	Environmental impact Assessment
CE424	Bridge Engineering
CE426	Repairs & Rehabilitation of Structures

VFSTR UNIVERSITY

B.Tech MINOR SPECIALIZATIONS

A. MANAGEMENT

Code	Subject	L	T	P	To	C
MS203	Principles of Management And Organizational Behavior	4	-	-	4	4
MS212	Business Environment And Ethics	4	-	-	4	4
MS303	Marketing and HR Management	4	-	-	4	4
MS310	Entrepreneurship and Project Management	4	-	-	4	4
MS409	Production and operations Management	4	-	-	4	4

B. HUMANITIES & SCIENCES

Code	Subject	L	T	P	To	C
HS219	Indian History and Culture	4	-	-	4	4
HS224	Polity and Governance of India	4	-	-	4	4
HS307	Economic and Social Development of india	4	-	-	4	4
HS308	Basic Numeracy, Mental Ability and Logical Reasoning	4	-	-	4	4
HS403	Geography and Environmental Concerns of India	4	-	-	4	4

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

VFSTR UNIVERSITY

B.Tech MINOR SPECIALIZATIONS

C. INFORMATION TECHNOLOGY (IT)

Code	Subject	L	T	P	To	C
CS223	Object Oriented Programming Through Java	4	-	-	4	4
IT201	Internet and Web Technologies	4	-	-	4	4
CS315	Operating Systems	4	-	-	4	4
IT311	Unix and Shell Programming	4	-	-	4	4
CS222	Data Base Systems	4	-	-	4	4
CS434	Multimedia Systems	4	-	-	4	4
CS225	Software Engineering	4	-	-	4	4
CS425	Datawarehousing & Datamining	4	-	-	4	4
CS435	Software Testing Methodologies	4	-	-	4	4
CS322	Object Oriented Analysis & Design	4	-	-	4	4

D. ELECTRONICS & COMMUNICATION ENGINEERING (ECE)

Code	Subject	L	T	P	To	C
EC223	Electronic Devices	4	-	-	4	4
EC250	Electronic Circuits	4	-	-	4	4
EC228	Digital Electronics	4	-	-	4	4
EC333	Communication Systems – I	4	-	-	4	4
EC335	Liner IC Applications	4	-	-	4	4
EC336	Microprocessors and Interfacing	4	-	-	4	4
EC338	Communication System – II	4	-	-	4	4
E C461	Sensors and Transducers	4	-	-	4	4

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

VFSTR UNIVERSITY
I B.Tech. CSE COURSE STRUCTURE
SEMESTER - I

Code	Subject	L	T	P	To	C
HS111	Engineering Mathematics I	4	-	-	4	4
HS113	Engineering Physics	4	-	-	4	4
ME101	Engineering Mechanics	4	-	-	4	4
HS114	Technical English Communication	3	2	-	5	5
CS101	Problem Solving and Computer Programming	5	-	-	5	5
CS105	Network Security	2	-	-	2	-
	Practicals:					
HS120	Engineering Physics Lab	-	-	3	3	2
CS107	Computer Programming Lab	-	-	3	3	2
ME105	Workshop Practice	-	-	3	3	2
	TOTAL	**22**	**2**	**9**	**33**	**28**

SEMESTER - II

Code	Subject	L	T	P	To	C
HS115	Engineering Mathematics-II	4	-	-	4	4
HS118	Environmantal Studies	3	-	-	3	3
EE111	Fundamentals of Electrical Engineering	4	-	-	4	4
HS117	Engineering Chemistry	4	-	-	4	4
CS103	Data Structures	4	-	-	4	4
HS119	Profissional Ethics, Values and Human Rights	2	-	-	2	-
	Practicals:					
CS108	Data Structures Lab	-	-	3	3	2
ME103	Engineering Graphics Lab	1	-	3	4	3
EE113	Fundamentals of Electrical Engineering Lab	-	-	3	3	2
	TOTAL	**22**	**0**	**9**	**31**	**26**

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

VFSTR UNIVERSITY

II B.Tech. CSE COURSE STRUCTURE
SEMESTER - I

Code	Subject	L	T	P	To	C
CS217	Discrete Mathematical Structures	4	-	-	4	4
CS219	Digital Logic Design	4	-	-	4	4
CS221	Advanced Data Structures	4	-	-	4	4
CS223	Object Oriented Programming Through Java	4	-	-	4	4
CS225	Software Engineering	4	-	-	4	4
	Minor - I	**4**	**-**	**-**	**4**	**4**
SR002	Seminar	-	-	1	1	1
	Practicals:					
CS227	Advanced Data Structures Lab.	-	-	3	3	2
CS229	Object Oriented programming Through Java Lab	-	-	3	3	2
HS217	Soft Skills Lab	-	-	3	3	2
	TOTAL	**24**	**1**	**9**	**34**	**31**

SEMESTER - II

Code	Subject	L	T	P	To	C
HS213	Probability & Statistics	4	-	-	4	4
CS220	Computer Organization	4	-	-	4	4
CS222	Database Systems	4	-	-	4	4
CS224	Formal Languages and Automata Theory	4	-	-	4	4
CS226	Design and Analysis of Algorithms	4	-	-	4	4
	Minor- II	**4**	**-**	**-**	**4**	**4**
SR003	Seminar	-	-	1	1	1
	Practicals:					
CS228	Database Systems Lab	-	-	3	3	2
CS230	Design and Analysis of Algorithms Lab	-	-	3	3	2
HS304	Professional Communication Lab	-	-	3	3	2
	TOTAL	**24**	**1**	**9**	**34**	**31**

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

VFSTR UNIVERSITY

III B.Tech. CSE COURSE STRUCTURE

SEMESTER - I

Code	Subject	L	T	P	To	C
CS234	Web Technologies	4	-	-	4	4
CS313	Computer Networks	4	-	-	4	4
CS315	Operating Systems	4	-	-	4	4
CS317	Compiler Design	4	-	-	4	4
	Elective - I	4	-	-	4	4
CS319	Open Systems for Web Technologies					
CS321	Computer Graphics					
CS323	Performance Evaluation of Computer Systems					
CS325	Operations Research					
	Minor - III	4	-	-	4	4
SR004	Seminar	-	-	1	1	1
	Practicals:					
CS236	Web Technologies Lab	-	-	3	3	2
CS329	Computer Networks Lab	-	-	3	3	2
CS331	Operating Systems Lab	-	-	3	3	2
	Total	24	01	09	34	31

SEMESTER - II

Code	Subject	L	T	P	To	C
CS322	Object Oriented Analysis & Design	4	-	-	4	4
CS324	Middleware Technologies	4	-	-	4	4
CS326	Microprocessors and Interfacing	4	-	-	4	4
CS328	Mobile Computing	4	-	-	4	4
	Elective II	4	-	-	4	4
CS330	Network Programming					
CS332	Artificial Intelligence					
CS334	Principles of Programming Languages					
CS336	Simulation and Modelling					
	Minor - IV	4	-	-	4	4
SR005	Seminar	-	-	1	1	1
	Practicals:					
CS338	Object Oriented Analysis & Design through UML Lab	-	-	3	3	2
CS340	Mobile Computing Lab	-	-	3	3	2
CS342	Mini Project	-	-	3	3	2
	Total	24	01	09	34	31

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

VFSTR UNIVERSITY

IV B.Tech. CSE COURSE STRUCTURE
SEMESTER - I

Code	Subject	L	T	P	To	C
CS425	Data Warehousing and Data mining	4	-	-	4	4
CS427	Cryptography and Network Security	4	-	-	4	4
CS429	Distributed Component Object Technologies (J2EE/.NET)	4	-	-	4	4
	Elective III	4	-	-	4	4
CS431	Cloud Computing					
CS433	Embedded Systems					
CS435	Software Testing Methodologies					
CS437	Fundamentals of Image Processing					
	Elective - IV	4	-	-	4	4
CS439	Software Project Management					
CS441	Business Intelligence					
CS443	Big Data Analytics					
CS445	Internet of Things					
MS310	Managerial Economics	4	-	-	4	4
	Labs					
CS447	Data Warehousing and Data mining Lab	-	-	3	3	2
CS449	Cryptography and Network Security Lab	-	-	3	3	2
CS451	J2EE Lab	-	-	3	3	2
	Total	24		09	33	30

The students opting for semester-long industrial internship during 8th semester, carry out Minor – V in 7th semester itself as additional course. 18 credits are allotted to internship as given below:

SEMESTER - II

Code	Subject	L	T	P	To	C
CS438	Internship					18
	Total					18

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

SEMESTER - II

Code	Subject	L	T	P	To	C
	Minor V	4	-	-	4	4
	Elective V	4	-	-	4	4
CS420	Mobile Ad-hoc Networks					
CS422	E-Commerce					
CS424	Pattern Recognition					
CS426	Human Computer Interaction					
	Elective VI	4	-	-	4	4
CS428	Neural Networks					
CS430	Bio Metrics					
CS432	Genetic Algorithms					
CS434	Multimedia Systems					
	Practicals					
CS436	Project Work	-	-	20	20	10
	Total	12	0	20	32	22

VFSTR UNIVERSITY

B.Tech. MINOR SPECIALIZATIONS

A. MANAGEMENT

Code	Subject	L	T	P	To	C
MS203	Principles of Management And Organizational Behavior	4	-	-	4	4
MS212	Business Environment And Ethics	4	-	-	4	4
MS303	Marketing and HR Management	4	-	-	4	4
MS310	Entrepreneurship and Project Management	4	-	-	4	4
MS409	Production and operations Management	4	-	-	4	4

B. HUMANITIES & SCIENCES

Code	Subject	L	T	P	To	C
HS219	Indian History and Culture	4	-	-	4	4
HS224	Polity and Governance of India	4	-	-	4	4
HS307	Economic and Social Development of india	4	-	-	4	4
HS308	Basic Numeracy, Mental Ability and Logical Reasoning	4	-	-	4	4
HS403	Geography and Environmental Concerns of India	4	-	-	4	4

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

VFSTR UNIVERSITY

B.Tech. MINOR SPECIALIZATIONS

C. INFORMATION TECHNOLOGY (IT)

Code	Subject	L	T	P	To	C
CS223	Object Oriented Programming Through Java	4	-	-	4	4
IT201	Internet and Web Technologies	4	-	-	4	4
CS315	Operating Systems	4	-	-	4	4
IT311	Unix and Shell Programming	4	-	-	4	4
CS222	Data Base Systems	4	-	-	4	4
CS434	Multimedia Systems	4	-	-	4	4
CS225	Software Engineering	4	-	-	4	4
CS425	Datawarehousing & Datamining	4	-	-	4	4
CS435	Software Testing Methodologies	4	-	-	4	4
CS322	Object Oriented Analysis & Design	4	-	-	4	4

D. ELECTRONICS & COMMUNICATION ENGINEERING (ECE)

Code	Subject	L	T	P	To	C
EC223	Electronic Devices	4	-	-	4	4
EC250	Electronic Circuits	4	-	-	4	4
EC228	Digital Electronics	4	-	-	4	4
EC333	Communication Systems – I	4	-	-	4	4
EC335	Liner IC Applications	4	-	-	4	4
EC336	Microprocessors and Interfacing	4	-	-	4	4
EC338	Communication System – II	4	-	-	4	4
E C461	Sensors and Transducers	4	-	-	4	4

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

B.Tech. I Year - Course Structure
SEMESTER - I

Code	Subject	L	T	P	To	C
HS111	Engineering Mathematics - I	4	-	-	4	4
HS122	Engineering Materials	4	-	-	4	4
EE111	Fundamentals of Electrical Engineering	4	-	-	4	4
HS117	Engineering Chemistry	4	-	-	4	4
HS118	Environmental Studies	3	-	-	3	3
HS119	Professional Ethics, Values and Human Rights	2	-	-	2	-
	Practicals:					
EE113	Fundamentals of Electrical Engineering Lab	-	-	3	3	2
HS121	Engineering Chemistry Lab	-	-	3	3	2
ME103	Engineering Graphics	1	-	3	4	3
	TOTAL	22	0	9	31	26

SEMESTER - II

Code	Subject	L	T	P	To	C
HS115	Engineering Mathematics - II	4	-	-	4	4
HS113	Engineering Physics	4	-	-	4	4
ME101	Engineering Mechanics	4	-	-	4	4
HS114	Technical English Communication	3	2	-	5	5
CS101	Problem Solving and Computer Programming	5	-	-	5	5
CS105	Network Security	2	-	-	2	-
	Practicals:					
CS107	Computer Programming Lab	-	-	3	3	2
HS120	Engineering Physics Lab	-	-	3	3	2
ME105	Workshop Practice	-	-	3	3	2
	TOTAL	22	2	9	31	28

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

B.Tech. II Year - Course Structure
SEMESTER - I

Code	Subject	L	T	P	To	C
HS215	Complex Variables and Special Functions	3	1	-	4	4
EC217	Network Theory	3	1	-	4	4
EC219	Electronic Devices and Circuits	4	-	-	4	4
EC221	Signals and Systems	3	1	-	4	4
CS231	Data Structures using C++	4	-	-	4	4
	Minor - I	4	-	-	4	4
SR002	Seminar	-	-	1	1	1
	Practicals:					
EC207	Electronic Devices and Circuits Lab	-	-	3	3	2
EC209	Signals and Systems Lab	-	-	3	3	2
HS217	Soft Skills Lab	-	-	3	3	2
	Total	21	3	10	34	31

SEMESTER - II

Code	Subject	L	T	P	To	C
EC224	Probability Theory and Stochastic Processes	3	1	-	4	4
EC226	Electronic Circuit Analysis	4	-	-	4	4
DC228	Digital Electronics	3	1	-	4	4
EC230	Analog Communication	4	-	-	4	4
EC232	Electromagnetic Field Theory	3	1	-	4	4
	Minor - II	4	-	-	4	4
SR003	Seminar	-	-	1	1	1
	Practicals:					
EC234	Electronic Circuit Analysis Lab	-	-	3	3	2
EC236	Analog Communication Lab	-	-	3	3	2
HS304	Professional Communication Lab	-	-	3	3	2
	Total	21	3	10	34	31

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

B.Tech. ELECTRONICS & COMMUNICATION ENGINEERING

B.Tech. III Year - Course Structure
SEMESTER - I

Code	Subject	L	T	P	To	C
EC317	Linear IC's and Applications	4	0	-	4	4
EC319	Microprocessor and Microcontrollers	4	0	-	4	4
EC321	Digital Communications	4	0	-	4	4
EC323	Transmission Lines and Waveguides	4	0	-	4	4
	Dept. Elective - I	4	0	-	4	4
CS315	Operating Systems					
CS223	OOPs Through Java					
EC325	Digital IC applications					
	Minor - III	4	0	-	4	4
SR004	Seminar	-	-	1	1	1
	Practicals:					
EC327	IC Applications Lab	-	-	3	3	2
EC329	Microprocessors and interfacing Lab	-	-	3	3	2
EC331	Digital Communication Lab	-	-	3	3	2
	Total	**24**	**0**	**10**	**34**	**31**

SEMESTER - II

Code	Subject	L	T	P	To	C
EC319	Linear Control Systems	4	0	-	4	4
EC320	VLSI Design	4	0	-	4	4
EC322	Antennas and Wave Propagation	4	0	-	4	4
EC324	Computer Architecture and Organization	4	0	-	4	4
	Dept. Elective - II	4	0	-	4	4
EC326	OPtical Communications					
EC328	Embedded Systems					
EC330	Electromagnetic Interference and Compatibility					
	Minor - IV	4	0	-	4	4
SR005	Seminar	-	-	1	1	1
	Practicals:					
CS344	Data Structures using C++ Lab	-	-	3	3	2
EC332	VLSI Design Lab	-	-	3	3	2
EC334	Mini Project	-	-	3	3	2
	Total	**24**	**0**	**10**	**34**	**31**

L = Lecture ; T = Tutorial ; P = Practicals ; To = Total ; C = Credits

B.Tech. ELECTRONICS & COMPUTER ENGINEERING

B.Tech. IV Year - Course Structure
SEMESTER - I

Code	Subject	L	T	P	To	C
MS142	Managerial Economics	4	0	-	4	4
EC431	Digital Signal Processing	3	1	-	4	4
EC433	RF and Microwave Engineering	4	0	-	4	4
EC435	Electronic Measurements and Instrumentation	4	0	-	4	4
	Dept. Elective - III	4	0	-	4	4
EC437	Data Communication and Computer Networks					
EC439	Satellite Communication					
EC441	MEMS					
	Dept. Elective - IV	4	0	-	4	4
EC437	Digital Design Through Verilog					
EC445	Cellular And Mobile Communications					
EC447	NANO Electronics					
	Practicals:					
EC449	Digital Signal Processing Lab	-	-	3	3	2
EC451	Microwave Engineering Lab	-	-	3	3	2
EC331	Instrumentation Lab	-	-	3	3	2
	Total	**23**	**01**	**09**	**33**	**30**

L = Lecture ; T = Tutorial ; P = Practicals ; To = Total ; C = Credits

B.Tech. IV Year - Course Structure
SEMESTER - II

Code	Subject	L	T	P	To	C
	Minor-V	4	0	-	4	4
	Dept. Elective - V	4	0	-	4	4
EC412	Sensors and Actuators					
EC414	Wireless Sensor Networks					
EC416	Biomedical Signal Processing					
	Dept. Elective - VI	4	0	-	4	4
EC418	Digital Image Processing					
EC420	Radar Systems					
EC422	VLSI Testing & Validation					
	Practicals					
EC424	Project Work	-	-	30	30	10
	Total	12	0	30	42	22

The students opting for semester-long industrial internship during eighth semester, carry out Minor-V in seventh semester itself as additional course. Eighteen credits are alloted to internship as given below.

SEMESTER - II

Practicals		L	T	P	To	C
EC426	Internship			36	36	18
	Total			36	36	18

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

B.Tech. MINOR SPECIALIZATIONS

A. MANAGEMENT

Code	Subject	L	T	P	To	C
MS203	Principles of Management And Organizational Behavior	4	-	-	4	4
MS212	Business Environment And Ethics	4	-	-	4	4
MS303	Marketing and HR Management	4	-	-	4	4
MS310	Entrepreneurship and Project Management	4	-	-	4	4
MS409	Production and operations Management	4	-	-	4	4

B. HUMANITIES & SCIENCES

Code	Subject	L	T	P	To	C
HS219	Indian History and Culture	4	-	-	4	4
HS224	Polity and Governance of India	4	-	-	4	4
HS307	Economic and Social Development of india	4	-	-	4	4
HS308	Basic Numeracy, Mental Ability and Logical Reasoning	4	-	-	4	4
HS403	Geography and Environmental Concerns of India	4	-	-	4	4

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

B.Tech. MINOR SPECIALIZATIONS

C. INFORMATION TECHNOLOGY (IT)

Code	Subject	L	T	P	To	C
CS223	Object Oriented Programming Through Java	4	-	-	4	4
IT201	Internet and Web Technologies	4	-	-	4	4
CS315	Operating Systems	4	-	-	4	4
IT311	Unix and Shell Programming	4	-	-	4	4
CS222	Data Base Systems	4	-	-	4	4
CS434	Multimedia Systems	4	-	-	4	4
CS225	Software Engineering	4	-	-	4	4
CS425	Datawarehousing & Datamining	4	-	-	4	4
CS435	Software Testing Methodologies	4	-	-	4	4
CS322	Object Oriented Analysis & Design	4	-	-	4	4

D. ELECTRONICS & COMMUNICATION ENGINEERING (ECE)

Code	Subject	L	T	P	To	C
EC223	Electronic Devices	4	-	-	4	4
EC250	Electronic Circuits	4	-	-	4	4
EC228	Digital Electronics	4	-	-	4	4
EC333	Communication Systems – I	4	-	-	4	4
EC335	Liner IC Applications	4	-	-	4	4
EC336	Microprocessors and Interfacing	4	-	-	4	4
EC338	Communication System – II	4	-	-	4	4
E C461	Sensors and Transducers	4	-	-	4	4

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

I B.Tech. COURSE STRUCTURE
SEMESTER - I

Code	Subject	L	T	P	To	C
HS111	Engineering Mathematics-I	4	-	-	4	4
HS113	Engineering Physics	4	-	-	4	4
ME101	Engineering Mechanics	4	-	-	4	4
CS101	Problem Solving & Computer Programming	5	-	-	5	5
CS105	Network Security	2	-	-	2	-
HS114	Technical English Communication	3	2	-	5	5
	Practicals:					
HS120	Engineering Physics Lab	-	-	3	3	2
CS107	Computer Programming Lab	-	-	3	3	2
ME105	Workshop Practice	-	-	3	3	2
	TOTAL	22	2	9	33	28

SEMESTER - II

Code	Subject	L	T	P	To	C
HS115	Engineering Mathematics - II	4	-	-	4	4
HS117	Engineering Chemistry	4	-	-	4	4
HS118	Environmental Studies	3	-	-	3	3
HS119	Professional Ethics,Values and Human Rights	2	-	-	2	-
HS122	Engineering Materials	4	-	-	4	4
EE108	Network Theory - I	4	-	-	4	4
	Practicals:					
ME103	Engineering Graphics	1	-	3	4	3
HS121	Engineering Chemistry Lab	-	-	3	3	2
EE110	Network Theory - I Lab	-	-	3	3	2
	TOTAL	22	0	9	31	26

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

II B.Tech. COURSE STRUCTURE
SEMESTER - I

Code	Subject	L	T	P	To	C
HS215	Complex Variables & Special Functions	4	-	-	4	4
EE211	Network Theory-II	4	-	-	4	4
EE213	Electromagnetic Fields & Transmission Lines	4	-	-	4	4
EE215	DC Machines	4	-	-	4	4
EC219	Electronic Devices and Circuits	4	-	-	4	4
	Minor - I	**4**	**-**	**-**	**4**	**4**
SR002	Seminar	-	-	1	1	1
	Labs:					
EC207	Electronic Devices & Circuits Lab	-	-	3	3	2
EE217	Network Theory-II Lab	-	-	3	3	2
EE219	Basic Simulation Lab	-	-	3	3	2
	TOTAL	**24**	**-**	**10**	**34**	**31**

SEMESTER - II

Code	Subject	L	T	P	To	C
EE212	A.C. Machines - I	4	-	-	4	4
EE214	Power Systems – I	4	-	-	4	4
EE216	Electrical Measurements & Instrumentation	4	-	-	4	4
EC220	Analog Electronics	4	-	-	4	4
CS218	Data structures	4	-	-	4	4
	Minor - II	**4**	**-**	**-**	**4**	**4**
SR003	Seminar	-	-	1	1	1
	Labs:					
EE220	D.C. Machines Lab	-	-	3	3	2
EC222	Analog Electronics Lab	-	-	3	3	2
HS217	Soft Skills Lab	-	-	3	3	2
	TOTAL	**24**	**-**	**10**	**34**	**31**

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

III B.Tech. COURSE STRUCTURE
SEMESTER - I

Code	Subject	L	T	P	To	C
EE313	A.C. Machines - II	4	-	-	4	4
EE315	Power Systems - II	4	-	-	4	4
EE317	Power Electronics Devices and Circuits	4	-	-	4	4
EE319	Linear Control Systems	4	-	-	4	4
	Dept. Electives - I	**4**	**-**	**-**	**4**	**4**
EE321	Digital Electronic Circuits					
EC221	Signals and Systems					
EE323	Energy Conversion and Storage Technologies					
	Minor - III	**4**	**-**	**-**	**4**	**4**
SR004	Seminar	-		1	1	1
	Labs:					
EE325	A.C. Machines Lab	-	-	3	3	2
EE327	Electrical Measurements & Instrumentation Lab	-	-	3	3	2
HS304	Professional Communication Lab	1	-	2	3	2
	TOTAL	**25**	**-**	**9**	**34**	**31**

SEMESTER - II

Code	Subject	L	T	P	To	C
EE316	Microprocessors Architectures and Control	4	-	-	4	4
EE318	Switch Gear and Protection	4	-	-	4	4
MS310	Managerial Economics	4	-	-	4	4
CS223	Object Oriented Programming Through Java	4	-	-	4	4
	Dept. Electives - II	**4**	**-**	**-**	**4**	**4**
EE320	High Voltage DC Transmission					
EE322	AI Techniques in Electrical Engineering					
EE324	Embedded Systems in Electrical Engineering					
	Minor - IV	**4**	**-**	**-**	**4**	**4**
SR005	Technical Seminar	-	-	1	1	1
	Labs:					
EE326	Power Electronics Lab	-	-	3	3	2
EE328	Linear Control Systems Lab	-	-	3	3	2
EE330	Mini Project	-	-	3	3	2
	TOTAL	**24**	**-**	**10**	**34**	**31**

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

IV B.Tech. COURSE STRUCTURE
SEMESTER - I

Code	Subject	L	T	P	To	C
EE415	Electric Drives	4	-	-	4	4
EE417	Renewable Energy Sources	4	-	-	4	4
EE419	Analysis and Operation of Power System	4	-	-	4	4
EE421	DSP and its Applications	4	-	-	4	4
	Dept. Electives - III	**4**	**-**	**-**	**4**	**4**
EE423	High Voltage Engineering					
EC302	VLSI Design					
MT431	Automotive Electronics					
	Dept. Electives - IV	**4**	**-**	**-**	**4**	**4**
EE425	Energy Conservation & Audit					
EE427	Advanced Control Systems					
EE429	Programmable Logic Controllers					
	Labs:					
EE431	Power Systems Lab	-	-	3	3	2
EE433	Microprocessor Programming and its Interfacing Lab	-	-	3	3	2
EE435	Electrical Systems Simulation Lab	-	-	3	3	2
	TOTAL	**24**	**0**	**9**	**33**	**30**

SEMESTER - II

Code	Subject	L	T	P	To	C
	Minor - V	**4**	**-**	**-**	**4**	**4**
	Dept. Electives - V	**4**	**-**	**-**	**4**	**4**
EE414	Utilization of Electrical Energy					
EE416	Special Electrical Machines					
EE418	Power Quality					
	Dept. Electives - VI	**4**	**-**	**-**	**4**	**4**
EE420	Electrical Distribution Systems					
EE422	Reliability Engineering					
EE424	Machine Modelling and Analysis					
EE426	Project Work	-	-	20	20	10
	TOTAL	**12**	**0**	**20**	**32**	**22**

The students opting semester-long Industrial Internship during the Final Semester carry out Minor-V in the IV Year I Semester itself as additional course. **18** credits are alloted to Internship as given below:

Code	Subject	L	T	P	To	C
EE428	Internship (6 months)	-	-	36	36	18
	TOTAL	**0**	**0**	**36**	**36**	**18**

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

MINOR DEGREE STREAMS

A. MANAGEMENT

Code	Subject	L	T	P	To	C
MS203	Principles of Management & Organizational Behaviour	4	-	-	4	4
MS212	Business Environment and Ethics	4	-	-	4	4
MS303	Marketing and HR Management	4	-	-	4	4
MS310	Entrepreneurship and Project Management	4	-	-	4	4
MS409	Production and Operations Management	4	-	-	4	4

B. HUMANITIES & SCIENCES

Code	Subject	L	T	P	To	C
HS219	Indian History and Culture	4	-	-	4	4
HS224	Polity and Governance of India	4	-	-	4	4
HS307	Economic and Social Development of India	4	-	-	4	4
HS308	Basic Numeracy, Mental Ability and Logical Reasoning	4	-	-	4	4
HS403	Geography and Environmental Concerns of India	4	-	-	4	4

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

C. INFORMATION TECHNOLOGY

Code	Subject	L	T	P	To	C
CS223	Object Oriented Programming Through Java	4	-	-	4	4
IT201	Internet and Web Technologies	4	-	-	4	4
CS315	Operating Systems	4	-	-	4	4
IT311	Unix And Shell Programming	4	-	-	4	4
CS222	Data Base Systems	4	-	-	4	4
CS434	Multimedia Systems	4	-	-	4	4
CS225	Software Engineering	4	-	-	4	4
CS425	Datawarehousing & Datamining	4	-	-	4	4
CS435	Software Testing Methodologies	4	-	-	4	4
CS322	Object Oriented Analysis & Design	4	-	-	4	4

D. ELECTRONICS & COMMUNICATION ENGINEERING

Code	Subject	L	T	P	To	C
EC223	Electronic Devices	4	-	-	4	4
EC250	Electronic Circuits	4	-	-	4	4
EC228	Digital Electronics	4	-	-	4	4
EC333	Communication Systems - I	4	-	-	4	4
EC335	Linear IC Aplications	4	-	-	4	4
EC336	Microprocessors and Interfacing	4	-	-	4	4
EC338	Communication Systems-II	4	-	-	4	4
EC461	Sensors and Trasducers	4	-	-	4	4

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

VFSTR UNIVERSITY

I B.Tech. IT COURSE STRUCTURE
SEMESTER - I

Code	Subject	L	T	P	To	C
HS111	Engineering Mathematics I	4	-	-	4	4
HS113	Engineering Physics	4	-	-	4	4
ME101	Engineering Mechanics	4	-	-	4	4
HS114	Technical English Communication	3	2	-	5	5
CS101	Problem Solving and Computer Programming	5	-	-	5	5
CS105	Network Security	2	-	-	2	-
	Practicals:					
HS120	Engineering Physics Lab	-	-	3	3	2
CS107	Computer Programming Lab	-	-	3	3	2
ME105	Workshop Practice	-	-	3	3	2
	TOTAL	22	2	9	33	28

SEMESTER - II

Code	Subject	L	T	P	To	C
HS115	Engineering Mathematics-II	4	-	-	4	4
HS118	Environmantal Studies	3	-	-	3	3
EE111	Fundamentals of Electrical Engineering	4	-	-	4	4
HS117	Engineering Chemistry	4	-	-	4	4
CS103	Data Structures	4	-	-	4	4
HS119	Profissional Ethics, Values and Human Rights	2	-	-	2	-
	Practicals:					
CS108	Data Structures Lab	-	-	3	3	2
ME103	Engineering Graphics	1	-	3	4	3
EE113	Fundamentals of Electrical Engineering Lab	-	-	3	3	2
	TOTAL	22	0	9	31	26

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

VFSTR UNIVERSITY

II B.Tech. IT COURSE STRUCTURE
SEMESTER - I

Code	Subject	L	T	P	To	C
CS217	Discrete Mathematical Structures	4	-	-	4	4
CS219	Digital Logic Design	4	-	-	4	4
CS221	Advanced Data Structures	4	-	-	4	4
CS223	Object Oriented Programming Through Java	4	-	-	4	4
CS225	Software Engineering	4	-	-	4	4
	Minor - I	**4**	**-**	**-**	**4**	**4**
SR002	Seminar	-	-	1	1	1
	Practicals:					
CS227	Advanced Data Structures Lab.	-	-	3	3	2
CS229	Object Oriented programming Through Java Lab	-	-	3	3	2
HS217	Soft Skills Lab	-	-	3	3	2
	TOTAL	**24**	**-**	**10**	**34**	**31**

SEMESTER - II

Code	Subject	L	T	P	To	C
HS213	Probability & Statistics	4	-	-	4	4
CS220	Computer Organization	4	-	-	4	4
CS222	Database Systems	4	-	-	4	4
CS224	Formal Languages and Automata Theory	4	-	-	4	4
CS226	Design and Analysis of Algorithms	4	-	-	4	4
	Minor- II	**4**	**-**	**-**	**4**	**4**
SR003	Seminar	-	-	1	1	1
	Practicals:					
CS228	Database Systems Lab	-	-	3	3	2
CS230	Design and Analysis of Algorithms Lab	-	-	3	3	2
HS304	Professional Communication Lab	-	-	3	3	2
	TOTAL	**24**	**-**	**10**	**34**	**31**

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

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VFSTR UNIVERSITY

III B.Tech. IT COURSE STRUCTURE
SEMESTER - I

Code	Subject	L	T	P	To	C
CS234	Web Technologies	4	-	-	4	4
CS313	Computer Networks	4	-	-	4	4
CS315	Operating Systems	4	-	-	4	4
CS317	Compiler Design	4	-	-	4	4
	Department Elective - I	4	-	-	4	4
	Minor - III	**4**	**-**	**-**	**4**	**4**
SR004	Seminar	-	-	1	1	1
	Practicals:					
CS236	Web Technologies Lab	-	-	3	3	2
CS329	Computer Networks Lab	-	-	3	3	2
CS331	Operating Systems Lab	-	-	3	3	2
	TOTAL	**24**	**-**	**10**	**34**	**31**

SEMESTER - II

Code	Subject	L	T	P	To	C
CS322	Object Oriented Analysis and Design	4	-	-	4	4
CS324	Middleware Technologies	4	-	-	4	4
IT308	Microprocessors and Microcontrollers	4	-	-	4	4
CS435	Software Testing Methodologies	4	-	-	4	4
	Department Elective - II	4	-	-	4	4
	Minor- IV	**4**	**-**	**-**	**4**	**4**
SR004	Seminar	-	-	1	1	1
	Practicals:					
CS338	Object Oriented Analysis and Design **Lab**	-	-	3	3	2
CS340	Middleware Technologies Lab	-	-	3	3	2
IT316	Mini Project	-	-	3	3	2
	TOTAL	**24**	**-**	**10**	**34**	**31**

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

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VFSTR UNIVERSITY
IV B.Tech. IT COURSE STRUCTURE
SEMESTER - I

Code	Subject	L	T	P	To	C
CS425	Data Warehousing and Data Mining	4	-	-	4	4
CS427	Cryptography and Network Security	4	-	-	4	4
CS443	Big Data Analytics	4	-	-	4	4
	Department Elective - III	4	-	-	4	4
	Department Elective - IV	4	-	-	4	4
	Managerial Economics	4	-	-	4	4
	Practicals:					
CS447	Data Warehousing and Data Mining Lab	-	-	3	3	2
CS449	Cryptography and Network Security Lab	-	-	3	3	2
IT407	Free Open Source Software (FOSS) Lab	-	-	3	3	2
	TOTAL	**24**	**0**	**9**	**33**	**30**

SEMESTER - II

Code	Subject	L	T	P	To	C
	Minor- V	**4**	**-**	**-**	**4**	**4**
	Department Elective - V	4	-	-	4	4
	Department Elective - VI	4	-	-	4	4
	Practicals:					
IT426	Project Work	-	-	10	10	10
	TOTAL	**12**	**0**	**10**	**22**	**22**

The students opting for semester-long industrial internship during 8th semester, carry out Minor – V in 7th semester itself as additional course. 18 credits are allotted to internship as given below:

Code	Subject	L	T	P	To	C
IT428	Internship (6 months)	--		--	36	36	18

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

VFSTR UNIVERSITY

DEPARTMENT ELECTIVES

Code	Subject
	Elective I
IT303	Digital Image Processing
CS332	Artificial Intelligence
CS334	Principles of Programming Languages
IT305	Advanced Computer Architecture
	Elective II
IT310	Soft Computing
CS431	Cloud Computing
IT312	Mobile Application Development
IT314	Script Programming
	Elective III
CS439	Software Project Management
CS426	Human Computer Interaction
CS434	Multimedia Systems
IT407	Distributed Computing
	Elective IV
CS336	Simulation and Modeling
CS319	Open Systems for Web Technologies
CS433	Embedded Systems
IT409	Robotics
	Elective V
CS330	Network Programming
IT414	Bio Informatics
IT416	Design Patterns
IT418	J2EE
	Elective VI
IT420	Enterprise Resource Planning
IT422	Mobile Commerce
IT424	Ethical Practices in IT
CS441	Business Intelligence

VFSTR UNIVERSITY

B.Tech. MINOR SPECIALIZATIONS

A. MANAGEMENT

Code	Subject	L	T	P	To	C
MS203	Principles of Management And Organizational Behavior	4	-	-	4	4
MS212	Business Environment And Ethics	4	-	-	4	4
MS303	Marketing and HR Management	4	-	-	4	4
MS310	Entrepreneurship and Project Management	4	-	-	4	4
MS409	Production and operations Management	4	-	-	4	4

B. HUMANITIES & SCIENCES

Code	Subject	L	T	P	To	C
HS219	Indian History and Culture	4	-	-	4	4
HS224	Polity and Governance of India	4	-	-	4	4
HS307	Economic and Social Development of india	4	-	-	4	4
HS308	Basic Numeracy, Mental Ability and Logical Reasoning	4	-	-	4	4
HS403	Geography and Environmental Concerns of India	4	-	-	4	4

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

VFSTR UNIVERSITY

B.Tech. MINOR SPECIALIZATIONS

C. INFORMATION TECHNOLOGY (IT)

Code	Subject	L	T	P	To	C
CS223	Object Oriented Programming Through Java	4	-	-	4	4
IT201	Internet and Web Technologies	4	-	-	4	4
CS315	Operating Systems	4	-	-	4	4
IT311	Unix and Shell Programming	4	-	-	4	4
CS222	Data Base Systems	4	-	-	4	4
CS434	Multimedia Systems	4	-	-	4	4
CS225	Software Engineering	4	-	-	4	4
CS425	Datawarehousing & Datamining	4	-	-	4	4
CS435	Software Testing Methodologies	4	-	-	4	4
CS322	Object Oriented Analysis & Design	4	-	-	4	4

D. ELECTRONICS & COMMUNICATION ENGINEERING (ECE)

Code	Subject	L	T	P	To	C
EC223	Electronic Devices	4	-	-	4	4
EC250	Electronic Circuits	4	-	-	4	4
EC228	Digital Electronics	4	-	-	4	4
EC333	Communication Systems – I	4	-	-	4	4
EC335	Liner IC Applications	4	-	-	4	4
EC336	Microprocessors and Interfacing	4	-	-	4	4
EC338	Communication System – II	4	-	-	4	4
E C461	Sensors and Transducers	4	-	-	4	4

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

VFSTR UNIVERSITY

B.Tech. I Year - Curriculum

I Year   **Semester - I**

Code	Subject	L	T	P	To	C
EE105	Fundamentals of Electrical Engineering	3	1	-	4	4
HS111	Engineering Mathematics - I	3	1	-	4	4
HS117	Engineering Chemistry	4	-	-	4	4
HS118	Environmental Studies	3	-	-	3	3
HS122	Engineering Materials	4	-	-	4	4
HS119	Professional Ethics, Values and Human Rights	2	-	-	2	-
	Practicals:					
EE109	Fundamentals of Electrical Engineering Lab	-	-	3	3	2
HS121	Engineering Chemistry Lab	-	-	3	3	2
ME103	Engineering Graphics	1	-	3	4	3
	TOTAL	19	3	9	31	26

I Year   **Semester - II**

Code	Subject	L	T	P	To	C
CS101	Problem Solving and Computer Programming	4	1	-	5	5
HS113	Engineering Physics	3	1	-	4	4
HS114	Technical English Communication	3	2	-	5	5
HS115	Engineering Mathematics - II	3	1	-	4	4
ME101	Engineering Mechanics	3	1	-	4	4
CS105	Network Security	2	-	-	2	-
	Practicals:					
CS107	Computer Programming Lab	-	-	3	3	2
HS120	Engineering Physics Lab	-	-	3	3	2
ME105	Workshop Practice	-	-	3	3	2
	TOTAL	18	6	9	33	28

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

VFSTR UNIVERSITY

B.Tech. II Year - Curriculum

II Year   **Semester - I**

Code	Subject	L	T	P	To	C
ME215	Manufacturing Process - I	4	0	-	4	4
ME217	Material Science & Metallurgy	4	0	-	4	4
ME219	Thermodynamics	3	1	-	4	4
ME221	Mechanics of Solids	3	1	-	4	4
ME223	Computational Methods for Engineers	3	1	-	4	4
	Minor-I	**4**	**0**	**-**	**4**	**4**
SR002	Seminar	-	-	1	1	1
	Practicals:					
ME209	Strength of Materials & Metallurgy Lab	-	-	3	3	2
ME212	Manufacturing Process Lab	-	-	3	3	2
ME211	Computational Methods for Engg. Lab	-	-	3	3	2
	TOTAL	**21**	**3**	**10**	**34**	**31**

II Year   **Semester - II**

Code	Subject	L	T	P	To	C
CS218	Data Structures	4	0	-	4	4
ME216	Fluid Mechanics & Hydraulic Machines	3	1	-	4	4
HS213	Probability & Statistics	3	1	-	4	4
ME218	Kinematics of Machines	3	1	-	4	4
ME220	Thermal Engineering - I	3	1	-	4	4
	Minor- II	**4**	**0**	**-**	**4**	**4**
SR003	Seminar	-	-	1	1	1
	Practicals:					
HS217	Soft Skills Lab	-	-	3	3	2
ME222	Machine Drawing	-	-	3	3	2
ME224	Fluid Mechanics & Hydraulic Machinery Lab	-	-	3	3	2
	TOTAL	**20**	**4**	**10**	**34**	**31**

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

B.Tech. III Year - Curriculum

III Year   **Semester - I**

Code	Subject	L	T	P	To	C
ME317	Design of Machine Elements - I	3	1	-	4	4
ME319	Dynamics of Machines	3	1	-	4	4
ME321	Manufacturing Process - II	4	0	-	4	4
ME323	Thermal Engineering - II	3	1	-	4	4
	Dept. Electives - I	**4**	**0**	**-**	**4**	**4**
ME325	Mechanical Vibrations					
ME327	Metrology & Instrumentation					
ME329	Rapid Prototyping					
	Minor - III	**4**	**0**	**-**	**4**	**4**
SR004	Seminar	-	-	1	1	1
	Practicals:					
ME331	Machine Tools & Metrology Lab.	-	-	3	3	2
ME333	Fuels & I.C. Engines Lab.	-	-	3	3	2
ME335	Manufacturing Drawing & Instrumentation Lab.	-	-	3	3	2
TOTAL		**21**	**3**	**10**	**34**	**31**

III Year   **Semester - II**

Code	Subject	L	T	P	To	C
ME318	Design of Machine Elements - II	3	1	-	4	4
ME320	Heat Transfer	3	1	-	4	4
ME322	Finite Element Analysis	3	1	-	4	4
ME324	CAD/CAM	4	0	-	4	4
	Dept. Electives - II	**4**	**0**	**-**	**4**	**4**
ME326	Computational Fluid Dynamics					
ME328	Mechatronics					
ME330	Composite Materials					
	Minor - IV	4	0	-	4	4
SR005	Seminar	-	-	1	1	1
	Practicals:					
ME332	Modeling & Simulation Lab.	-	-	3	3	2
ME334	**Mini Project**	-	-	3	3	2
HS304	Professional Communication Lab	1	0	2	3	2
TOTAL		**22**	**3**	**9**	**34**	**31**

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

B.Tech. IV Year - Curriculum

IV Year   **Semester - I**

Code	Subject	L	T	P	To	C
ME421	Operations Research	3	1	-	4	4
ME423	Robotics	3	1	-	4	4
ME425	Refrigeration and Air Conditioning	3	1	-	4	4
MS310	Managerial Economics	4	0	-	4	4
	Dept. Electives - III	**4**	**0**	**-**	**4**	**4**
ME427	Automobile Engineering					
ME429	Power Plant Engineering					
ME431	Non-Destructive Testing					
	Dept. Electives - IV	**4**	**0**	**-**	**4**	**4**
ME433	Nano Technology					
ME435	Automation in Manufacturing					
CS223	Object Oriented Programing					
	Practicals:					
ME437	Mechanisms & Machine Dynamics Lab	-	-	2	2	2
ME439	Heat Transfer Lab.	-	-	3	3	2
ME441	Hydraulics & Pneumatics Lab.	-	-	3	3	2
TOTAL		**21**	**3**	**8**	**32**	**30**

IV Year   **Semester - II**

Code	Subject	L	T	P	To	C
	MINOR-V	4	0	-	4	4
	Dept. Electives - V	**4**	**0**	**-**	**4**	**4**
ME420	Total Quality Management					
ME422	Unconventional Manufacturing Processes					
ME424	Non-Conventional Sources of Energy					
	Electives - VI	**4**	**0**	**-**	**4**	**4**
ME426	Operations Management					
EE319	Linear Control Systems					
EE321	Digital Electronic Circuits					
ME428	Project	-	-	10	10	10
TOTAL		**12**	**0**	**10**	**22**	**22**

The students opting for semester –long industrial internship during eighth semester, carry out minor-V in seventh semester itself as additional course. Eighteen credits are allotted to internship as given below:

ME430   **Internship**   **-**   **- 36 36 18**

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

MINOR SPECIALIZATIONS

A. MANAGEMENT

Code	Subject	L	T	P	To	C
MS201	Principles of Management and Organizational Behaviour	4	0	-	4	4
MS202	Business Environment and Ethics	4	0	-	4	4
MS301	Marketing & Human Resource Management	4	0	-	4	4
MS302	Entrepreneurship and Project Management	4	0	-	4	4
MS401	Logistics & Supply Chain Management	4	0	-	4	4
MS403	Business Research And Statistical Methods	4	0	-	4	4
MS405	Enterprise Resource Planning	4	0	-	4	4
MS407	Production & Operations Management	4	0	-	4	4

B. HUMANITIES & SCIENCES

Code	Subject	L	T	P	To	C
HS281	General Studies - I	4	0	-	4	4
HS282	General Studies - II	4	0	-	4	4
HS381	General Studies - III	4	0	-	4	4
HS382	General Studies - IV	4	0	-	4	4
HS383	General Studies - V	4	0	-	4	4

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

C. INFORMATION TECHNOLOGY

Code	Subject	L	T	P	To	C
CS201	Data Structures	4	0	-	4	4
CS202	Object Oriented Programming	4	0	-	4	4
CS203	Unix and Shell Programming	4	0	-	4	4
CS204	Database Management Systems	4	0	-	4	4
CS205	Computer Architecture	4	0	-	4	4
CS208	Operating Systems	4	0	-	4	4
CS301	Internet Technologies	4	0	-	4	4
CS303	Software Engineering	4	0	-	4	4
CS304	Software Testing Methodologies	4	0	-	4	4
CS307	Computer Networks	4	0	-	4	4
CS401	Information Security	4	0	-	4	4

D. ELECTRONICS & COMMUNICATION ENGINEERING

Code	Subject	L	T	P	To	C
EC206	Pulse and Digital Circuits	4	0	-	4	4
EC208	Switching Theory and Logic Design	4	0	-	4	4
EC212	Principles of Communication Systems	4	0	-	4	4
EC302	Digital Signal Processing	4	0	-	4	4
EC304	VLSI	4	0	-	4	4
EC306	Microprocessors and Interfacing	4	0	-	4	4
EC313	Linear and Digital IC's	4	0	-	4	4
EC413	Cellular and Mobile Communications	4	0	-	4	4
EC417	Digital Design through Verilog	4	0	-	4	4
EC421	Embedded Systems	4	0	-	4	4

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

VFSTR UNIVERSITY

B.Tech. I Year - Course Structure
SEMESTER - I

Code	Subject	L	T	P	To	C
EE111	Fundamentals of Electrical Engineering	4	0	-	4	4
HS111	Engineering Mathematics - I	3	1	-	4	4
HS117	Engineering Chemistry	4	0	-	4	4
HS118	Environmental Studies	3	-	-	3	3
HS122	Engineering Materials	4	-	-	4	4
HS119	Professional Ethics, Values and Human Rights	2	-	-	2	-
	Practical Courses:					
EE113	Fundamentals of Electrical Engineering Lab	-	-	3	3	2
HS121	Engineering Chemistry Lab	-	-	3	3	2
ME103	Engineering Graphics	1	-	2	3	3
	TOTAL	21	1	8	30	26

SEMESTER - II

Code	Subject	L	T	P	To	C
CS101	Problem Solving and Computer Programming	4	1	-	5	5
HS113	Engineering Physics	3	1	-	4	4
HS114	Technical English Communication	3	2	-	5	5
HS115	Engineering Mathematics - II	3	1	-	4	4
ME101	Engineering Mechanics	3	1	-	4	4
CS105	Network Security	2	-	-	2	-
	Practical Courses:					
CS107	Computer Programming Lab	-	-	3	3	2
HS120	Engineering Physics Lab	-	-	3	3	2
ME105	Workshop Practice	-	-	3	3	2
	TOTAL	18	6	9	33	28

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

II B.Tech. COURSE STRUCTURE
SEMESTER - I

Code	Subject	L	T	P	To	C
AE211	Manufacturing Processes for Automotive Components	4	-	-	4	4
ME219	Thermodynamics	3	1	-	4	4
ME221	Mechanics of Solids	3	1	-	4	4
ME217	Material Science & Metallurgy	4	-	-	4	4
ME216	Fluid Mechanics and Hydraulic Machines	3	1	-	4	4
	Minor - I	3	1	-	4	4
SR002	**Seminar**	-	-	-	-	1
	Labs :					
ME224	Fluid Mechanics and Hydraulic Machinery Lab	-	-	3	3	2
AE215	Mechanics of solids & Materials Lab	-	-	3	3	2
AE213	Thermodynamics Lab	-	-	3	3	2
	Total	20	4	9	33	31

SEMESTER - II

Code	Subject	L	T	P	To	C
CS218	Data Structures	4	0	-	4	4
HS213	Probability & Statistics	3	1	-	4	4
AE212	Design of Machine Elements	3	1	-	4	4
AE214	Fundamentals of I.C Engines	3	1	-	4	4
ME218	Kinematics of Machines	3	1	-	4	4
	Minor - II	4	0	-	4	4
SR003	**Seminar**	-	-	-	-	1
	Labs :					
HS217	Soft skills Lab	-	-	3	3	2
ME214	Machine Drawing	-	-	3	3	2
AE216	I.C Engines Lab	-	-	3	3	3
	Total	20	4	9	33	31

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

VIGNAN'S UNIVERSITY

III B.Tech. COURSE STRUCTURE
SEMESTER - I

Code	Subject	L	T	P	To	C
AE319	Advanced theory of I.C.Engines	3	1	-	4	4
ME319	Dynamics of Machines	3	1	-	4	4
AE323	Automotive components Design	3	1	-	4	4
AE325	Automotive Transmission	4	-	-	4	4
	Dept. Electives-I	**4**	**-**	**-**	**4**	**4**
AE327	Automotive Chassis					
AE329	Two and Three Wheelers Technology					
ME327	Metrology & Instrumentation					
	Minor - III	4	0	-	4	4
SR004	**Seminar**	-	-	-	-	1
	Labs :					
AE331	Vehicle Evaluation & Maintenance Lab	-	-	3	3	2
AE333	Automotive Chassis and Transmission Lab	-	-	3	3	2
AE335	Two And Three Wheelers Technology Lab	-	-	3	3	2
	Total	**21**	**3**	**9**	**33**	**31**

SEMESTER - II

Code	Subject	L	T	P	To	C
AE320	Vehicle Body Engineering	4	-	-	4	4
ME320	Heat Transfer	3	1	-	4	4
AE324	Modern Vehicle Tchnology	4	0	-	4	4
AE326	Vehicle Dynamics	3	1	-	4	4
	Dept. Electives-II	**4**	**-**	**-**	**4**	**4**
AE328	Special Purpose Vehicles					
AE330	Electronic Engine Management System					
AE322	Automotive Safety					
	Minor - IV	**4**	**0**	**-**	**4**	**4**
SR005	**Seminar**	-	-	-	-	1
AE334	Mini Project	-	-	3	3	2
	Labs :					
ME439	Heat Transfer Lab	-	-	3	3	2
HS304	Professional Communication Lab	-	-	3	3	2
	Total	**22**	**2**	**9**	**33**	**31**

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

VIGNAN'S UNIVERSITY
IV B.Tech. COURSE STRUCTURE
SEMESTER - I

Code	Subject	L	T	P	To	C
AE423	Autotronics	4	-	-	4	4
AE425	Automotive Emission & Control	4	-	-	4	4
AE427	Automotive System Design	3	1	-	4	4
AE429	Industrial Economics & Management	4	0	-	4	4
	Minor-V (for Internship students)	4	0	-	4	4
	Dept. Electives-III					
AE431	Automotive Aerodynamics	4	0	-	4	4
ME322	Finite Element Methods	3	1	-	4	4
ME423	Robotics	4	0	-	4	4
	Dept. Electives-IV					
AE435	Product Data Management & Collaborative Product Commerce	4	0	-	4	4
AE437	Transport Management	4	0	-	4	4
AE439	New Generation and Hybrid Vehicles	4	0	-	4	4
	Labs :					
AE441	Automotive Testing Lab	-	-	3	3	2
AE443	Autotronics Lab	-	-	3	3	2
AE445	Design Analysis and Simulation Lab	-	-	3	3	2
	Total	**26**	**2**	**9**	**37**	**34**

SEMESTER - II

Code	Subject	L	T	P	To	C
AE422	Automotive Air-conditioning	3	1	-	4	4
	Minor-V (for Project students)	4	0	-	4	4
	Dept. Electives-V					
AE424	Alternative Fuels and Energy systems	4	0	-	4	4
AE426	Motor Sport Engineering	4	0	-	4	4
ME326	Computational Fluid Dynamics	3	1	-	4	4
	Interdisciplinary Subject (Dept Elective-VI)					
EE319	Linear Control Systems	4	0	-	4	4
ME328	Mechatronics	4	0	-	4	4
ME433	Nano Technology	4	0	-	4	4
AE430	**Project-II**			12	12	12
	Total	**14**	**2**	**12**	**28**	**28**

The students opting for semester-long internship during eighth semester, carryout Minor-V in seventh semester itself as additional course. Eighteen credits are allotted to internship as given below:

AE 432 Internship   -   -   24   24   24

VFSTR UNIVERSITY

B.Tech. MINOR SPECIALIZATIONS

A. MANAGEMENT

Code	Subject	L	T	P	To	C
MS203	Principles of Management And Organizational Behavior	4	-	-	4	4
MS212	Business Environment And Ethics	4	-	-	4	4
MS303	Marketing and HR Management	4	-	-	4	4
MS310	Entrepreneurship and Project Management	4	-	-	4	4
MS409	Production and operations Management	4	-	-	4	4

B. HUMANITIES & SCIENCES

Code	Subject	L	T	P	To	C
HS219	Indian History and Culture	4	-	-	4	4
HS224	Polity and Governance of India	4	-	-	4	4
HS307	Economic and Social Development of india	4	-	-	4	4
HS308	Basic Numeracy, Mental Ability and Logical Reasoning	4	-	-	4	4
HS403	Geography and Environmental Concerns of Indian Basics	4	-	-	4	4

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

C. INFORMATION TECHNOLOGY (IT)

Code	Subject	L	T	P	To	C
CS223	Object Oriented Programming Through Java	4	-	-	4	4
IT201	Internet and Web Technologies	4	-	-	4	4
CS315	Operating Systems	4	-	-	4	4
IT311	Unix and Shell Programming	4	-	-	4	4
CS222	Data Base Systems	4	-	-	4	4
CS434	Multimedia Systems	4	-	-	4	4
CS225	Software Engineering	4	-	-	4	4
CS425	Datawarehousing & Datamining	4	-	-	4	4
CS435	Software Testing Methodologies	4	-	-	4	4
CS322	Object Oriented Analysis & Design	4	-	-	4	4

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B.Tech. MINOR SPECIALIZATIONS

C. INFORMATION TECHNOLOGY (IT)

Code	Subject	L	T	P	To	C
CS223	Object Oriented Programming Through Java	4	-	-	4	4
IT201	Internet and Web Technologies	4	-	-	4	4
CS315	Operating Systems	4	-	-	4	4
IT311	Unix and Shell Programming	4	-	-	4	4
CS222	Data Base Systems	4	-	-	4	4
CS434	Multimedia Systems	4	-	-	4	4
CS225	Software Engineering	4	-	-	4	4
CS425	Datawarehousing & Datamining	4	-	-	4	4
CS435	Software Testing Methodologies	4	-	-	4	4
CS322	Object Oriented Analysis & Design	4	-	-	4	4

D. ELECTRONICS & COMMUNICATION ENGINEERING (ECE)

Code	Subject	L	T	P	To	C
EC223	Electronic Devices	4	-	-	4	4
EC250	Electronic Circuits	4	-	-	4	4
EC228	Digital Electronics	4	-	-	4	4
EC333	Communication Systems – I	4	-	-	4	4
EC335	Liner IC Applications	4	-	-	4	4
EC336	Microprocessors and Interfacing	4	-	-	4	4
EC338	Communication System – II	4	-	-	4	4
E C461	Sensors and Transducers	4	-	-	4	4

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

VFSTR UNIVERSITY

I B.Tech. TEXTILE TECHNOLOGY CURRICULUM
SEMESTER - I

Code	Subject	L	T	P	To	C
HS111	Engineering Mathematics - I	4	-	-	4	4
HS122	Engineering Materials	4	-	-	4	4
EE111	Fundamentals of Electrical Engineering	4	-	-	4	4
HS117	Engineering Chemistry	4	-	-	4	4
HS118	Environmantal Studies	3	-	-	3	3
HS119	Profissional Ethics, Values and Human Rights	2	-	-	2	-
	Practicals:					
EE113	Fundamentals of Electrical Engineering Lab	-	-	3	3	2
HS121	Engineering Chemistry Lab	-	-	3	3	2
ME103	Engineering Graphics Lab	1	-	3	4	3
	TOTAL	22	-	9	31	26

SEMESTER - II

Code	Subject	L	T	P	To	C
HS115	Engineering Mathematics - II	4	-	-	4	4
HS113	Engineering Physics	4	-	-	4	4
ME101	Engineering Mechanics	4	-	-	4	4
HS114	Technical English Communication	3	-	-	2	5
CS101	Problem Solving and Computer Programming	5	-	-	5	5
CS105	Network Security	2	-	-	2	-
	Practicals:					
CS107	Computer Programming Lab	-	-	3	3	2
ME105	Workshop Practice	-	-	3	3	2
HS120	Engineering Physics Lab	-	-	3	3	2
	TOTAL	22	0	9	30	28

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

VFSTR UNIVERSITY

II B.Tech. TEXTILE TECHNOLOGY CURRICULUM
SEMESTER - I

Code	Subject	L	T	P	To	C
HS213	Probability and Statistics	4	0	-	4	4
TT217	Natural Fibres	4	0	-	4	4
TT219	Yarn Manufacturing - I	4	0	-	4	4
TT221	Fabric Manufacturing - I	4	0	-	4	4
TT223	Technology of Manufactured Fibres	4	0	-	4	4
	Minor-I	4	0	-	4	4
SR002	Seminar	-	-	1	1	1
	Practicals:					
TT225	Yarn Manufacturing - I Lab	-	-	3	3	2
TT227	Fabric Manufacturing - I Lab	-	-	3	3	2
HS217	Soft Skills Lab	-	-	3	3	2
	TOTAL	24	0	10	34	31

SEMESTER - II

Code	Subject	L	T	P	To	C
CS218	Data Structures	4	0	-	4	4
TT218	Yarn Manufacturing - II	4	0	-	4	4
TT220	Fabric Manufacturing - II	4	0	-	4	4
TT222	Fashion Technology in Apparelas & Made-Ups	4	0	-	4	4
TT224	Technology of Knits & Nonwovens	4	0	-	4	4
	Minor- II	4	0	-	4	4
SR003	Seminar	-	-	1	1	1
	Practicals:					
TT226	Yarn Manufacturing - II Lab	-	-	3	3	2
TT228	Fabric Manufacturing - II Lab	-	-	3	3	2
HS304	Professional Communication Lab	-	-	3	3	2
	TOTAL	24	0	10	34	31

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VFSTR UNIVERSITY

III B.Tech. TEXTILE TECHNOLOGY CURRICULUM
SEMESTER - I

Code	Subject	L	T	P	To	C
TT317	Textile Testing - I	4	0	-	4	4
TT319	Technology of Preparatory and Dying	4	0	-	4	4
TT321	Fabric Structure and Design	4	0	-	4	4
TT323	Advanced Yarn Manufacturing	4	0	-	4	4
	Dept. Elective - I	4	0	-	4	4
TT325	Physical Properties of Textile Fibres					
TT327	Process and Quality Management in Textiles					
TT329	Machanics of Textile Machinery					
	Minor - III	4	0	-	4	4
SR004	Seminar	-	-	1	1	1
	Practicals:					
TT331	Textile Testing - I Lab	-	-	3	3	2
TT333	Technology of Preparatory and Dying Lab	-	-	3	3	2
TT335	Fabric Sturcture and Design Lab	-	-	3	3	2
	Total	24	0	10	34	31

SEMESTER - II

Code	Subject	L	T	P	To	C
TT322	Textile Testing - II	4	0	-	4	4
TT324	Technology of Printing and Finishing	4	0	-	4	4
TT326	Technical Textiles	4	0	-	4	4
TT328	Shuttle Less Weaving	4	0	-	4	4
	Dept. Elective - II	4	0	-	4	4
TT330	Intellectual Property Rights					
TT332	Personal Management and Industrial Relations					
TT334	Lean and Six Sigma for Texiles and Apparels					
	Minor - IV	4	0	-	4	4
SR005	Seminar	-	-	1	1	1
	Practicals:					
TT336	Textile Testing - II Lab	-	-	3	3	2
TT338	Technology of Printing and Finishing Lab	-	-	3	3	2
TT340	Mini Project	-	-	3	3	2
	Total	24	0	10	34	31

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

VFSTR UNIVERSITY

IV B.Tech. TEXTILE TECHNOLOGY CURRICULUM
SEMESTER - I

Code	Subject	L	T	P	To	C
TT423	Appareal Production Technology	4	0	-	4	4
TT425	Industrial Engineering for Textiles & Apparels	4	0	-	4	4
TT427	Practical Aspects of Textile&Apparels Manufacturing	4	0	-	4	4
MS310	Managrial Economics	4	0	-	4	4
	Dept. Elective - III	4	0	-	4	4
TT429	Garment Manufacturing					
TT431	Retailing & Branding Management of Apparels					
TT433	Energy and Pollution Control in Textiles					
	Dept. Elective - IV	4	0	-	4	4
TT435	Structure and Properties of Yarn & Fabrics					
TT437	Textile Polymer Science					
TT439	Maintenance of Textile Machines					
	Practicals:					
TT441	Apparel Production Technology Lab	-	-	3	3	2
TT443	Pattern Making Lab	-	-	3	3	2
TT445	Industrial Engineering Lab	-	-	3	3	2
	Total	24	0	9	33	30

SEMESTER - II

Code	Subject	L	T	P	To	C
	Minor-V	4	0	-	4	4
	Dept. Elective - V	4	0	-	4	4
TT414	High Performance Fibers					
TT416	Functional and Medical Textiles					
TT418	Computer Applications in Textiles					
	Dept. Elective - VI	4	0	-	4	4
TT420	Textiles in Sports and Automobiles					
TT422	Textile Costing and Financial Analysis					
TT424	Home Textiles					
TT426	Project Work	-	-	20	20	10
	Total	12	0	20	32	22

The students opting for semester-long industrial internship during 8th semester, carry out Minor – V in 7th semester itself as additional course.18 credits are allotted to internship as given below:

Code	Subject	L	T	P	To	C
TT428	Internship (6 months)	-	-	36	36	18
	TOTAL	0	0	36	36	18

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

VFSTR UNIVERSITY

B.Tech. MINOR SPECIALIZATIONS

A. MANAGEMENT

Code	Subject	L	T	P	To	C
MS203	Principles of Management And Organizational Behavior	4	-	-	4	4
MS212	Business Environment And Ethics	4	-	-	4	4
MS303	Marketing and HR Management	4	-	-	4	4
MS310	Entrepreneurship and Project Management	4	-	-	4	4
MS409	Production and operations Management	4	-	-	4	4

B. HUMANITIES & SCIENCES

Code	Subject	L	T	P	To	C
HS219	Indian History and Culture	4	-	-	4	4
HS224	Polity and Governance of India	4	-	-	4	4
HS307	Economic and Social Development of india	4	-	-	4	4
HS308	Basic Numeracy, Mental Ability and Logical Reasoning	4	-	-	4	4
HS403	Geography and Environmental Concerns of Indian Basics	4	-	-	4	4

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

C. INFORMATION TECHNOLOGY (IT)

Code	Subject	L	T	P	To	C
CS223	Object Oriented Programming Through Java	4	-	-	4	4
IT201	Internet and Web Technologies	4	-	-	4	4
CS315	Operating Systems	4	-	-	4	4
IT311	Unix and Shell Programming	4	-	-	4	4
CS222	Data Base Systems	4	-	-	4	4
CS434	Multimedia Systems	4	-	-	4	4
CS225	Software Engineering	4	-	-	4	4
CS425	Datawarehousing & Datamining	4	-	-	4	4
CS435	Software Testing Methodologies	4	-	-	4	4
CS322	Object Oriented Analysis & Design	4	-	-	4	4

VFSTR UNIVERSITY

B.Tech. MINOR SPECIALIZATIONS

C. INFORMATION TECHNOLOGY (IT)

Code	Subject	L	T	P	To	C
CS223	Object Oriented Programming Through Java	4	-	-	4	4
IT201	Internet and Web Technologies	4	-	-	4	4
CS315	Operating Systems	4	-	-	4	4
IT311	Unix and Shell Programming	4	-	-	4	4
CS222	Data Base Systems	4	-	-	4	4
CS434	Multimedia Systems	4	-	-	4	4
CS225	Software Engineering	4	-	-	4	4
CS425	Datawarehousing & Datamining	4	-	-	4	4
CS435	Software Testing Methodologies	4	-	-	4	4
CS322	Object Oriented Analysis & Design	4	-	-	4	4

D. ELECTRONICS & COMMUNICATION ENGINEERING (ECE)

Code	Subject	L	T	P	To	C
EC223	Electronic Devices	4	-	-	4	4
EC250	Electronic Circuits	4	-	-	4	4
EC228	Digital Electronics	4	-	-	4	4
EC333	Communication Systems – I	4	-	-	4	4
EC335	Liner IC Applications	4	-	-	4	4
EC336	Microprocessors and Interfacing	4	-	-	4	4
EC338	Communication System – II	4	-	-	4	4
E C461	Sensors and Transducers	4	-	-	4	4

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

VFSTR UNIVERSITY

B.Tech. I Year - Course Structure
SEMESTER - I

Code	Subject	L	T	P	To	C
EE111	Fundamentals of Electrical Engineering	4	0	-	4	4
HS111	Engineering Mathematics - I	3	1	-	4	4
HS117	Engineering Chemistry	4	0	-	4	4
HS118	Environmental Studies	3	-	-	3	3
HS122	Engineering Materials	4	-	-	4	4
HS119	Professional Ethics, Values and Human Rights	2	-	-	2	-
	Practical Courses:					
EE113	Fundamentals of Electrical Engineering Lab	-	-	3	3	2
HS121	Engineering Chemistry Lab	-	-	3	3	2
ME103	Engineering Graphics	1	-	2	3	3
	TOTAL	21	1	8	30	26

SEMESTER - II

Code	Subject	L	T	P	To	C
CS101	Problem Solving and Computer Programming	4	1	-	5	5
HS113	Engineering Physics	3	1	-	4	4
HS114	Technical English Communication	3	2	-	5	5
HS115	Engineering Mathematics - II	3	1	-	4	4
ME101	Engineering Mechanics	3	1	-	4	4
CS105	Network Security	2	-	-	2	-
	Practical Courses:					
CS107	Computer Programming Lab	-	-	3	3	2
HS120	Engineering Physics Lab	-	-	3	3	2
ME105	Workshop Practice	-	-	3	3	2
	TOTAL	18	6	9	33	28

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

VFSTR UNIVERSITY

II B.Tech. COURSE STRUCTURE
SEMESTER - I

Code	Subject	L	T	P	To	C
AG201	Engineering Properties of Biological Materials and Food Quality	4	0	-	4	4
AG203	Soil and Fluid Mechanics	3	1	-	4	4
AG205	Strength of Materials and Design of Structures	3	1	-	4	4
HS213	Probability & Statistics	3	1	-	4	4
AG207	Farm Power and Renewable Energy Sources	3	1	-	4	4
SR002	Seminar – I	-	-	1	1	1
MS203	Minor – I	4	0	-	4	4
	Practical Courses:					
AG209	Mechanics Lab	-	-	3	3	2
AG211	Strength of Materials and Design of Structures	-	-	3	3	2
AG213	Farm Power and Renewable Energy Sources	-	-	3	3	2
	Total	20	4	9	33	31

SEMESTER - II

Code	Subject	L	T	P	To	C
AG202	Heat and Mass Transfer	3	1	-	4	4
CS218	Data Structures	4	0	-	4	4
AG206	Drying and Storage Engineering	3	1	-	4	4
AG208	Theory of Machines	3	1	-	4	4
AG210	Crop Production & Processing Technology	4	0	-	4	4
SR003	Seminar - II	-	-	1	1	1
MS212	Minor – II	4	0	-	4	4
	Practical Courses:					
AG214	Surveying & Levelling Lab	-	-	3	3	2
HS217	Soft skills Lab	-	-	3	3	2
AG212	Crop Process, Drying and Storage Engineering Lab	-	-	3	3	2
	Total	21	3	9	33	31

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

VFSTR UNIVERSITY
III B.Tech. COURSE STRUCTURE
SEMESTER - I

Code	Subject	L	T	P	To	C
AG301	Machine Design	3	1	-	4	4
AG303	Farm Machinery and Equipment	3	1	-	4	4
AG305	Ground Water, Wells and Pumps	3	1	-	4	4
AG307	Watershed Hydrology	3	1	-	4	4
	Elective – I					
AG309	*Food Packaging Technology*	4	0	-	4	4
AG311	*Farm Power and Machinery Management*	3	1	-	4	4
AG313	*Remote Sensing & GIS Applications*	3	1	-	4	4
SR004	Seminar - III	-	-	1	1	1
	Minor – III	4	0	-	4	4
	Practical Courses:					
AG315	Machine Drawing		-	3	3	2
AG317	Database Management and Internet	-	-	3	3	2
AG319	Farm Machinery and Equipment	-	-	3	3	2
	Total	**19**	**5**	**9**	**33**	**31**

SEMESTER - II

Code	Subject	L	T	P	To	C
AG302	Irrigation Engineering	3	1	-	4	4
AG304	Tractor Systems and Controls	3	1	-	4	4
AG306	Dairy and Food Engineering	3	1	-	4	4
AG308	Drainage Engineering	3	1	-	4	4
	Elective – II					
AG310	*Development of Processed Products and Equipments*	4	0	-	4	4
AG312	*Tractor Design and Testing*	3	1	-	4	4
AG314	*Watershed Planning and Management*	3	1	-	4	4
SR005	Seminar - IV	-	-	1	1	1
	Minor – IV	4	0	-	4	4
	Practical Couses:					
AG316	Irrigation and Drainage Engineering Lab	-	-	3	3	2
AG318	Field Operation and Maintenance of Tractors and Farm Machinery	-	-	3	3	2
AG320	Mini Project	-	-	3	3	2
	Total	**19**	**5**	**9**	**33**	**31**

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

VFSTR UNIVERSITY
IV B.Tech. COURSE STRUCTURE
SEMESTER - I

Code	Subject	L	T	P	To	C
AG401	Soil and Water Conservation and Structures	3	1	-	4	4
AG403	Electrical Machines and Power Utilization	3	1	-	4	4
ME425	Refrigeration and Air Conditioning	3	1	-	4	4
MS310	Managerial Economics	4	0	-	4	4
	Elective – III					
AG405	*Food Processing Plant Design and Layout*	3	1	-	4	4
AG407	*Hydraulic Drive & Controls*	3	1	-	4	4
AG409	*Minor Irrigation and Command area Development*	3	1	-	4	4
	Elective – IV					
AG411	*Agricultural Structures and Environment Control*	4	0	-	4	4
AG413	*Mechanics of Tillage and Traction*	3	1	-	4	4
AG415	*Micro Irrigation System Design*	3	1	-	4	4
AG417	*System Engineering*	3	1	-	4	4
	Practical Courses:					
AG419	Refrigeration and Air Conditioning Lab	-	-	3	3	2
AG421	Soil & Water Conservation and Structures lab	-	-	3	3	2
AG423	Dairy and Food Engineering Lab	-	-	3	3	2
	Total	19	5	9	33	30

SEMESTER - II

Code	Subject	L	T	P	To	C
	Elective – V					
AG406	Design and Maintenance of Greenhouse	3	1	-	4	4
AG408	Production Technology for Agril. Machinery	4	0	-	4	4
AG410	Gully and Ravine Control Structures	3	1	-	4	4
	Elective – VI					
AG412	Biomass Management for Fodder and Energy	4	0	-	4	4
AG414	Reservoir and Farm Pond Design	3	1	-	4	4
AG416	Human Engineering and Safety	4	0	-	4	4
AG418	Environmental Engineering	4	0	-	4	4
	Minor – V	4	0	-	4	4
AG420	Project	-	-	20	20	10
	Total	10	3	20	32	22

The students opting for semester-long internship during eighth semester, carryout Minor-V in seventh semester itself as additional course. Eighteen credits are allotted to internship as given below:

AG422   Internship   -   -   36   36   18

VFSTR UNIVERSITY

B.Tech. MINOR SPECIALIZATIONS

A. MANAGEMENT

Code	Subject	L	T	P	To	C
MS203	Principles of Management And Organizational Behavior	4	-	-	4	4
MS212	Business Environment And Ethics	4	-	-	4	4
MS303	Marketing and HR Management	4	-	-	4	4
MS310	Entrepreneurship and Project Management	4	-	-	4	4
MS409	Production and operations Management	4	-	-	4	4

B. HUMANITIES & SCIENCES

Code	Subject	L	T	P	To	C
HS219	Indian History and Culture	4	-	-	4	4
HS224	Polity and Governance of India	4	-	-	4	4
HS307	Economic and Social Development of india	4	-	-	4	4
HS308	Basic Numeracy, Mental Ability and Logical Reasoning	4	-	-	4	4
HS403	Geography and Environmental Concerns of India	4	-	-	4	4

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

C. INFORMATION TECHNOLOGY (IT)

Code	Subject	L	T	P	To	C
CS223	Object Oriented Programming Through Java	4	-	-	4	4
IT201	Internet and Web Technologies	4	-	-	4	4
CS315	Operating Systems	4	-	-	4	4
IT311	Unix and Shell Programming	4	-	-	4	4
CS222	Data Base Systems	4	-	-	4	4
CS434	Multimedia Systems	4	-	-	4	4
CS225	Software Engineering	4	-	-	4	4
CS425	Datawarehousing & Datamining	4	-	-	4	4
CS435	Software Testing Methodologies	4	-	-	4	4
CS322	Object Oriented Analysis & Design	4	-	-	4	4

VFSTR UNIVERSITY

B.Tech. MINOR SPECIALIZATIONS

C. INFORMATION TECHNOLOGY (IT)

Code	Subject	L	T	P	To	C
CS223	Object Oriented Programming Through Java	4	-	-	4	4
IT201	Internet and Web Technologies	4	-	-	4	4
CS315	Operating Systems	4	-	-	4	4
IT311	Unix and Shell Programming	4	-	-	4	4
CS222	Data Base Systems	4	-	-	4	4
CS434	Multimedia Systems	4	-	-	4	4
CS225	Software Engineering	4	-	-	4	4
CS425	Datawarehousing & Datamining	4	-	-	4	4
CS435	Software Testing Methodologies	4	-	-	4	4
CS322	Object Oriented Analysis & Design	4	-	-	4	4

D. ELECTRONICS & COMMUNICATION ENGINEERING (ECE)

Code	Subject	L	T	P	To	C
EC223	Electronic Devices	4	-	-	4	4
EC250	Electronic Circuits	4	-	-	4	4
EC228	Digital Electronics	4	-	-	4	4
EC333	Communication Systems – I	4	-	-	4	4
EC335	Liner IC Applications	4	-	-	4	4
EC336	Microprocessors and Interfacing	4	-	-	4	4
EC338	Communication System – II	4	-	-	4	4
E C461	Sensors and Transducers	4	-	-	4	4

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

I B.Tech. CURRICULUM
SEMESTER - I

Code	Subject	L	T	P	To	C
HS112	Mathematics for Biotechnologist-I	4	-	-	4	4
HS113	Engineering Physics	4	-	-	4	4
ME101	Engineering Mechanics	4	-	-	4	4
HS114	Technical English Communication	3	2	-	5	5
CS101	Problem Solving&Computer Programming	5	-	-	5	5
CS105	Network Security	2	-	-	2	-
	Practical Course :					
CS107	Computer Programming Lab	-	-	3	3	2
ME105	Workshop Practice	-	-	3	3	2
HS120	Engineering Physics Lab	-	-	3	3	2
TOTAL		22	2	9	33	28

SEMESTER - II

Code	Subject	L	T	P	To	C
HS116	Mathematics for Biotechnologists-II	4	-	-	4	4
HS118	Environmental Studies	3	-	-	3	3
EE111	Fundamental of Electrical Engineering	4	-	-	4	4
HS117	Engineering Chemistry	4	-	-	4	4
BT101	Elements of Biology & Biotechnology	4	-	-	4	4
HS119	Professional Ehics Values & Human Rights	2	-	-	2	-
	Practical Course :					
HS121	Engineering Chemistry Lab	-	-	3	3	2
ME103	Engineering Graphics	1	-	3	4	3
EE113	Fundamental of Electrical Engg. Lab	-	-	3	3	2
TOTAL		22	-	9	31	26

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

II B.Tech. CURRICULUM
SEMESTER - I

Code	Subject	L	T	P	To	C
BI201	Cell Biology & Microbiology	4	-	-	4	4
BI203	Biochemistry	4	-	-	4	4
BI205	Bioinformatics networks and Application	4	-	-	4	4
BI207	Biodiversity and Conservation	4	-	-	4	4
HS213	Probability & Statistics	4	-	-	4	4
SR002	Seminar		-	-	1	1
	Minor - I	4	-	-	4	4
	Practical Course :					
BI209	Microbiology Lab	-	-	3	3	2
BI211	Biochemistry Lab	-	-	3	3	2
HS217	Soft Skills Laboratory	-	-	3	3	2
TOTAL		24	-	9	34	31

SEMESTER - II

Code	Subject	L	T	P	To	C
CS218	Data Structures	4	-	-	4	4
BT214	Genetics	4	-	-	4	4
BT301	Molecular Biology	4	-	-	4	4
BI202	Introduction to Biological Databases	4	-	-	4	4
BI204	Molecular Phylogeography	4	-	-	4	4
SR003	Seminar		-	1	1	1
	Minor - II	4	-	-	4	4
	Practical Course :					
CS108	Data Structures Lab.	-	-	3	3	2
BI206	Biological Database Lab.	-	-	3	3	2
HS304	Professional Communication Laboratory	1	-	2	3	2
TOTAL		25	-	9	34	31

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

III B.Tech. CURRICULUM
SEMESTER - I

Code	Subject	L	T	P	To	C
BI301	Molecular Evolution & Phylogenetic trees	4	-	-	4	4
CS223	Object Oriented Programming through JAVA	4	-	-	4	4
IT314	Script Programming	4	-	-	4	4
MS310	Managerial Economics	4	-	-	4	4
BI303	Herbal Biotechnology **(Elective-I)**	4	-	-	4	4
BI305	Natural Selection **(Elective-I)**	-	-	-	-	-
BT307	Plant Biotechnology **(Elective-I)**	-	-	-	-	-
	Minor - III	4	-	-	4	4
SR004	Seminar	-	-	1	1	1
	Practical Course :					
CS229	Object Oriented Programming Lab.	-	-	3	3	2
IT305	Script Programming Lab.	-	-	3	3	2
BI307	Construction of Phylogenetic Trees Lab.	-	-	3	3	2
TOTAL		**24**	**-**	**10**	**34**	**31**

SEMESTER - II

Code	Subject	L	T	P	To	C
CS222	Database Systems	4	-	-	4	4
BI302	Genetic Engineering & Epigenetics	4	-	-	4	4
BI310	Biomedical informatics	4	-	-	4	4
BI312	Unix Programming	4	-	-	4	4
BI304	Ethnobotany genomics **(Elective-II)**	4	-	-	4	4
BI306	Codon Evolution and Temporal dynamics (Elective-II)	-	-	-	-	-
BT302	Animal Biotechnology **(Elective-II)**	-	-	-	-	-
	Minor - IV	4	-	-	4	4
SR005	Seminar	-	-	1	1	1
	Practical Course :					
CS228	Database System Lab	-	-	3	3	2
BI314	Unix Programming Lab	-	-	3	3	2
BI316	Mini Project Lab	-	-	3	3	2
TOTAL		**24**	**-**	**10**	**34**	**31**

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

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IV B.Tech. CURRICULUM
SEMESTER - I

Code	Subject	L	T	P	To	C
BI401	Molecular Modeling & Drug Design	4	-	-	4	4
BI403	R - Statistics	4	-	-	4	4
BI405	Immunology & Immunoinformatics	4	-	-	4	4
BI415	Structural Bioinformatics	4	-	-	4	4
	Elective - III	**4**	**-**	**-**	**4**	**4**
BI407	Population Genetics					
BI409	Proteomics and Genomics					
BT310	Bioethics Safety & IPR					
	Elective - IV	4	-	-	4	4
BI411	Forensic Science					
BI413	Next Generation sequenceing & Analysis					
BT415	Biopharmaceutical Technology					
	Practical Course :					
BI417	Immunoinformatics Lab	-	-	3	3	2
BI419	R - Statistics Lab.	-	-	3	3	2
BI421	Molecular Modeling Lab	-	-	3	3	2
TOTAL		**24**	**-**	**9**	**33**	**30**

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

SEMESTER - II

Code	Subject	L	T	P	To	C
	Minor - V	4	-	-	4	4
	Elective - V	4	-	-	4	4
BI402	Eco Informatics & Predictive Ecology					
BI404	Computational Epigenetics					
BI406	Metabolic Engineering					
	Elective - VI	4	-	-	4	4
BI408	Molecular Forensics					
BI410	Comparative Genomics					
BT409	Biosensors and Bioelectronics					
BI412	Project work	-	-	20	20	10
TOTAL		12	-	20	32	22

The students opting for semester-long industrial internship during 8th semester, carry out Minor – V in 7th semester itself as additional course. 18 credits are allotted to internship as given below:

SEMESTER - II

Code	Subject	L	T	P	To	C
BI414	Internship (6 months)	-	-	36	36	18
TOTAL		-	-	36	36	18

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

VFSTR UNIVERSITY

B.Tech. MINOR SPECIALIZATIONS

A. MANAGEMENT

Code	Subject	L	T	P	To	C
MS203	Principles of Management And Organizational Behavior	4	-	-	4	4
MS212	Business Environment And Ethics	4	-	-	4	4
MS303	Marketing and HR Management	4	-	-	4	4
MS310	Entrepreneurship and Project Management	4	-	-	4	4
MS409	Production and operations Management	4	-	-	4	4

B. HUMANITIES & SCIENCES

Code	Subject	L	T	P	To	C
HS219	Indian History and Culture	4	-	-	4	4
HS224	Polity and Governance of India	4	-	-	4	4
HS307	Economic and Social Development of india	4	-	-	4	4
HS308	Basic Numeracy, Mental Ability and Logical Reasoning	4	-	-	4	4
HS403	Geography and Environmental Concerns of India	4	-	-	4	4

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

VFSTR UNIVERSITY

B.Tech. MINOR SPECIALIZATIONS

C. INFORMATION TECHNOLOGY (IT)

Code	Subject	L	T	P	To	C
CS223	Object Oriented Programming Through Java	4	-	-	4	4
IT201	Internet and Web Technologies	4	-	-	4	4
CS315	Operating Systems	4	-	-	4	4
IT311	Unix and Shell Programming	4	-	-	4	4
CS222	Data Base Systems	4	-	-	4	4
CS434	Multimedia Systems	4	-	-	4	4
CS225	Software Engineering	4	-	-	4	4
CS425	Datawarehousing & Datamining	4	-	-	4	4
CS435	Software Testing Methodologies	4	-	-	4	4
CS322	Object Oriented Analysis & Design	4	-	-	4	4

D. ELECTRONICS & COMMUNICATION ENGINEERING (ECE)

Code	Subject	L	T	P	To	C
EC223	Electronic Devices	4	-	-	4	4
EC250	Electronic Circuits	4	-	-	4	4
EC228	Digital Electronics	4	-	-	4	4
EC333	Communication Systems – I	4	-	-	4	4
EC335	Liner IC Applications	4	-	-	4	4
EC336	Microprocessors and Interfacing	4	-	-	4	4
EC338	Communication System – II	4	-	-	4	4
E C461	Sensors and Transducers	4	-	-	4	4

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

VFSTR UNIVERSITY

I B.Tech. FOOD TECHNOLOGY CURRICULUM
SEMESTER - I

Code	Subject	L	T	P	To	C
HS112	Mathematics for Biotechnologistis - I	4	-	-	4	4
HS122	Engineering Materials	4	-	-	4	4
EE111	Fundamentals of Electrical Science	4	-	-	4	4
HS117	Engineering Chemistry	4	-	-	4	4
HS118	Environmantal Studies	3	-	-	3	3
HS119	Profissional Ethics, Values and Human Rights	2	-	-	2	-
	Practicals:					
EE113	Fundamentals of Electrical Engineering Lab	-	-	3	3	2
HS121	Engineering Chemistry Lab	-	-	3	3	2
ME103	Engineering Graphics Lab	1	-	3	4	3
	TOTAL	22	-	9	31	26

SEMESTER - II

Code	Subject	L	T	P	To	C
HS116	Mathematics for Biotechnologistis - II	4	-	-	4	4
HS113	Engineering Physics	4	-	-	4	4
ME101	Engineering Mechanics	4	-	-	4	4
HS114	Technical English Communication	3	-	-	2	5
CS101	Problem Solving and Computer Programming	5	-	-	5	5
CS105	Network Security	2	-	-	2	-
	Practicals:					
CS107	Computer Programming Lab	-	-	3	3	2
ME105	Workshop Practice	-	-	3	3	2
HS120	Engineering Physics Lab	-	-	3	3	2
	TOTAL	22	0	9	30	28

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

VFSTR UNIVERSITY

II B.Tech. FOOD TECHNOLOGY CURRICULUM
SEMESTER - I

Code	Subject	L	T	P	To	C
HS213	Probability and Statistics	4	0	-	4	4
FT201	Food Chemistry	4	0	-	4	4
	Principles of Cost Accounting	4	0	-	4	4
FT203	Food Microbiology	4	0	-	4	4
FT205	Bio-Chemistry and Nutrition	4	0	-	4	4
	Minor-I	4	0	-	4	4
SR002	Seminar	-	-	1	1	1
	Practicals:					
FT207	Food Microbiology Lab	-	-	3	3	2
FT209	Bio-Chemistry Lab	-	-	3	3	2
HS217	Soft Skills Lab	-	-	3	3	2
	TOTAL	24	0	10	34	31

SEMESTER - II

Code	Subject	L	T	P	To	C
CS218	Data Structures	4	0	-	4	4
FT202	Principles of Food Preservation	4	0	-	4	4
FT204	Fluid Mechanics and Hydraulics	4	0	-	4	4
FT206	Heat and Mass Transfer	4	0	-	4	4
FT208	Thermodynamics and Heat Engines	4	0	-	4	4
	Minor- II	4	0	-	4	4
SR003	Seminar	-	-	1	1	1
	Practicals:					
FT210	Fluid Mechanics Lab	-	-	3	3	2
FT212	Food Processing Lab	-	-	3	3	2
HS304	Professional Communication Lab	-	-	3	3	2
	TOTAL	24	0	10	34	31

VFSTR UNIVERSITY

III B.Tech. FOOD TECHNOLOGY CURRICULUM
SEMESTER - I

Code	Subject	L	T	P	To	C
FT301	Legumes and Oil Seeds Technology	4	0	-	4	4
FT303	Creal Processing	4	0	-	4	4
FT305	Fruit and Vegetable Processing	4	0	-	4	4
FT307	Bakery and Confectionery Products	4	0	-	4	4
	Dept. Elective - I	4	0	-	4	4
FT309	Refrigiration Engineering and Cold Chain					
FT311	Engineering Properties of Food Materials					
FT313	Novel Food Processing Techniques					
	Minor - III	4	0	-	4	4
SR004	Seminar	-	-	1	1	1
	Practicals:					
FT315	Creal Processing Lab	-	-	3	3	2
FT317	Fruit and Vegetable Processing Lab	-	-	3	3	2
FT319	Bakery and Confectionery Products Lab	-	-	3	3	2
	Total	24	0	10	34	31

SEMESTER - II

Code	Subject	L	T	P	To	C
MS310	Managerial Economics	4	0	-	4	4
FT302	Food Packing	4	0	-	4	4
FT304	Food Safety and Microbial Standards	4	0	-	4	4
FT306	Processing of Milk and Milk Products	4	0	-	4	4
	Dept. Elective - II	4	0	-	4	4
FT308	Processing of Meat and Poultry Products					
FT310	Food Industry By-Products					
FT312	Neutraceuticals and Functional Foods					
	Minor - IV	4	0	-	4	4
SR005	Seminar	-	-	1	1	1
	Practicals:					
FT314	Food Safety and Microbial Standards Lab	-	-	3	3	2
FT316	Processing of Milk and Milk Products Lab	-	-	3	3	2
FT318	Mini Project	-	-	3	3	2
	Total	24	0	10	34	31

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

VFSTR UNIVERSITY

IV B.Tech. FOOD TECHNOLOGY CURRICULUM

SEMESTER - I

Code	Subject	L	T	P	To	C
FT401	Processing of Spices and Planting Crops	4	0	-	4	4
FT403	Techniques in Food Analysis	4	0	-	4	4
FT405	Food Additivies	4	0	-	4	4
FT407	Food Processing Equipment	4	0	-	4	4
	Dept. Elective - III	4	0	-	4	4
FT409	Food Plant Layout, Management and Utilities					
FT411	Processing of Fish and Marine Products					
FT413	Food Quality and Certification					
	Dept. Elective - IV	4	0	-	4	4
FT415	Food Biotechnology					
FT417	Food Storage and Transport Engineering					
FT419	Food Laws and Regulations					
	Practicals:					
FT421	Processing of Spices and Planting Crops Lab	-	-	3	3	2
FT423	Techniques in Food Analysis Lab	-	-	3	3	2
FT425	Food Processing Equipment Lab	-	-	3	3	2
	Total	24	0	9	33	30

SEMESTER - II

Code	Subject	L	T	P	To	C
	Minor-V	4	0	-	4	4
	Dept. Elective - V	4	0	-	4	4
FT402	Instrumentation and Process Control					
FT404	Industrial Microbiology					
FT406	Product Development and Formulation					
	Dept. Elective - VI	4	0	-	4	4
FT408	Extrusion Technology					
FT410	Entrepreneurship Development					
FT412	Post Harvest Management of Fruits and Vegetables					
FT414	Project Work	-	-	20	20	10
	Total	12	0	20	32	22

The students opting for semester-long industrial internship during 8th semester, carry out Minor – V in 7th semester itself as additional course.18 credits are allotted to internship as given below:

Code	Subject	L	T	P	To	C
FT416	Internship (6 months)	-	-	36	36	18
	TOTAL	0	0	36	36	18

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

MINOR SPECIALIZATIONS

A. MANAGEMENT

Code	Subject	L	T	P	To	C
MS203	Principles of Management & Organizational Behaviour	4	-	-	4	4
MS212	Business Environment and Ethics	4	-	-	4	4
MS303	Marketing and HR Management	4	-	-	4	4
MS310	Entrepreneurship and Project Management	4	-	-	4	4
MS409	Production and Operations Management	4	-	-	4	4

B. HUMANITIES & SCIENCES

Code	Subject	L	T	P	To	C
HS219	Indian History and Culture	4	-	-	4	4
HS224	Polity and Governance of India	4	-	-	4	4
HS307	Economic and Social Development of India	4	-	-	4	4
HS308	Basic Numeracy, Mental Ability and Logical Reasoning	4	-	-	4	4
HS403	Geography and Environmental Concerns of India	4	-	-	4	4

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

C. INFORMATION TECHNOLOGY

Code	Subject	L	T	P	To	C
CS223	Object Oriented Programming Through Java	4	-	-	4	4
IT201	Internet and Web Technologies	4	-	-	4	4
CS315	Operating Systems	4	-	-	4	4
IT311	Unix And Shell Programming	4	-	-	4	4
CS222	Data Base Systems	4	-	-	4	4
CS434	Multimedia Systems	4	-	-	4	4
CS225	Software Engineering	4	-	-	4	4
CS425	Datawarehousing & Datamining	4	-	-	4	4
CS435	Software Testing Methodologies	4	-	-	4	4
CS322	Object Oriented Analysis & Design	4	-	-	4	4

D. ELECTRONICS & COMMUNICATION ENGINEERING

Code	Subject	L	T	P	To	C
EC223	Electronic Devices	4	-	-	4	4
EC250	Electronic Circuits	4	-	-	4	4
EC228	Digital Electronics	4	-	-	4	4
EC333	Communication Systems - I	4	-	-	4	4
EC335	Linear IC Aplications	4	-	-	4	4
EC336	Microprocessors and Interfacing	4	-	-	4	4
EC338	Communication Systems-II	4	-	-	4	4
EC461	Sensors and Trasducers	4	-	-	4	4

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

B.Tech. BIOMEDICAL ENGINEERING

B.Tech. I Year - Course Structure
SEMESTER - I

Code	Subject	L	T	P	To	C
HS112	Mathematics for Biotechnologist - I	4	-	-	4	4
HS123	Engineering Physics	4	-	-	4	4
ME101	Engineering Mechanics	4	-	-	4	4
HS114	Technical English Communication	3	2	-	5	5
CS101	Problem Solving and Computer Programming	5	-	-	5	5
CS105	Network Security	2	-	-	2	-
	Practicals:					
HS120	Engineering Physics Lab	-	-	3	3	2
CS107	Computer Programming Lab	-	-	3	3	2
ME105	Workshop Practice	-	-	3	3	2
	TOTAL	**22**	**2**	**9**	**31**	**28**

SEMESTER - II

Code	Subject	L	T	P	To	C
HS116	Mathematics for Biotechnologist - II	3	1	-	4	4
HS118	Environmental Studies	3	-	-	3	3
EE111	Fundamentals of Electrical Engineering	4	-	-	4	4
HS117	Engineering Chemistry	4	-	-	4	4
HS122	Engineering Materials	4	-	-	4	4
HS119	Professional Ethics, Values and Human Rights	2	-	-	2	-
	Practicals:					
HS121	Engineering Chemistry Lab	-	-	3	3	2
ME103	Engineering Graphics	1	-	3	4	3
EE113	Fundamentals of Electrical Engg. Lab	-	-	3	3	2
	TOTAL	**21**	**1**	**9**	**31**	**26**

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

B.Tech. BIOMEDICAL ENGINEERING

B.Tech. II Year - Course Structure
SEMESTER - I

Code	Subject	L	T	P	To	C
BM201	Anatomy	4	-	-	4	4
BM203	Physiology	4	-	-	4	4
BM211	Bio Chemistry	4	-	-	4	4
EC217	Network Theory	3	1	-	4	4
BM205	Signals and Systems for Bioengineers	3	1	-	4	4
	Minor - I	4	-	-	4	4
SR002	Seminar	-	-	1	1	1
	Practicals:					
BM207	Anatomy and Physiology Lab	-	-	3	3	2
BT211	Biochemistry Lab	-	-	3	3	2
BM209	Signals and Systems for Bioengineers Lab	-	-	3	3	2
	Total	22	2	10	34	31

SEMESTER - II

Code	Subject	L	T	P	To	C
BM202	Transforms and partial differential equations	3	1	-	4	4
BM204	Electronics Engineering - I	4	-	-	4	4
BM206	Transducers and Bio-sensors	3	1	-	4	4
BM208	Communication Systems	4	-	-	4	4
BM210	Clinical Science	3	1	-	4	4
	Minor - II	4	-	-	4	4
SR003	Seminar	-	-	1	1	1
	Practicals:					
HS217	Soft Skills Lab	-	-	3	3	2
BM212	Electronics Engineering-I Lab	-	-	3	3	2
BM214	Transducers and Bio-sensors Lab	-	-	3	3	2
	Total	21	3	10	34	31

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

B.Tech. BIOMEDICAL ENGINEERING

B.Tech. III Year - Course Structure
SEMESTER - I

Code	Subject	L	T	P	To	C
BM301	Microprocessor and Microcontrollers for Bio Engineers	4	-	-	4	4
BM303	Bio Medical Instrumentation	4	-	-	4	4
BM305	Diagnostic and therapeutic equipments-I	4	-	-	4	4
BM307	Electronics Engineering - II	4	-	-	4	4
	Dept. Elective - I	4	-	-	4	4
BM309	Physiological control systems					
BM311	Bio Informatics					
BM313	Total Quality Management					
	Minor-III	4	-	-	4	4
SR004	Seminar	-	-	1	1	1
	Practicals:					
BM315	Microprocessor and Microcontrollers Bio Engineers Lab	-	-	3	3	2
BM317	Biomedical Instrumentation Lab	-	-	3	3	2
HS304	Professional Communication Lab	-	-	3	3	2
	Total	24	0	10	34	31

SEMESTER - II

Code	Subject	L	T	P	To	C
EC431	Digital Signal Processing	3	1	-	4	4
CS218	Data Structures	4	-	-	4	4
BM302	Diagnostic and therapeutic equipment-II	4	-	-	4	4
BM304	Medi-Embedded Systems and RTOS	4	-	-	4	4
	Dept. Elective - II	4	-	-	4	4
BM306	Bio Materials and Artificial Organs					
BM308	Physiological System Modeling					
EC320	VLSI Design					
	Minor-IV	4	-	-	4	4
SR005	Seminar	-	-	1	1	1
	Practicals:					
BM310	DSP Lab (with MATLAB, C)	-	-	3	3	2
BM312	Embedded System Lab	-	-	3	3	2
BM314	Mini Project	-	-	3	3	2
	Total	23	1	10	34	31

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

B.Tech. BIOMEDICAL ENGINEERING

B.Tech. IV Year - Course Structure
SEMESTER - I

Code	Subject	L	T	P	To	C
MS310	Managerial Economics	4	-	-	4	4
BM401	Medical Imaging Techniques	3	1	-	4	4
BM403	Digital Image Processing	3	1	-	4	4
IT310	Soft Computing	4	-	-	4	4
	Dept. Elective - III	4	-	-	4	4
BM405	Rehabilitation Engineering					
BM407	Wearable Systems					
EC447	Nano Electronics					
	Dept. Elective - IV	4	-	-	4	4
BM409	Hospital Management					
BM411	Assist Devices					
BM413	Fiber Optics and Lasers in Medicine					
	Practicals:					
BM415	Digital Image Processing Lab	-	-	3	3	2
BM417	Data Structures Lab	-	-	3	3	2
BM419	Hospital Visit	-	-	3	3	2
	Total	**22**	**2**	**9**	**33**	**30**

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

B.Tech. BIOMEDICAL ENGINEERING
B.Tech. IV Year - Course Structure
SEMESTER - II

Code	Subject	L	T	P	To	C
	Minor-V	4	-	-	4	4
	Department Electives-V	4	-	-	4	4
BM402	Telemedicine					
BM404	Bio Transport Process					
BM406	Neural Engineering					
	Department Electives-IV	4	-	-	4	4
BM408	Tissue Engineering					
BM410	Bio MEMS					
BM412	Medical Physics					
BM414	Project Work	-	-	20	20	10
	TOTAL	12	-	20	31	22

The students opting for semester-long industrial internship during eighth semester, carry out Minor-V in seventh semester itself as additional course. Eighteen credits are alloted to internship as given below.

Practicals		L	T	P	To	C
BM416	Internship	-	-	36	36	18
	Total	-	-	36	36	18

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits

B.Tech. MINOR SPECIALIZATIONS

A. MANAGEMENT

Code	Subject	L	T	P	To	C
MS203	Principles of Management And Organizational Behavior	4	-	-	4	4
MS212	Business Environment And Ethics	4	-	-	4	4
MS303	Marketing and HR Management	4	-	-	4	4
MS310	Entrepreneurship and Project Management	4	-	-	4	4
MS409	Production and operations Management	4	-	-	4	4

B. HUMANITIES & SCIENCES

Code	Subject	L	T	P	To	C
HS219	Indian History and Culture	4	-	-	4	4
HS224	Polity and Governance of India	4	-	-	4	4
HS307	Economic and Social Development of india	4	-	-	4	4
HS308	Basic Numeracy, Mental Ability and Logical Reasoning	4	-	-	4	4
HS403	Geography and Environmental Concerns of India	4	-	-	4	4

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

B.Tech. BIOMEDICAL ENGINEERING

B.Tech. MINOR SPECIALIZATIONS

C. INFORMATION TECHNOLOGY (IT)

Code	Subject	L	T	P	To	C
CS223	Object Oriented Programming Through Java	4	-	-	4	4
IT201	Internet and Web Technologies	4	-	-	4	4
CS315	Operating Systems	4	-	-	4	4
IT311	Unix and Shell Programming	4	-	-	4	4
CS222	Data Base Systems	4	-	-	4	4
CS434	Multimedia Systems	4	-	-	4	4
CS225	Software Engineering	4	-	-	4	4
CS425	Datawarehousing & Datamining	4	-	-	4	4
CS435	Software Testing Methodologies	4	-	-	4	4
CS322	Object Oriented Analysis & Design	4	-	-	4	4

D. ELECTRONICS & COMMUNICATION ENGINEERING (ECE)

Code	Subject	L	T	P	To	C
EC223	Electronic Devices	4	-	-	4	4
EC250	Electronic Circuits	4	-	-	4	4
EC228	Digital Electronics	4	-	-	4	4
EC333	Communication Systems – I	4	-	-	4	4
EC335	Liner IC Applications	4	-	-	4	4
EC336	Microprocessors and Interfacing	4	-	-	4	4
EC338	Communication System – II	4	-	-	4	4
E C461	Sensors and Transducers	4	-	-	4	4

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

VFSTR UNIVERSITY

I B.Tech. PETROLEUM ENGINEERING CURRICULUM
SEMESTER - I

Code	Subject	L	T	P	To	C
HS111	Engineering Mathematics - I	4	-	-	4	4
HS122	Engineering Materials	4	-	-	4	4
EE111	Fundamentals of Electrical Engineering	4	-	-	4	4
HS117	Engineering Chemistry	4	-	-	4	4
HS118	Environmantal Studies	3	-	-	3	3
HS119	Profissional Ethics, Values and Human Rights	2	-	-	2	-
	Practicals:					
EE113	Fundamentals of Electrical Engineering Lab	-	-	3	3	2
HS121	Engineering Chemistry Lab	-	-	3	3	2
ME103	Engineering Graphics Lab	1	-	3	4	3
	TOTAL	22	-	9	31	26

SEMESTER - II

Code	Subject	L	T	P	To	C
HS115	Engineering Mathematics - II	4	-	-	4	4
HS113	Engineering Physics	4	-	-	4	4
ME101	Engineering Mechanics	4	-	-	4	4
HS114	Technical English Communication	3	-	-	2	5
CS101	Problem Solving and Computer Programming	5	-	-	5	5
CS105	Network Security	2	-	-	2	-
	Practicals:					
CS107	Computer Programming Lab	-	-	3	3	2
ME105	Workshop Practice	-	-	3	3	2
HS120	Engineering Physics Lab	-	-	3	3	2
	TOTAL	22	0	9	30	28

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

VFSTR UNIVERSITY

II B.Tech. PETROLEUM ENGINEERING CURRICULUM
SEMESTER - I

Code	Subject	L	T	P	To	C
HS213	Probability and Statistics	4	0	-	4	4
PL201	Petroleum Geology	4	0	-	4	4
CH215	Momentum Transfer	4	0	-	4	4
CH217	Chemical Process Calculations	4	0	-	4	4
PL203	Petroleum Geophysics	4	0	-	4	4
	Minor-I	4	0	-	4	4
SR002	Seminar	-	-	1	1	1
	Practicals:					
PL205	Petroleum Geology Lab	-	-	3	3	2
CH205	Momentum Transfer Lab	-	-	3	3	2
HS217	Soft Skills Lab	-	-	3	3	2
	TOTAL	**24**	**0**	**10**	**34**	**31**

SEMESTER - II

Code	Subject	L	T	P	To	C
PL202	Petroleum Engg. Thermodynamics	4	0	-	4	4
PL204	Process Heat Transfer	4	0	-	4	4
PL206	Drilling Technology-I	4	0	-	4	4
PL208	Drilling Fluids & Cementing Technology	4	0	-	4	4
PL210	Petrochemical Products	4	0	-	4	4
	Minor- II	4	0	-	4	4
SR003	Seminar	-	-	1	1	1
	Practicals:					
PL212	Process Heat Transfer Lab	-	-	3	3	2
PL214	Drilling Technology-I Lab	-	-	3	3	2
HS304	Professional Communication Lab	-	-	3	3	2
	TOTAL	**24**	**0**	**10**	**34**	**31**

VFSTR UNIVERSITY

III B.Tech. PETROLEUM ENGINEERING CURRICULUM
SEMESTER - I

Code	Subject	L	T	P	To	C
PL301	Petroleum Production Engineering	4	0	-	4	4
PL303	Process Instrumentation	4	0	-	4	4
PL305	Well Logging & Formation Evaluation	4	0	-	4	4
PL307	Well Completion, Testing & Services	4	0	-	4	4
	Dept. Elective - I	4	0	-	4	4
PL309	Petroleum Refinery Engineering					
	Minor - III	4	0	-	4	4
SR004	Seminar	-	-	1	1	1
Practicals:						
PL315	Proces Instrumentation Lab	-	-	3	3	2
PL317	Drilling Technology & Well Logging Lab	-	-	3	3	2
PL319	Petroleum Analysis Lab	-	-	3	3	2
	Total	24	0	10	34	31

SEMESTER - II

Code	Subject	L	T	P	To	C
PL302	Petroleum Reservoir Engineering	4	0	-	4	4
PL304	Surface Production Operations	4	0	-	4	4
PL306	Process Dynamics & Control	4	0	-	4	4
PL308	Petroleum Economics & Asset Management	4	0	-	4	4
	Dept. Elective - II	4	0	-	4	4
PL350	Fundamentals of Liquified Natural Gas					
	Minor - IV	4	0	-	4	4
SR005	Seminar	-	-	1	1	1
	Practicals:						
PL310	Petroleum Reservoir Engineering-I Lab	-	-	3	3	2
PL312	Process Dynamics & Control Lab	-	-	3	3	2
CH336	Mini Project	-	-	3	3	2
	Total	24	0	10	34	31

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

VFSTR UNIVERSITY

IV B.Tech. PETROLEUM ENGINEERING CURRICULUM
SEMESTER - I

Code	Subject	L	T	P	To	C
MS310	Managerial Economics	4	0	-	4	4
PL401	Health Safety & Environment	4	0	-	4	4
PL402	Oil & Gas Process Plant Design	4	0	-	4	4
PL403	Petroleum Reservoir Engineering-II	4	0	-	4	4
PL404	Enhanced Oil Recovery Methods	4	0	-	4	4
	Dept. Elective - III	4	0	-	4	4
PL441	Reservoir Stimulation					
	Practicals:					
PL421	Petroleum Reservoir Engineering-II Lab	-	-	3	3	2
PL423	Enhanced Oil Recovery Methods Lab	-	-	3	3	2
PL424	Oil & Gas Process Plant Design Lab	-	-	3	3	2
	Total	**24**	**0**	**9**	**33**	**30**

SEMESTER - II

Code	Subject	L	T	P	To	C
PL411	Project Work	-	-	20	20	15
	Total	**0**	**0**	**20**	**20**	**15**

The students opting for semester-long industrial internship during 8th semester, carry out Minor – V in 7th semester itself as additional course.18 credits are allotted to internship as given below:

Code	Subject	L	T	P	To	C
CH412	Internship (6 months)	-	-	36	36	18
	TOTAL	**0**	**0**	**36**	**36**	**18**

L = Lecture **; T =** Tutorial **; P =** Practicals **; To =** Total **; C =** Credits

MINOR SPECIALIZATIONS

A. MANAGEMENT

Code	Subject	L	T	P	To	C
MS203	Principles of Management & Organizational Behaviour	4	-	-	4	4
MS212	Business Environment and Ethics	4	-	-	4	4
MS303	Marketing and HR Management	4	-	-	4	4
MS310	Entrepreneurship and Project Management	4	-	-	4	4
MS409	Production and Operations Management	4	-	-	4	4

B. HUMANITIES & SCIENCES

Code	Subject	L	T	P	To	C
HS219	Indian History and Culture	4	-	-	4	4
HS224	Polity and Governance of India	4	-	-	4	4
HS307	Economic and Social Development of India	4	-	-	4	4
HS308	Basic Numeracy, Mental Ability and Logical Reasoning	4	-	-	4	4
HS403	Geography and Environmental Concerns of India	4	-	-	4	4

L = Lecture ; **T =** Tutorial ; **P =** Practicals ; **To =** Total ; **C =** Credits

C. INFORMATION TECHNOLOGY

Code	Subject	L	T	P	To	C
CS223	Object Oriented Programming Through Java	4	-	-	4	4
IT201	Internet and Web Technologies	4	-	-	4	4
CS315	Operating Systems	4	-	-	4	4
IT311	Unix And Shell Programming	4	-	-	4	4
CS222	Data Base Systems	4	-	-	4	4
CS434	Multimedia Systems	4	-	-	4	4
CS225	Software Engineering	4	-	-	4	4
CS425	Datawarehousing & Datamining	4	-	-	4	4
CS435	Software Testing Methodologies	4	-	-	4	4
CS322	Object Oriented Analysis & Design	4	-	-	4	4

D. ELECTRONICS & COMMUNICATION ENGINEERING

Code	Subject	L	T	P	To	C
EC223	Electronic Devices	4	-	-	4	4
EC250	Electronic Circuits	4	-	-	4	4
EC228	Digital Electronics	4	-	-	4	4
EC333	Communication Systems - I	4	-	-	4	4
EC335	Linear IC Aplications	4	-	-	4	4
EC336	Microprocessors and Interfacing	4	-	-	4	4
EC338	Communication Systems-II	4	-	-	4	4
EC461	Sensors and Trasducers	4	-	-	4	4

L = Lecture **;** **T =** Tutorial **;** **P =** Practicals **;** **To =** Total **;** **C =** Credits