Birla Institute of Technology & Science, Pilani
Pilani | Dubai | Goa | Hyderabad | Mumbai

DETAILS OF PROGRAMMES

Legend

AN	Aeronautics
BIO	Biological Sciences
BIOT	Biotechnology
CDP	Courses on Development Process
CE	Civil Engineering
CHE	Chemical
CHEM	Chemistry
CHI	Chinese
CS/Comp/Comp Sc	Computer Science
ECON	Economics
ECE	Electronics and Communication Engineering
EEE	Electrical & Electronics Engineering
EI	Electronics & Instrumentation
ES	Engineering Science
ET	Engineering Technology
Engg	Engineering: Chemical, Civil, Computer Science, Electrical & Electronics, Electronics & Instrumentation, Electronics and Communication, Manufacturing, Mechanical
ENGL	English
ExptlSc	Experimental Science: Biological Sciences, Chemistry, Physics
FIN	Finance
FRE	French
GER	German

HSS	Humanities and Social Sciences
IS	Information Systems
ITEB	Internet Technology and e-Business
JAP	Japanese
L	Lecture hours per week
MATH	Mathematics
MBA	Master of Business Administration
MECH	Mechanical
MF	Manufacturing Engineering
Min/Max	Indicates minimum/maximum number of units specified in a course or semester programme
MGTS	Management
MGSYS	Management Systems
MM	Manufacturing Management
MPH	Master in Public Health
MST	Material Science and Technology
P	Practical, Seminar & Project, etc. hours per week
PHIL	Philosophy
PHARM	Pharmacy
PHY	Physics
RUS	Russian
SAN	Sanitation Science, Technology and Management
SS	Software Systems
Sc.	Biological Sciences, Chemistry, Economics, Mathematics, Physics
T	Suffixed to a course number indicates that a non-letter grade will be awarded in such a course
TA	Technical Arts
TOC	Technique Oriented Courses
U	Number of units associated to a course

Course descriptions are available at: **https://academic.bits-pilani.ac.in/Institute_Important_Documents.aspx**

INTEGRATED FIRST DEGREE PROGRAMMES

(I) Structure of the Integrated First Degree Programmes

The structure and the requirements of the first degree programs ,namely, B.E.,B. Pharm., and M.Sc., are provided in the following sections.

The structure and the requirements of the first degree programs, namely, B.E., B. Pharm, M.Sc., and M.Sc.(Tech) are the same as provided in the following sections although the nomenclature of these programs is indicated without the Hons. / Tech. tag in the rest of the section**.**

The category-wise structure of each programme:

Category	**Number of Units Required**	**Number of Courses Required**
(I) General Institutional Requirement		
Humanities Electives	8	3
Science Foundation	12	6
Mathematics Foundation	12	4
Engineering Foundation	6	2
Technical Arts	10	4
General Awareness / Professional Courses	3 to 6	1 to 3
Sub-Total	**51 to 54**	**20 to 22**
(II) Discipline Requirement		
Core	33 to 48	10 to 16

Elective	12 to 27	4 to 9
Sub-Total	57 to 60	15 to 20
(III) Open Electives	15 to 27	5 to 9
Course-work Sub-Total	**129 (min)**	**41 (min)**
(IV) PS-I and II **OR** **Thesis**	25 OR 9 to 16	2 OR 1
Total	**144 (min)**	**42 (min)**

A student should complete the minimum number of courses and units required in each category as well as meet the minimum requirements of courses (42) and units (144) in total.

1. The following courses are needed to meet the General Institutional Requirement:

a) General Biology, Biology Laboratory, General Chemistry, Chemistry Laboratory, Mechanics, Oscillations and Waves, and Physics Laboratory under the head of Science Foundation. For specific programs, General Physics may replace Mechanics, Oscillations and Waves.

b) Electrical Sciences, Thermodynamics and Process Engineering under the head of Engineering Foundation.

c) Computer Programming, Workshop Practice, Engineering Graphics, and Technical Report Writing under the head of Technical Arts.

d) Principles of Economics, or Principles of Management and Environmental Studies* under the head of General Awareness / Professional courses. *[Students completing this course will be awarded a non-letter grade (GOOD or POOR)]

2. The courses under the following heads are designed to meet the General Institutional Requirement under the head of Humanities Electives:
    - Languages and Literature
    - History and Philosophy
    - Political and Social Sciences
    - Fine Arts and Professional Arts
3. A thesis is for 16 units and for a full semester duration. But a student has the option of pursuing a Thesis of 9 units concurrently with coursework over a full semester, in which case the additional coursework would be at least 2 courses of total 6 units to meet the minimum unit requirements.

The nominal semester-wise chart for first degree programs are given in the Pages 3-22.

Dual Degree Programs:

Students admitted to M.Sc. programmes are given an opportunity to work under the dual degree scheme for one of the B.E. programmes, the assignment being made by competition on their performance at BITS at the end of the first year, separately in Pilani, Goa and Hyderabad campuses. The Dual Degree scheme at BITS Pilani is quite popular. Based on the above, the curricular structure of a dual degree programmmes has been derived using the following principles.

- General Institute Requirements will remain the same for both the degrees of the composite dual-degree program and therefore need not be repeated.
- While the Discipline Requirements of each of the two degrees in a dual degree program have to be met separately, any course that meets the discipline requirements of both the degree programs need not be repeated.
- In addition the Discipline Elective courses of either of the two degrees

in a dual degree program may be used to fulfill the open elective requirement of the other degree.

- A PS-II or Thesis must be done to meet the requirements of each degree. Therefore to complete the dual degree program a student must complete one of the following:
  - 2 Practice School-II courses
  - 2 Thesis courses
  - 1 Practice School-II course and 1 Thesis course.

A thesis for 9 units with concurrent course work for at most 9 units over a full semester duration is also possible as an option.

Based on these principles, the semester-wise patterns for a composite dual degree program as options for the student are shown in pages 23-25. However, the charts mentioned on pages 26-65 are designed to enable the students to complete the composite dual degrees in their respective programmes in 10 semesters.

Semester-wise Pattern for Students Admitted to B.E. Biotechnology Programme								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Open/Humanities Electives	3(min)			or	or
	BIOT	F211	Biological Chemistry	3	MGTS	F211	Principles of Management	3
	BIOT	F212	Microbiology	4			Open/Humanities Electives	3(min)
	BIOT	F215	Biophysics	3	BIOT	F241	Genetic Engineering Techniques	4
	BIOT	F213	Cell Biology	3	BIOT	F243	Genetics	3
	BITS	F225	Environmental Studies	3	BIOT	F245	Introduction to Environmental Biotechnology	3
					BIOT	F244	Instrumental Methods of Analysis	4
				22				**20**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	3to6			Open/Humanities Electives	3to6
	BIOT	F311	Recombinant DNA Technology	3	BIOT	F342	Immunology	3
					BIOT	F343	Experiments in Biotechnology	3
	BIOT	F314	Industrial Microbiology & Bioprocess Engineering	4	BIOT	F344	Downstream Processing	3
			Discipline Electives	8			Discipline Electives	6
				18/21				**18/21**
IV			Open Electives	5 to 11	BITS	F412	Practice School-II	20
			Discipline Electives	3			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15to18
				8/14				**15/20**

Discipline Core -43 Units (13 Courses)

Discipline Electives-15 Units(5 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to B.E. Chemical Programme									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3(min)			or	or
	CHE	F211	Chemical Process Calculations	3	MGTS	F211	Principles of Management Humanities Electives	3 3(min)
	CHE	F214	Engineering Chemistry	3	CHE	F241	Heat Transfer	3
	CHE	F213	Chemical Engineering Thermodynamics	3	CHE	F242	Numerical Methods for Chemical Engineers	3
	CHE	F212	Fluid Mechanics	3	CHE	F243	Material Science & Engineering	3
	BITS	F225	Environmental Studies	3	CHE	F244	Separation Processes I	3
				21 (min)				**18(min)**
Summer	**BITS F221 Practice School – I(for PS Option Only)**							
III			Open/Humanities Electives	3to6			Open/Humanities Electives	3to6
	CHE	F312	Chemical Engineering Laboratory I	3	CHE	F341	Chemical Engineering Laboratory II	3
	CHE	F313	Separation Processes II	3	CHE	F342	Process Dynamics &	3
	CHE	F311	Kinetics & Reactor Design	3			Control	
	CHE	F314	Process Design Principles I	3	CHE	F343	Process Design	
			Discipline Electives	3			Principles II	3
							Discipline Electives	6
				18/21				**18/21**
IV			Open Electives	5 to 11	BITS	F412	Practice School-II	20
			Discipline Electives	6			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15 to 18
				11/17				**15/20**

Discipline Core -45 Units (15 Courses)

Discipline Electives-15 Units(5 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to B.E. Civil Programme									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3 (min)			or	or
	CE	F211	Mechanics of Solids	3	MGTS	F211	Principles of Management	3
	CE	F231	Fluid Mechanics	3			Humanities Electives	3 (min)
	CE	F213	Surveying	4	CE	F241	Analysis of Structures	3
	CE	F230	Civil Engineering Materials	4	CE	F242	Construction Planning & Technology	3
					CE	F243	Soil Mechanics	4
					CE	F244	Highway Engineering	4
					BITS	F225	Environmental Studies	3
				20 (min)				**20(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	1 to 4			Open/Humanities	2 to 5
	CE	F320	Design of Reinforced Concrete Structures	3			Electives	
	CE	F312	Hydraulic Engineering	4	CE	F342	Water & Waste Water	4
	CE	F313	Foundation Engineering	3			Treatment	
			Discipline Electives	6	CE	F321	Engineering Hydrology	3
					CE	F343	Design of Steel Structures	3
							Discipline Electives	6
				17/20				**18/21**
IV			Open Electives	8to14	BITS	F412	Practice School-II	20
							or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15to18
				8/14				**15/20**

Discipline Core -48 Units (14 Courses)

Discipline Electives-12 Units(4 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to B. E. Computer Science Programme								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3(min)			or	or
	CS	F214	Logic in Computer Science	3	MGTS	F211	Principles of Management	3
	CS	F222	Discrete Structures for Computer Science	3			Humanities Electives	3(min)
	CS	F213	Object Oriented Programming	4	CS	F211	Data Structures & Algorithms	4
	CS	F215	Digital Design	4	CS	F241	Microprocessors & Interfacing	4
					CS	F212	Database Systems	4
					BITS	F225	Environmental Studies	3
				20(min)				**21(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	3to6			Open/Humanities Electives	2to5
	CS	F351	Theory of Computation	3				
	CS	F372	Operating Systems	3	CS	F363	Compiler Construction	3
	CS	F301	Principles of Programming Languages	2	CS	F364	Design & Analysis of Algorithms	3
	CS	F342	Computer Architecture	4	CS	F303	Computer Networks	4
			Discipline Electives	3(min)			Discipline Electives	6(min)
				18/21				**18/21**
IV			Open Electives	6to12	BITS	F412	Practice School-II	20
			Discipline Electives	3(min)			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15to18
				9/15				**15/20**

Discipline Core -48 Units (14 Courses)

Discipline Electives-12 Units(4 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to B.E. Electrical & Electronics Programme									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3(min)			or	or
	EEE	F211	Electrical Machines	4	MGTS	F211	Principles of Management	3
	EEE	F212	Electromagnetic Theory	3			Humanities Electives	3(min)
	EEE	F215	Digital Design	4	EEE	F241	Microprocessors & Interfacin	4
	EEE	F214	Electronic Devices	3	EEE	F242	Control Systems	3
					EEE	F243	Signals & Systems	3
					EEE	F244	Microelectronic Circuits	3
					BITS	F225	Environmental Studies	3
				20(min)				**22(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	4to6			Open/Humanities Electives	3to6
	EEE	F311	Communication Systems	4	EEE	F341	Analog Electronics	4
	MATH	F212	Optimization	3	EEE	F342	Power Electronics	4
			or		EEE	F312	Power Systems	3
	ME	F344	Engineering Optimization	2			Discipline Electives	4(min)
	EEE	F313	Analog & Digital VLSI Design	3				
			Discipline Electives	5(min)				
				18/21				**18/21**
IV			Open Electives	5to11	BITS	F412	Practice School-II	20
			Discipline Electives	3(min)			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15to18
				8/14				**15/20**

Discipline Core -47 or 48 Units (14 Courses)

Discipline Electives-12 Units (4 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to B.E. Electronics & Communication Programme									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3(min)			or	or
	ECE	F211	Electrical Machines	4	MGTS	F211	Principles of Management	3
	ECE	F212	Electromagnetic Theory	3			Humanities Electives	3(min)
	ECE	F215	Digital Design	4	ECE	F241	Microprocessors and	
	ECE	F214	Electronic Devices	3			Interfacing	4
					ECE	F242	Control Systems	3
					ECE	F243	Signals & Systems	3
					ECE	F244	Microelectronic Circuits	3
					BITS	F225	Environmental Studies	3
				20(min)				**22(min)**
Summer				**BITS F221 Practice School – I (for PS Option Only)**				
III			Open/Humanities Electives	3 to 6			Open/Humanities Electives	3 to 6
	ECE	F311	Communication Systems	4	ECE	F341	Analog Electronics	4
	ECE	F314	Electromagnetic Fields &		ECE	F343	Communication Networks	3
			Microwave Engineering	3	ECE	F344	Information Theory &	
	ECE	F434	Digital Signal Processing	4			Coding	3
			Discipline Electives	4(min)			Discipline Electives	5(min)
				18/21				**18/21**
IV			Open Electives	5 to 11	BITS	F412	Practice School-II	20
			Discipline Electives	3			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15 to 18
				8/14				**15/20**

Discipline Core-48 Units (14 Courses)

Discipline Electives-12 Units (4 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to B.E. Electronics and Instrumentation Programme									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3(min)			or	or
	INSTR	F211	Electrical Machines	4	MGTS	F211	Principles of Management	3
	INSTR	F212	Electromagnetic Theory	3			Humanities Electives	3(min)
	INSTR	F215	Digital Design	4	INSTR	F241	Microprocessors & Interfacing	4
	INSTR	F214	Electronic Devices	3	INSTR	F242	Control Systems	3
					INSTR	F243	Signals & Systems	3
					INSTR	F244	Microelectronic Circuits	3
					BITS	F225	Environmental Studies	3
				20(min)				**22(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	3to6			Open/Humanities Electives	3to6
	INSTR	F311	Electronic Instruments & Instrumentation Technology	4	INSTR	F341	Analog Electronics	4
					INSTR	F342	Power Electronics	4
	INSTR	F312	Transducers & Measurement Systems	3	INSTR	F343	Industrial Instrumentation & Control	3
	INSTR	F313	Analog & Digital VLSI Design	3			Discipline Electives	4(min)
			Discipline Electives	5(min)				
				18/21				**18/21**
IV			Open Electives	5to11	BITS	F412	Practice School-II	20
			Discipline Electives	3			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15to18
				8/14				**15/20**

Discipline Core- 48 Units (14 Courses)

Discipline Electives-12 Units (4 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to B.E. Mechanical Programme								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BITS	F110	Engineering Graphics	2	BITS	F111	Thermodynamics	3
	BIO	F110	Biology Laboratory	1	BITS	F112	Technical Report Writing	2
	BIO	F111	General Biology	3	CS	F111	Computer Programming	4
	CHEM	F110	Chemistry Laboratory	1	EEE	F111	Electrical Sciences	3
	CHEM	F111	General Chemistry	3	MATH	F112	Mathematics II	3
	MATH	F111	Mathematics I	3	MATH	F113	Probability and Statistics	3
	PHY	F110	Physics Laboratory	1	ME	F112	Workshop Practice	2
	PHY	F111	Mechanics, Oscillations and Waves	3				
				17				**20**
II	MATH	F211	Mathematics III	3	BITS	F225	Environmental Studies	3
	ME	F211	Mechanics of Solids	3	ECON	F211	Principles of Economics	3
	ME	F212	Fluid Mechanics	3			or	or
	ME	F216	Materials Science & Engineering	3	MGTS	F211	Principles of Management	3
	ME	F217	Applied Thermodynamics	4	ME	F218	Advanced Mechanics of Solids	2
			Humanities Electives	3(min)	ME	F219	Manufacturing Processes	4
					ME	F220	Heat Transfer	4
					ME	F221	Mechanisms and Machines	3
							Humanities Electives	3(min)
				19(min)				**22(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	1 to 4			Open/Humanities Electives	3 to 6
	ME	F314	Design of Machine Elements	3	ME	F318	Computer-Aided Design	3
	ME	F315	Advanced Manufacturing Processes	3	ME	F319	Vibrations & Control	3
	ME	F316	Manufacturing Management	2	ME	F320	Engineering Optimization	3
	ME	F317	Engines, Motors, and Mobility	2	ME	F341	Prime Movers & Fluid Machines	3
			Discipline Electives	6(min)			Discipline Electives	3(min)
				17/20				**18/21**
IV			Open Electives	7to13	BITS	F412	Practice School-II	20
			Discipline Electives	3(min)			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15 to 18
				10/16				**15/20**

Discipline Core - 48 Units (16 Courses)

Discipline Electives - 12 Units (4 Courses)

Note: This is an operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to B.E. Manufacturing Programme								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BITS	F110	Engineering Graphics	2	BITS	F111	Thermodynamics	3
	BIO	F110	Biology Laboratory	1	BITS	F112	Technical Report Writing	2
	BIO	F111	General Biology	3	CS	F111	Computer Programming	4
	CHEM	F110	Chemistry Laboratory	1	EEE	F111	Electrical Sciences	3
	CHEM	F111	General Chemistry	3	MATH	F112	Mathematics II	3
	MATH	F111	Mathematics I	3	MATH	F113	Probability and Statistics	3
	PHY	F110	Physics Laboratory	1	ME	F112	Workshop Practice	2
	PHY	F111	Mechanics, Oscillations and Waves	3				
				17				**20**
II	MATH	F211	Mathematics III	3	BITS	F225	Environmental Studies	3
	MF	F211	Mechanics of Solids	3	ECON	F211	Principles of Economics	3
	MF	F216	Materials Science & Engineering	3			or	or
	MF	F217	Machine Drawing	2	MGTS	F211	Principles of Management	3
	MF	F218	Transport Phenomena in Manufacturing	4	MF	F219	Operations Management	3
			Humanities Electives	3(min)	MF	F220	Metrology and Quality Assurance	3
					MF	F221	Mechanisms and Machines	3
					MF	F222	Casting, Forming and Welding	4
							Humanities Electives	3(min)
				18(min)				**22(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	2 to 5			Open/Humanities Electives	2 to 5
	MF	F314	Design of Machine Elements	3	MF	F317	Computer Aided Design and Manufacturing	3
	MF	F315	Automation and Control	4	MF	F318	Non Traditional Manufacturing Processes	3
	MF	F316	Machining and Machine Tools	4	MF	F319	Supply Chain Management	3
			Discipline Electives	6(min)	MF	F320	Engineering Optimization	3
							Discipline Electives	3(min)
				19/22				**17/20**
IV			Open Electives	7 to 13	BITS	F412	Practice School-II	20
			Discipline Electives	3(min)			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15 to18
				10/16				**15/20**

Discipline Core - 48 Units (15 Courses)
Discipline Electives - 12 Units (4 Courses)

Note: This is an operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to B.E. Mathematics and Computing Programme				
Year	**First Semester**	**Units**	**Second Semester**	**Units**
	MATH F111 Mathematics I	3	MATH F112 Mathematics II	3
	BIO F110 Biology Laboratory	1	ME F112 Workshop Practice	2
	BIO F111 General Biology	3		
	CHEM F110 Chemistry Laboratory	1	CS F111 Computer Programming	4
	CHEM F111 General Chemistry	3	EEE F111 Electrical Sciences	3
	PHY F110 Physics Laboratory	1		
	PHY F111 Mechanics, Oscillations, and Waves	3	BITS F112 Technical Report Writing	2
			MATH F113 Probability and Statistics	3
	BITS F110 Engineering Graphics	2	BITS F111 Thermodynamics	3
		17		**20**
	First Semester	**U**	**Second Semester**	**U**
II	MATH F211 Mathematics III	3	MAC F241 Numerical Analysis	3
	MAC F211 Linear Algebra and Applications	3	MAC F242 Data Structures & Algorithms	4
	MAC F212 Object Oriented Programming	4	MAC F243 Numerical Optimization	3
	MAC F213 Discrete Mathematics	3	MAC F244 Stochastic Calculus and Application to Finance	3
	MAC F214 Elementary Real Analysis	3		
	Humanities Elective	3	MAC F245 Scientific Computing Laboratory	1
	BITS F225 Environmental Studies	3	MGTS F211 Principles of Management (or) ECON F211 Principles of Economics	3
		22		**17**
Summer	**BITS F221 Practice School -1**			
	First Semester	**U**	**Second Semester**	**U**
III	MAC F311 Algebra I	3	MAC F341 Design and Analysis of Algorithms	3
	MAC F312 Foundations of Data Science	3	MAC F342 Computational Partial Differential Equations	4
	MAC F313 Statistical Data Analysis	4		
	MAC F314 Mathematical Modelling	4		6
	Humanities Elective	3	Discipline Elective	2
	Discipline Elective	3	Humanities Elective	3
			Open Elective	
		20		**18**
	First Semester	**U**	**Second Semester**	**U**
IV	Open Electives	12	BITS Practice School-II	20
			or	or
	Discipline Elective	3	BITS F421T Thesis	16
			or	or
			Thesis (9) and Electives (6 to 9)	15 to 18
		15		**15/20**

Discipline core – **48** Units (**15** Courses), Discipline elective – **12** Units (4 Courses)

Semester-wise Pattern for Students Admitted to B. Pharm.Programme								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3(min)			or	or
	PHA	F211	Pharmaceutical Analysis	3	MGTS	F211	Principles of Management	3
	PHA	F214	Anatomy, Physiology & Hygiene	3			Humanities Electives	3(min)
	PHA	F216	Pharmaceutical Formulations I	3	PHA	F241	Pharmaceutical Chemistry	3
	PHA	F217	Pharmaceutical Microbiology	3	PHA	F242	Biological Chemistry	3
	BITS	F225	Environmental Studies	3	PHA	F243	Industrial Pharmacy	3
					PHA	F244	Physical Pharmacy	3
				21(min)				**18(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	2 to 5			Open/Humanities Electives	4 to 6
	PHA	F311	Pharmacology I	3	PHA	F341	Pharmacology II	3
	PHA	F312	Medicinal Chemistry I	3	PHA	F342	Medicinal Chemistry II	3
	PHA	F313	Instrumental Methods of Analysis	4	PHA	F343	Forensic Pharmacy	2
	PHA	F315	Pharmaceutical Formulations II	3	PHA	F344	Natural Drugs	3
			Discipline Electives	3(min)			Discipline Electives	3(min)
				18/21				**18/20**
IV			Open Electives	6 to 11	BITS	F412	Practice School-II	20
			Discipline Electives	6(min)			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15 to 18
				12/17				**15/20**

Discipline Core - 48 Units (16 Courses); Discipline Electives-12 Units(4 Courses)

Note: This is operative pattern for the students who are admitted during 2011-2013 as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to B. Pharm. Programme						
Year	**First Semester**		**U**	**Second Semester**		**U**
I	BIO F110	Biology Laboratory	1	BITS F114	General Mathematics II*	3
	BIO F111	General Biology	3	OR		
	CHEM F110	Chemistry Laboratory	1	MATH F112	Mathematics II	
	CHEM F111	General Chemistry	3	ME F112	Workshop Practice	2
	BITS F113	General Mathematics I*	3	CS F111	Computer Programming	4
	OR			PHA F214	Anatomy, Physiology, &	3
	MATH F111	Mathematics I			Hygiene	
	PHY F110	Physics Laboratory	1	PHA F216	Pharmaceutical Formulations I	3
	PHY F112	General Physics	3	BITS F112	Technical Report Writing	2
	OR			MGTS F211	Principles of Management	
	PHY F111	Mechanics, Oscillations and Waves		OR		3
				ECON F211	Principles of Economics	
	BITS F110	Engineering Graphics	2			
			17			**20**
II	Humanities Electives		3	Humanities Electives		3
	BITS F218	General Mathematics III*	3	BITS F111	Thermodynamics	3
	OR			PHA F241	Pharmaceutical Chemistry	3
	MATH F211	Mathematics III		MATH F113	Probability and Statistics	3
	PHA F211	Pharmaceutical Analysis	3	PHA F215	Introduction to Molecular	
	BITS F219	Process Engineering	3		Biology and Immunology	3
	PHA F242	Biological Chemistry	3	PHA F244	Physical Pharmacy	3
	PHA F217	Pharmaceutical Microbiology	3			
	BITS F225	Environmental Studies	3			
			21			**18**
Summer BITS F221 Practice School I (5 Units) Only for PS Option						
III	Open/Humanities Electives		2 to 5	Open/Humanities electives		4 to 6
	PHA F311	Pharmacology I	3	PHA F341	Pharmacology II	3
	PHA F312	Medicinal Chemistry I	3	PHA F342	Medicinal Chemistry II	3
	PHA F313	Instrumental Methods of Analysis	4	PHA F343	Forensic Pharmacy	2
				PHA F344	Natural Drugs	3
	PHA F315	Pharmaceutical Formulations II	3	Discipline Electives		3(min)
	Discipline Electives		3 (min)			
			18 /21			**18 /20**
IV	Open electives		6to11	BITS F412 Practice School II		20
	Discipline Electives		6 (min)	OR		
				BITS F421T Thesis (16) or Thesis (9) and Electives (6 to 9)		16 or 15 to 18
			12/17			**15/20**

Discipline Core -48 Units (16 Courses)

Discipline Electives- 12 Units (4 Courses)

* A student must pursue all three courses in one sequence only (i.e. either Mathematics I, Mathematics II, and Mathematics III, or General Mathematics, General Mathematics II, and General Mathematics III).

Note: This is operative pattern for the students who are admitted from August 2014 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to M.Sc. Biological Sciences Programme									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3(min)			or	or
	BIO	F211	Biological Chemistry	3	MGTS	F211	Principles of Management	3
	BIO	F213	Cell Biology	3			Humanities Electives	3(min)
	BIO	F212	Microbiology	4	BIO	F241	Ecology & Environmental	
	BIO	F214	Integrated Biology	3			Science	3
	BITS	F225	Environmental Studies	3	BIO	F242	Introduction to Bioinformatics	3
					BIO	F243	Genetics	3
					BIO	F244	Instrumental Methods of Analysis	4
				22(min)				**19(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	3 to 6			Open/Humanities Electives	0 to 3
	BIO	F311	Recombinant DNA Technology	3	BIO	F341	Developmental Biology	3
					BIO	F342	Immunology	3
	BIO	F312	Plant Physiology	3	BIO	F215	Biophysics	3
	BIO	F313	Animal Physiology	3			Discipline Electives	9(min)
			Discipline Electives	6(min)				
				18/21				**18/21**
IV			Open Electives	8 to14	BITS	F412	Practice School-II	20
							or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15 to18
				8/14				**15/20**

*****Discipline Core - 44 Units (14 Courses)

*Discipline Electives - 15 Units (min)-(4 Courses (min))

Note: *This is operative pattern for the students who are admitted from August 2013 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to M.Sc. Chemistry Programme									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3(min)			or	or
	CHEM	F211	Physical Chemistry I	3	MGTS	F211	Principles of Management	3
	CHEM	F212	Organic Chemistry I	3			Humanities Electives	3(min)
	CHEM	F213	Physical Chemistry II	3	CHEM	F241	Inorganic Chemistry II	
	PHY	F212	Electromagnetic Theory I	3	CHEM	F242	Chemical Experimentation I	3
	CHEM	F214	Inorganic Chemistry I	3	CHEM	F243	Organic Chemistry II	3
					CHEM	F244	Physical Chemistry III	3
					BITS	F225	Environmental Studies	3
				21(min)				**21(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	2 to 5			Open/Humanities Electives	2 to 5
	CHEM	F313	Instrumental Methods of Analysis	4	CHEM	F341	Chemical Experimentation II	4
					CHEM	F342	Organic Chemistry IV	3
	CHEM	F311	Organic Chemistry III	3	CHEM	F343	Inorganic Chemistry III	3
	CHEM	F312	Physical Chemistry IV	3			Discipline Electives	6(min)
			Discipline Electives	6(min)				
				18/21				**18/21**
IV			Open Electives	7 to13	BITS	F412	Practice School-II	20
							or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15 to18
				7/13				**15/20**

Discipline Core-47 Units (15 Courses)

Discipline Electives-12 Units(4 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to M. Sc. Economics Programme									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	MGTS	F211	Principles of Management	3
			Humanities Electives	3(min)			Humanities Electives	3(min)
	ECON	F211	Principles of Economics	3	ECON	F241	Econometric Methods	3
	ECON	F212	Fundamentals of Finance &		ECON	F242	Microeconomics	3
			Accounts	3	ECON	F243	Macroeconomics	3
	ECON	F213	Mathematical & Statistical		ECON	F244	Economics of Growth &	
			Methods	3			Development	3
	ECON	F214	Economic Environment of Business	3				
	BITS	F225	Environmental Studies	3				
				21(min)				**18(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	3 to 6			Open/Humanities Electives	3 to 6
	ECON	F311	International Economics	3	ECON	F341	Public Finance Theory &	
	ECON	F312	Money Banking & Financial	3			Policy	3
			Markets		ECON	F342	Applied Econometrics	3
	ECON	F313	Issues in Economic Development	3	ECON	F343	Economic Analysis of Public Policy	3
			Discipline Electives	6(min)			Discipline Electives	6(min)
				18/21				**18/21**
IV			Open Electives	5 to 11	BITS	F412	Practice School-II	20
			Discipline Electives	6			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15to18
				11/17				**15/20**

Discipline Core -42 Units (14 Courses)

Discipline Electives -18 Units(6 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to M.Sc. Mathematics Programme									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3(min)			or	or
	MATH	F212	Optimization	3	MGTS	F211	Principles of Management	3
	MATH	F213	Discrete Mathematics	3			Humanities Electives	3(min)
	MATH	F214	Elementary Real Analysis	3	MATH	F241	Mathematical Methods	3
	MATH	F215	Algebra I	3	MATH	F242	Operations Research	3
	BITS	F225	Environmental Studies	3	MATH	F243	Graphs & Networks	3
					MATH	F244	Measure & Integration	3
				21(min)				**18(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	3 to 6			Open/Humanities	
	MATH	F311	Introduction to Topology	3			Electives	0 to 3
	MATH	F312	Ordinary Differential		MATH	F341	Introduction to Functional	
			Equations	3			Analysis	3
	MATH	F313	Numerical Analysis	3	MATH	F342	Differential Geometry	3
			Discipline Electives	6	MATH	F343	Partial Differential Equations	3
							Discipline Electives	9
				18/21				**18/21**
IV			Open Electives	8 to14	BITS	F412	Practice School-II	20
							or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15 to18
				8/14				**15/20**

Discipline Core -42 Units (14 Courses)

Discipline Electives -15 Units (5 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to M. Sc. Physics Programme									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3(min)			or	or
	PHY	F211	Classical Mechanics	4	MGTS	F211	Principles of Management	3
	PHY	F212	Electromagnetic Theory I	3			Humanities Electives	3(min)
	PHY	F213	Optics	3	PHY	F241	Electromagnetic Theory II	4
	PHY	F214	Electricity, Magnetism & Optics Laboratory	2	PHY	F242	Quantum Mechanics I	3
					PHY	F243	Mathematical Methods of Physics	3
	BITS	F225	Environmental Studies	3	PHY	F244	Modern Physics Laboratory	2
				21(min)				**18(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	3 to 6			Open/Humanities Electives	3 to 6
	PHY	F311	Quantum Mechanics II	3	PHY	F341	Solid State Physics	3
	PHY	F312	Statistical Mechanics	3	PHY	F342	Atomic & Molecular Physics	3
	PHY	F313	Computational Physics	3	PHY	F343	Nuclear & Particle Physics	3
			Discipline Electives	6(min)	PHY	F344	Advanced Physics Laboratory	3
							Discipline Electives	3(min)
				18/21				**18/21**
IV			Open Electives	5 to 11	BITS	F412	Practice School-II	20
			Discipline Electives	6(min)			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15 to 18
				11/17				**15/20**

*****Discipline Core - 45 Units (15 Courses)

*Discipline Electives - 15 Units (min)-4 Courses(min)

Note: *This is operative pattern for the students who are admitted from August 2014 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to M.Sc. General Studies – Communication and Media Studies Stream								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			Humanities Electives	3(min)			or	or
	GS	F221	Business Communication	3	MGTS	F211	Principles of Management	3
	GS	F222	Language Lab Practice	3			Humanities Electives	3(min)
	GS	F223	Introduction to Mass Communication	3	GS	F244	Reporting & Writing for Media	3
	GS	F224	Print & Audio Visual Advertising	3	GS	F241	Creative Writing	3
					GS	F245	Effective Public Speaking	3
	BITS	F225	Environmental Studies	3	GS	F243	Current Affairs	3
				21(min)				**18(min)**
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	3 to 6			Open/Humanities Electives	3 to 6
	GS	F321	Mass Media Content & Design	3	GS	F342	Computer Mediated Communication	3
	GS	F322	Critical Analysis of Literature & Cinema	3	GS	F343	Short Film & Video Production	3
			Discipline Electives	9(min)			Discipline Electives	9(min)
				18/21				**18/21**
IV			Open Electives	5 to 11	BITS	F412	Practice School-II	20
			Discipline Electives	3(min)			or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15 to18
				8/14				**15/20**

Discipline Core - 36 Units (12 Courses)

Discipline Electives - 21 Units(7 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise Pattern for Students Admitted to M.Sc. General Studies – Development Studies Stream								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology Laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	3
	BITS	F110	Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	MGTS	F211	Principles of Management	3
			Humanities Electives	3(min)			Humanities Electives	3(min)
	GS	F211	Modern Political Concepts	3	GS	F231	Dynamics of Social Change	3
	GS	F212	Environment, Development & Climate Change	3	GS	F232	Introductory Psychology	3
	GS	F213	Development Theories	3	GS	F233	Public Policy	3
	ECON	F211	Principles of Economics	3	GS	F234	Development Economics	3
	BITS	F225	Environmental Studies	3				
				21(min)				18(min)
Summer	**BITS F221 Practice School – I (for PS Option Only)**							
III			Open/Humanities Electives	3 to 6			Open/Humanities Electives	0 to 3
	GS	F311	Introduction to Conflict Management	3	GS	F331	Techniques in Social Research	3
	GS	F312	Applied Philosophy	3	GS	F332	Contemporary India	3
			Discipline Electives	9(min)	GS	F333	Public Administration	3
					GS	F334	Global Business Technology & Knowledge Sharing	3
							Discipline Electives	6(min)
				18/21				**18/21**
IV			Open Electives	8 to 14	BITS	F412	Practice School-II	20
							or	or
					BITS	F421T	Thesis	16
							or	
							Thesis (9) and Electives (6 to 9)	15 to 18
				8/14				**15/20**

Discipline Core - 42 Units (14 Courses)

Discipline Electives - 15 Units (5 Courses)

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Pattern 1 Semester-wise Pattern for Composite Dual Degree Programmes (Option A: Duration 10 Sem.)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations		BITS	F111	Thermodynamics	3
	BITS	F110	and Waves	3				
			Engineering Graphics	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
			First Discipline Core				or	
			Courses	13 to 17	MGTS	F211	Principles of Management	
			Electives	3 to 6			First Discipline Core	
							Courses	13 to 17
							Electives	3 to 6
				23/24				**23/24**
Summer	**BITS F221 Practice School – I(for PS Option Only)**							
III			Second Discipline Core				Second Discipline Core	
			courses	12 to 16			Courses	12 to 16
			First Discipline Courses-Core/Elective	7 to 11			First Discipline Courses – Core / Elective	7 to 11
				23/24				**23/24**
IV			First Discipline Elective Courses	3 to 10			First Discipline Elective Courses	3to10
			Second Discipline Courses – Core + Elective	14 to 18			Second Discipline Courses - Core + Elective	14 to 18
							Electives (0 to 6)	0 to 6
				23/24				**23/24**
V			Electives	5 to 9	BITS	F412	Practice School-II	20
	BITS	F423T	Thesis	9			or	or
					BITS	F421T	Thesis	16

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Pattern 2	**Semester-wise Pattern for Composite Dual Degree Programmes (Option B: Duration 10 Sem. and a Summer Term)**							
Year	**First Semester**			**U**	**Second Semester**			**U**
I	BIO	F110	Biology laboratory	1	MATH	F112	Mathematics II	3
	BIO	F111	General Biology	3	ME	F112	Workshop Practice	2
	CHEM	F110	Chemistry Laboratory	1	CS	F111	Computer Programming	4
	CHEM	F111	General Chemistry	3	EEE	F111	Electrical Sciences	3
	MATH	F111	Mathematics I	3	BITS	F112	Technical Report Writing	2
	PHY	F110	Physics Laboratory	1	MATH	F113	Probability and Statistics	3
	PHY	F111	Mechanics, Oscillations and Waves	3	BITS	F111	Thermodynamics	4
	BITS	F110	Engineering Graphics(2)	2				
				17				**20**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	
							or	
			First Discipline Core Courses	13 to 17	MGTS	F211	Principles of Management	3
			Electives	3 to 6			First Discipline Core Courses	13 to 17
							Electives	3 to 6
				23/24				**23/24**
Summer	**BITS F221 Practice School – I(for PS Option Only)**							
III			Second Discipline Core Courses	12 to 16			Second Discipline Core Courses	12 to 16
			First Discipline Courses - Core / Elective	7 to 11			First Discipline Courses - Core / Elective	7 to 11
				23/24				**23/24**
IV			First Discipline Elective Courses	3/10			First Discipline Elective Courses	3 to 10
			Second Discipline Courses – Core + Elective	14 to 18			Second Discipline Courses - Core + Elective	14 to 18
			Electives	0 to 6			Electives	0 to 6
				23/24				**23/24**
Summer			Electives	5/9				
V	BITS	F412	Practice School - II	20	BITS	F413	Practice School - II	20
			or	or			or	or
	BITS	F421T	Thesis	16	BITS	F422	Thesis	16

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Pattern 3 Semesterwise Pattern for Dual Degree (Duration 11 Sem.)							
Year	**First Semester**		**U**	**Second Semester**			**U**
I	BIO F110	Biology laboratory	1	MATH F112	Mathematics II		3
	BIO F111	General Biology	3	ME F112	Workshop Practice		2
	CHEMF110	Chemistry Laboratory	1	CS F111	Computer Programming		4
	CHEM F111	General Chemistry	3	EEE F111	Electrical Sciences		3
	MATH F111	Mathematics I	3	BITS F112	Technical Report Writing		2
	PHY F110	Physics Laboratory	1	MATH F113	Probability and Statistics		3
	PHY F111	Mechanics, Oscillations and Waves	3	BITS F111	Thermodynamics		3
	BITS F110	Engineering Graphics	2				
			17				**20**
II	MATH F211	Mathematics III	3	ECON F211	Principles of Economics		13
		First Discipline Core Courses	13 to 17		or		
				MGTS F211	Principles of Management		
		Electives	3 to 6		First Discipline Core Courses		13 to 17
					Electives		3 to 6
			21/22				**21/22**
Summer		**BITS F221 Practice School – I (for PS Option Only)**					
III		Second Discipline Core courses	12 to 16		Second Discipline Core		
		First Discipline Courses -			Courses		12 to 16
		Core/Elective	7 to 10		First Discipline Courses – Core / Elective		7to11
			21/22				**21/22**
IV		First Discipline Elective Courses	3 to 10		First Discipline Elective Courses		3 to10
		Second Discipline Courses – Core+Elective	14 to 18		Second Discipline Courses - Core + Elective		14 to 18
		Electives	0 to 6		Electives		0 to 6
			21/22				**21/22**
V		Electives	17 to 23	BITS F412	Practice School-II		20
					or		or
				BITS F421T	Thesis		16
VI	BITS F413	Practice School-II	20				
		or	or				
	BITS F422T	Thesis	16				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Biological Sciences with B.E. Chemical)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
II	**First Semester**			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics/	3
	BIO	F211	Biological Chemistry	3			Principles of Management	
	BIO	F213	Cell Biology	3	BIO	F241	Ecology & Environmental	
	BIO	F212	Microbiology	4			Science	3
	BIO	F214	Integrated Biology	3	BIO	F242	Introduction to	
			Humanities Elective	3			Bioinformatics	3
	BITS	F225	Environmental Studies	3	BIO	F243	Genetics	3
					BIO	F244	Instrumental Methods of	
							Analysis	4
							Humanities Electives	5
				22				**21**
Summer	**BITS F221 Practice School -1 (for PS Option Only) (5 Units)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	BIO	F311	Recombinant DNA	3	BIO	F341	Developmental Biology	3
			Technology		BIO	F342	Immunology	3
	BIO	F312	Plant Physiology	3	BIO	F215	Biophysics	3
	BIO	F313	Animal Physiology	3	CHE	F241	Heat Transfer	3
	CHE	F211	Chemical Process Calculations	3	CHE	F242	Numerical Methods for Chemical Engineers	3
	CHE	F212	Fluid Mechanics	3	CHE	F243	Material Science &	
	CHE	F214	Engineering Chemistry	3			Engineering	3
	CHE	F213	Chemical Engineering Thermodynamics	3	CHE	F244	Separation Processes I	3
				21				**21**
IV	**First Semester**			**U**	**Second Semester**			**U**
	CHE	F311	Kinetics & Reactor Design	3	CHE	F341	Chemical Engineering Laboratory II	3
	CHE	F312	Chemical Engineering		CHE	F342	Process Dynamics & Control	3
			Laboratory I	3	CHE	F343	Process Design Principles II	3
	CHE	F313	Separation Processes II	3			First Discipline Electives	9
	CHE	F314	Process Design Principles I	3			Second Discipline Electives	6
			First Discipline Electives	6				
			Second Discipline Electives	3				
				21				**24**
V	**First Semester**			**U**	**Second Semester**			**U**
	Second Discipline Electives			6	BITS F412		Practice School - Ii	20
	BITS F423T		Thesis	9				
				15				**20**

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Biological Sciences with B.E. Civil)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	Same as First degree Programme				Same as First degree Programme			
II	**First Semester**			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	
	BIO	F211	Biological Chemistry	3			or	
	BIO	F213	Cell Biology	3	MGTS	F211	Principles of Management	3
	BIO	F212	Microbiology	4	BIO	F241	Ecology & Environmental Science	3
	BIO	F214	Integrated Biology	3	BIO	F242	Introduction to Bioinformatics	3
			Humanities Elective	3	BIO	F243	Genetics	3
	BITS	F225	Environmental Studies	3	BIO	F244	Instrumental Methods of Analysis	4
							Humanities Electives	5
				22				**21**
Summer	**BITS F221 Practice School -1 (for PS Option Only) (5 Units)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	BIO	F311	Recombinant DNA Technology	3	BIO	F341	Developmental Biology	3
	BIO	F312	Plant Physiology	3	BIO	F342	Immunology	3
	BIO	F313	Animal Physiology	3	BIO	F215	Biophysics	3
	CE	F211	Mechanics of Solids	3	CE	F241	Analysis of structures	3
	CE	F231	Fluid Mechanics	3	CE	F242	Construction Planning & Technology	3
	CE	F230	Civil Engineering Materials	4	CE	F243	Soil Mechanics	4
	CE	F213	Surveying	4	CE	F244	Highway Engineering	4
				23				**23**
IV	**First Semester**			**U**	**Second Semester**			**U**
	CE	F320	Design of Reinforced Concrete Structures	3	CE	F342	Water & Waste Water Treatment	4
	CE	F312	Hydraulic Engineering	4	CE	F321	Engineering Hydrology	**3**
	CE	F313	Foundation Engineering	3	CE	F343	Design of Steel Structures	3
			First Discipline Electives	6			First Discipline Electives	9
			Second Discipline Electives	6			Second Discipline Electives	3
				22				**22**
V	**First Semester**			**U**	**Second Semester**			**U**
	Second Discipline Electives			3	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from **August 2017** onwards.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Biological Sciences with B.E. Computer Science)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	Same as First degree Programme				Same as First degree Programme			
II	**First Semester**			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	
	BIO	F211	Biological Chemistry	3			or	
	BIO	F213	Cell Biology	3	MGTS	F211	Principles of Management	3
	BIO	F212	Microbiology	4	BIO	F241	Ecology & Environmental Science	3
	BIO	F214	Integrated Biology	3	BIO	F242	Introduction to Bioinformatics	3
					BIO	F243	Genetics	3
			Humanities Elective	3	BIO	F244	Instrumental Methods of Analysis	4
	BITS	F225	Environmental Studies	3			Humanities Electives	5
				22				**21**
Summer	**BITS F221 Practice School -1 (for PS Option Only) (5 Units)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	BIO	F311	Recombinant DNA Technology	3	BIO	F341	Developmental Biology	3
	BIO	F312	Plant Physiology	3	BIO	F342	Immunology	3
	BIO	F313	Animal Physiology	3	BIO	F215	Biophysics	3
	CS	F215	Digital Design	4	CS	F241	Microprocessors & Interfacing	4
	CS	F214	Logic in Computer Science	3	CS	F212	Database Systems	4
	CS	F222	Discrete Structures for Computer Science	3	CS	F211	Data Structures & Algorithms	4
	CS	F213	Object Oriented Programming	4				
				23				**21**
IV	**First Semester**			**U**	**Second Semester**			**U**
	CS	F351	Theory of Computation	3	CS	F363	Compiler Construction	3
	CS	F372	Operating Systems	3	CS	F364	Design and Analysis of Algorithms	3
	CS	F342	Computer Architecture	4	CS	F303	Computer Networks	4
	CS	F301	Principles of Programming Languages	2			First Discipline Elective	9
			First Discipline Electives	6			Second Discipline Electives	3
			Second Discipline Electives	3				
				21				**22**
V	**First Semester**			**U**	**Second Semester**			**U**
	Second Discipline Electives			6	BITS F412		Practice School - II	20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Biological Sciences with B.E. Electrical & Electronics)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	Same as First degree Programme				Same as First degree Programme			
II	**First Semester**			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	BIO	F211	Biological Chemistry	3			or	
	BIO	F213	Cell Biology	3	MGTS	F211	Principles of Management	3
	BIO	F212	Microbiology	4	BIO	F241	Ecology & Environmental Science	3
	BIO	F214	Integrated Biology	3	BIO	F242	Introduction to Bioinformatics	3
			Humanities Elective	3	BIO	F243	Genetics	3
	BITS	F225	Environmental Studies	3	BIO	F244	Instrumental Methods of Analysis	4
							Humanities Electives	`5
				22				**21**
Summer	**BITS F221 Practice School -1 (for PS Option Only) (5 Units)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	BIO	F311	Recombinant DNA Technology	3	BIO	F341	Developmental Biology	3
	BIO	F312	Plant Physiology	3	BIO	F342	Immunology	3
	BIO	F313	Animal Physiology	3	BIO	F215	Biophysics	3
	EEE	F212	Electromagnetic Theory	3	EEE	F243	Signals and Systems	3
	EEE	F211	Electrical Machines	4	EEE	F244	Microelectronic Circuits	3
	EEE	F214	Electronic Devices	3	EEE	F241	Microprocessors & Interfacing	4
	EE	F215	Digital Design	4	EEE	F242	Control Systems	3
				23				**22**
IV	**First Semester**			**U**	**Second Semester**			**U**
	EEE	F311	Communication Systems	4	EEE	F341	Analog Electronics	4
	MATH	F212	Optimization	3	EEE	F342	Power Electronics	4
			or	or	EEE	F312	Power Systems	3
	ME	F344	Engineering Optimization	2			First Discipline Electives	6
	EEE	F313	Analog & Digital VLSI Design	3			Second Discipline Elective	4
			First Discipline Electives	3				
			Second Discipline Electives	8				
				20/21				**21**
V	**First Semester**			**U**	**Second Semester**			**U**
	First Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Biological Sciences with B.E. Electronics & Communication)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	Same as First degree Programme				Same as First degree Programme			
II	**First Semester**			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	BIO	F211	Biological Chemistry	3			or	
	BIO	F213	Cell Biology	3	MGTS	F211	Principles of Management	3
	BIO	F212	Microbiology	4	BIO	F241	Ecology & Environmental Science	3
	BIO	F214	Integrated Biology	3	BIO	F242	Introduction to Bioinformatics	3
					BIO	F243	Genetics	3
			Humanities Elective	3	BIO	F244	Instrumentation of Analysis	4
	BITS	F225	Environmental Studies	3			Humanities Electives	5
				22				**21**
Summer	**BITS F221 Practice School -1 (for PS Option Only) (5 Units)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	BIO	F311	Recombinant DNA Technology	3	BIO	F341	Developmental Biology	3
	BIO	F312	Plant Physiology	3	BIO	F342	Immunology	3
	BIO	F313	Animal Physiology	3	BIO	F215	Biophysics	3
	ECE	F212	Electromagnetic Theory	3	ECE	F241	Microprocessors & Interfacing	4
	ECE	F215	Digital Design	4	ECE	F242	Control Systems	3
	ECE	F211	Electrical Machines	4	ECE	F243	Signals and Systems	3
	ECE	F214	Electronic Devices	3	ECE	F244	Microelectronic Circuits	3
				23				**22**
IV	**First Semester**			**U**	**Second Semester**			**U**
	ECE	F311	Communication Systems	4	ECE	F341	Analog Electronics	4
	ECE	F434	Digital Signal Processing	4	ECE	F344	Information Theory & Coding	3
	ECE	F314	Electromagnetic Fields & Microwave Engineering	3	ECE	F343	Communication Networks	3
			First Discipline Electives	3			First Discipline Elective	6
			Second Discipline Electives	7			Second Discipline Electives	5
				21				**21**
V	**First Semester**			**U**	**Second Semester**			**U**
	First Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Biological Sciences with B.E. Electronics & Instrumentation)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	Same as First degree Programme				Same as First degree Programme			
II	**First Semester**			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	BIO	F211	Biological Chemistry	3			or	
	BIO	F213	Cell Biology	3	MGTS	F211	Principles of Management	3
	BIO	F212	Microbiology	4	BIO	F241	Ecology & Environmental Science	3
	BIO	F214	Integrated Biology	3	BIO	F242	Introduction to Bioinformatics	3
			Humanities Elective	3	BIO	F243	Genetics	3
	BITS	F225	Environmental Studies	3	BIO	F244	Instrumental Methods of Analysis	4
							Humanities Electives	5
				22				**21**
Summer	**BITS F221 Practice School -1 (for PS Option Only) (5 Units)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	BIO	F311	Recombinant DNA Technology	3	BIO	F341	Developmental Biology	3
	BIO	F312	Plant Physiology	3	BIO	F342	Immunology	3
	BIO	F313	Animal Physiology	3	BIO	F215	Biophysics	3
	INSTR	F212	Electromagnetic Theory	3	INSTR	F241	Microprocessors & Interfacing	4
	INSTR	F215	Digital Design	4	INSTR	F242	Control Systems	3
	INSTR	F211	Electrical Machines	4	INSTR	F243	Signals & Systems	3
	INSTR	F214	Electronic Devices	3	INSTR	F244	Microelectronic Circuits	3
				23				**22**
IV	**First Semester**			**U**	**Second Semester**			**U**
	INSTR	F311	Electronic Instruments &		INSTR	F341	Analog Electronics	4
			Instrumentation Technology	4	INSTR	F342	Power Electronics	4
	INSTR	F312	Transducers and Measurement Systems	3	INSTR	F343	Industrial Instrumentation & Control	3
	INSTR	F313	Analog & Digital VLSI Design	3			First Discipline Electives	6
			First Discipline Electives	9			Second Discipline Electives	4
			Second Discipline Electives	3				
				22				**21**
V	**First Semester**			**U**	**Second Semester**			**U**
	First Discipline Electives			5	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Biological Sciences with B.E. Manufacturing)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	Same as First degree Programme				Same as First degree Programme			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	BIO	F211	Biological Chemistry	3			or	
	BIO	F213	Cell Biology	3	MGTS	F211	Principles of Management	3
	BIO	F212	Microbiology	4	BIO	F241	Ecology & Environmental Science	3
	BIO	F214	Integrated Biology	3	BIO	F242	Introduction to Bioinformatics	3
			Humanities Elective	3	BIO	F243	Genetics	3
	BITS	F225	Environmental Studies	3	BIO	F244	Instrumental Methods of Analysis	4
							Humanities Electives	5
				22				**21**
Summer	**BITS F221 Practice School -1 (for PS Option Only) (5 Units)**							
	First Semester			**U**	**Second Semester**			**U**
III	BIO	F311	Recombinant DNA Technology	3	BIO	F341	Developmental Biology	3
	BIO	F312	Plant Physiology	3	BIO	F342	Immunology	3
	BIO	F313	Animal Physiology	3	BIO	F215	Biophysics	3
	MF	F211	Mechanics of Solids	3	MF	F219	Operations Management	3
	MF	F216	Materials Science & Engineering	3	MF	F220	Metrology and Quality Assurance	3
	MF	F217	Machine Drawing	2	MF	F221	Mechanisms and Machines	3
	MF	F218	Transport Phenomena in Manufacturing	4	MF	F222	Casting, Forming and Welding	4
				21				**22**
	First Semester			**U**	**Second Semester**			**U**
IV	MF	F314	Design of Machine Elements	3	MF	F317	Computer Aided Design and Manufacturing	3
	MF	F315	Automation and Control	4	MF	F318	Non Traditional Manufacturing Processes	3
	MF	F316	Machining and Machine Tools	4	MF	F319	Supply Chain Management	3
			First Discipline Electives	9	MF	F320	Engineering Optimization	3
			Second Discipline Elective	3			First Discipline Electives	6
							Second Discipline Elective	3
				23				**21**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Biological Sciences with B.E. Mechanical)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	BIO	F211	Biological Chemistry	3			or	
	BIO	F213	Cell Biology	3	MGTS	F211	Principles of Management	3
	BIO	F212	Microbiology	4	BIO	F241	Ecology & Environmental Science	3
	BIO	F214	Integrated Biology	3	BIO	F242	Introduction to Bioinformatics	3
			Humanities Elective	3	BIO	F243	Genetics	3
	BITS	F225	Environmental Studies	3	BIO	F244	Instrumental Methods of Analysis	4
							Humanities Electives	5
				22				**21**
Summer	**BITS F221 Practice School -1 (for PS Option Only) (5 Units)**							
	First Semester			**U**	**Second Semester**			**U**
III	BIO	F311	Recombinant DNA Technology	3	BIO	F341	Developmental Biology	3
	BIO	F312	Plant Physiology	3	BIO	F342	Immunology	3
	BIO	F313	Animal Physiology	3	BIO	F215	Biophysics	3
	ME	F211	Mechanics of Solids	3	ME	F218	Advanced Mechanics of Solids	2
	ME	F212	Fluid Mechanics	3	ME	F219	Manufacturing Processes	4
	ME	F216	Materials Science & Engineering	3	ME	F220	Heat Transfer	4
	ME	F217	Applied Thermodynamics	4	ME	F221	Mechanisms and Machines	3
				22				**22**
	First Semester			**U**	**Second Semester**			**U**
IV	ME	F314	Design of Machine Elements	3	ME	F318	Computer-Aided Design	3
	ME	F315	Advanced Manufacturing Processes	3	ME	F319	Vibrations & Control	3
	ME	F316	Manufacturing Management	2	ME	F320	Engineering Optimization	3
	ME	F317	Engines, Motors, and Mobility	2	ME	F341	Prime Movers & Fluid Machines	3
			First Discipline Electives	9			First Discipline Electives	6
			Second Discipline Electives	3			Second Discipline Electives	3
				22				**21**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Chemistry with B.E. Chemical)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	CHEM	F211	Physical Chemistry I	3			or	
	CHEM	F212	Organic Chemistry I	3	MGTS	F211	Principles of Management	3
	CHEM	F213	Physical Chemistry II	3	CHEM	F241	Inorganic Chemistry II	3
II	CHEM	F214	Inorganic Chemistry I	3	CHEM	F242	Chemical Experimentation I	3
	PHY	F212	Electromagnetic Theory I	3	CHEM	F243	Organic Chemistry II	3
			Humanities Elective	3	CHEM	F244	Physical Chemistry III	3
							Humanities Electives	5
					BITS	F225	Environmental Studies	3
				21				**23**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
	CHEM	F313	Instrumental Methods of Analysis	4	CHEM	F341	Chemical Experimentation II	4
					CHEM	F342	Organic Chemistry IV	3
	CHEM	F311	Organic Chemistry III	3	CHEM	F343	Inorganic Chemistry III	3
	CHEM	F312	Physical Chemistry IV	3	CHE	F241	Heat Transfer	3
III	CHE	F211	Chemical Process Calculations	3	CHE	F242	Numerical Methods for Chemical Engineers	3
	CHE	F212	Fluid Mechanics	3	CHE	F243	Material Science & Engineering	3
	CHE	F213	Chemical Engineering Thermodynamics	3	CHE	F244	Separation Processes I	3
				19				**22**
	First Semester			**U**	**Second Semester**			**U**
	CHE	F311	Kinetics & Reactor Design	3	CHE	F341	Chemical Engineering	
	CHE	F312	Chemical Engineering Laboratory I	3			Laboratory II	3
IV	CHE	F313	Separation Processes II	3	CHE	F342	Process Dynamics & Control	3
	CHE	F314	Process Design Principles I	3	CHE	F343	Process Design Principles II	3
			First Discipline Electives	6			First Discipline Electives	6
			Second Discipline Electives	3			Second Discipline Electives	6
				21				**21**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			6	BITS F412 Practice School - II			20
	BITS	F423T	Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Chemistry with B.E. Civil)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	CHEM	F211	Physical Chemistry I	3			or	
	CHEM	F212	Organic Chemistry I	3	MGTS	F211	Principles of Management	3
	CHEM	F213	Physical Chemistry II	3	CHEM	F241	Inorganic Chemistry II	3
II	CHEM	F214	Inorganic Chemistry I	3	CHEM	F242	Chemical Experimentation I	3
	PHY	F212	Electromagnetic Theory I	3	CHEM	F243	Organic Chemistry II	3
			Humanities Elective	3	CHEM	F244	Physical Chemistry III	3
							Humanities Electives	5
					BITS	F225	Environmental Studies	3
				21				**23**
Summer				**BITS F221 Practice School -1(for PS Option Only)**				
	First Semester			**U**	**Second Semester**			**U**
	CHEM	F313	Instrumental Methods of Analysis	4	CHEM	F341	Chemical Experimentation II	4
	CHEM	F311	Organic Chemistry III	3	CHEM	F342	Organic Chemistry IV	3
	CHEM	F312	Physical Chemistry IV	3	CHEM	F343	Inorganic Chemistry III	3
III	CE	F211	Mechanics of Solids	3	CE	F241	Analysis of structures	3
	CE	**F231**	**Fluid Mechanics**	**3**	CE	F242	Construction Planning & Technology	3
	CE	**F230**	**Civil Engineering Materials**	**4**	CE	F243	Soil Mechanics	4
	CE	F213	Surveying	4	CE	F244	Highway Engineering	4
				24				**24**
	First Semester			**U**	**Second Semester**			**U**
	CE	**F320**	**Design of Reinforced Concrete Structures**	**3**	CE	F342	Water & Waste Water Treatment	4
	CE	F312	Hydraulic Engineering	4	**CE**	**F321**	**Engineering Hydrology**	**3**
IV	CE	F313	Foundation Engineering	3				
			First Discipline Electives	6	CE	F343	Design of Steel Structures	3
			Second Discipline Electives	3			First Discipline Electives	6
							Second Discipline Electives	6
				19				**22**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			3	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from **August 2017** onwards.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Chemistry with B.E. Computer Science)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	CHEM	F211	Physical Chemistry I	3			or	
	CHEM	F212	Organic Chemistry I	3	MGTS	F211	Principles of Management	3
	CHEM	F213	Physical Chemistry II	3	CHEM	F241	Inorganic Chemistry II	3
II	CHEM	F214	Inorganic Chemistry I	3	CHEM	F242	Chemical Experimentation I	3
	PHY	F212	Electromagnetic Theory I	3	CHEM	F243	Organic Chemistry II	3
			Humanities Elective	3	CHEM	F244	Physical Chemistry III	3
							Humanities Electives	5
					BITS	F225	Environmental Studies	3
				21				**23**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
	CHEM	F313	Instrumental Methods of Analysis	4	CHEM	F341	Chemical Experimentation II	4
	CHEM	F311	Organic Chemistry III	3	CHEM	F342	Organic Chemistry IV	3
	CHEM	F312	Physical Chemistry IV	3	CHEM	F343	Inorganic Chemistry III	3
III	CS	F215	Digital Design	4	CS	F241	Microprocessors & Interfacing	4
	CS	F214	Logic in Computer Science	3	CS	F212	Database Systems	4
	CS	F222	Discrete Structures For Computer Science	3	CS	F211	Data Structures & Algorithms	4
	CS	F213	Object Oriented Programming	4				
				24				**22**
	First Semester			**U**	**Second Semester**			**U**
	CS	F351	Theory of Computation	3	CS	F363	Compiler Construction	3
	CS	F372	Operating Systems	3	CS	F364	Design and Analysis of	
	CS	F342	Computer Architecture	4			Algorithms	3
IV	CS	F301	Principles of		CS	F303	Computer Networks	4
			Programming Languages	2			First Discipline Electives	6
			First Discipline Electives	6			Second Discipline Electives	3
			Second Discipline Electives	3				
				21				**19**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Chemistry with B.E. Electrical & Electronics)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	CHEM	F211	Physical Chemistry I	3			or	
	CHEM	F212	Organic Chemistry I	3	MGTS	F211	Principles of Management	3
	CHEM	F213	Physical Chemistry II	3	CHEM	F241	Inorganic Chemistry II	3
	CHEM	F214	Inorganic Chemistry I	3	CHEM	F242	Chemical Experimentation I	3
	PHY	F212	Electromagnetic Theory I	3		F243	Organic Chemistry II	3
			Humanities Elective	3	CHEM	F244	Physical Chemistry III	3
					CHEM		Humanities Electives	5
					BITS	F225	Environmental Studies	3
				21				**23**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	CHEM	F313	Instrumental Methods of Analysis	4	CHEM	F341	Chemical Experimentation II	4
	CHEM	F311	Organic Chemistry III	3	CHEM	F342	Organic Chemistry IV	3
	CHEM	F312	Physical Chemistry IV	3	CHEM	F343	Inorganic Chemistry III	3
	EEE	F211	Electrical Machines	4	EEE	F243	Signals and Systems	3
	EEE	F214	Electronic Devices	3	EEE	F244	Microelectronic Circuits	3
	EEE	F215	Digital Design	4	EEE	F241	Microprocessors & Interfacing	4
					EEE	F242	Control Systems	3
				21				**23**
	First Semester			**U**	**Second Semester**			**U**
IV	EEE	F311	Communication Systems	4	EEE	F341	Analog Electronics	4
					EEE	F342	Power Electronics	4
	MATH	F212	Optimization	3	EEE	F312	Power Systems	3
			or				First Discipline Elective	6
	ME	F344	Engineering Optimization	2			Second Discipline Elective	4
	EEE	F313	Analog & Digital VLSI Design	3				
			First Discipline Electives	6				
			Second Discipline Electives	5				
				20/21				**21**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			3	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes M.Sc. Chemistry with B.E. Electronics & Communication									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	CHEM	F211	Physical Chemistry I	3			or	
	CHEM	F212	Organic Chemistry I	3	MGTS	F211	Principles of Management	3
	CHEM	F213	Physical Chemistry II	3	CHEM	F241	Inorganic Chemistry II	3
II	CHEM	F214	Inorganic Chemistry I	3	CHEM	F242	Chemical Experimentation I	3
	PHY	F212	Electromagnetic Theory I	3	CHEM	F243	Organic Chemistry II	3
			Humanities Elective	3	CHEM	F244	Physical Chemistry III	3
							Humanities Electives	5
					BITS	F225	Environmental Studies	3
				21				**23**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
	CHEM	F313	Instrumental Methods of Analysis	4	CHEM	F341	Chemical Experimentation II	4
	CHEM	F311	Organic Chemistry III	3	CHEM	F342	Organic Chemistry IV	3
	CHEM	F312	Physical Chemistry IV	3	CHEM	F343	Inorganic Chemistry III	3
III	ECE	F215	Digital Design	4	ECE	F241	Microprocessors &	
	ECE	F211	Electrical Machines	4			Interfacing	4
	ECE	F214	Electronic Devices	3	ECE	F242	Control Systems	3
					ECE	F243	Signals and Systems	3
					ECE	F244	Microelectronic Circuits	3
				21				**23**
	First Semester			**U**	**Second Semester**			**U**
	ECE	F311	Communication Systems	4	ECE	F341	Analog Electronics	4
	ECE	F434	Digital Signal Processing	4	ECE	F344	Information Theory & Coding	3
IV	ECE	F314	Electromagnetic Fields & Microwave Engineering	3	ECE	F343	Communication Networks	3
			First Discipline Electives	6			First Discipline Electives	6
			Second Discipline Electives	4			Second Discipline Electives	5
				21				**21**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			3	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Chemistry with B.E. Electronics & Instrumentation)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	CHEM	F211	Physical Chemistry I	3	MGTS	F211	or	
	CHEM	F212	Organic Chemistry I	3			Principles of Management	3
	CHEM	F213	Physical Chemistry II	3	CHEM	F241	Inorganic Chemistry II	3
	CHEM	F214	Inorganic Chemistry I	3	CHEM	F242	Chemical Experimentation I	3
	PHY	F212	Electromagnetic Theory I	3	CHEM	F243	Organic Chemistry II	3
			Humanities Elective	3	CHEM	F244	Physical Chemistry III	3
							Humanities Electives	5
					BITS	F225	Environmental Studies	3
				21				**23**
Summer	**BITS F221 Practice School -1(for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	CHEM	F313	Instrumental Methods of Analysis	4	CHEM	F341	Chemical Experimentation II	4
	CHEM	F311	Organic Chemistry III	3	CHEM	F342	Organic Chemistry IV	3
	CHEM	F312	Physical Chemistry IV	3	CHEM	F343	Inorganic Chemistry III	3
	INSTR	F215	Digital Design	4	INSTR	F241	Microprocessors & Interfacing	4
	INSTR	F211	Electrical Machines	4	INSTR	F242	Control Systems	3
	INSTR	F214	Electronic Devices	3	INSTR	F243	Signals & Systems	3
					INSTR	F244	Microelectronic Circuits	3
				21				**23**
IV	**First Semester**			**U**	**Second Semester**			**U**
	INSTR	F311	Electronic Instruments & Instrumentation Technology	4	INSTR	F341	Analog Electronics	4
					INSTR	F342	Power Electronics	4
	INSTR	F312	Transducers and Measurement Systems	3	INSTR	F343	Industrial Instrumentation & Control	3
	INSTR	F313	Analog & Digital VLSI Design	3			First Discipline Electives	6
			First Discipline Electives	6			Second Discipline Electives	4
			Second Discipline Electives	5				
				21				**21**
V	**First Semester**			**U**	**Second Semester**			**U**
	Second Discipline Electives			3	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Chemistry with B.E. Manufacturing)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	CHEM	F211	Physical Chemistry I	3			or	
	CHEM	F212	Organic Chemistry I	3	MGTS	F211	Principles of Management	3
	CHEM	F213	Physical Chemistry II	3	CHEM	F241	Inorganic Chemistry II	3
II	CHEM	F214	Inorganic Chemistry I	3	CHEM	F242	Chemical Experimentation I	3
	PHY	F212	Electromagnetic Theory I	3	CHEM	F243	Organic Chemistry II	3
			Humanities Elective	3	CHEM	F244	Physical Chemistry III	3
							Humanities Electives	5
					BITS	F225	Environmental Studies	3
				21				**23**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
	CHEM	F313	Instrumental Methods of Analysis	4	CHEM	F341	Chemical Experimentation II	4
	CHEM	F311	Organic Chemistry III	3	CHEM	F342	Organic Chemistry IV	3
	CHEM	F312	Physical Chemistry IV	3	CHEM	F343	Inorganic Chemistry III	3
	MF	F211	Mechanics of Solids	3	MF	F219	Operations Management	3
III	MF	F216	Materials Science & Engineering	3	MF	F220	Metrology and Quality Assurance	3
	MF	F217	Machine Drawing	2	MF	F221	Mechanisms and Machines	3
	MF	F218	Transport Phenomena in Manufacturing	4	MF	F222	Casting, Forming and Welding	4
				22				**23**
	First Semester			**U**	**Second Semester**			**U**
	MF	F314	Design of Machine Elements	3	MF	F317	Computer Aided Design and Manufacturing	3
	MF	F315	Automation and Control	4	MF	F318	Non Traditional Manufacturing Processes	3
IV	MF	F316	Machining and Machine Tools	4	MF	F319	Supply Chain Management	3
					MF	F320	Engineering Optimization	3
			First Discipline Electives	6			First Discipline Electives	6
			Second Discipline Elective	6			Second Discipline Elective	3
				23				**21**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			3	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Chemistry with B.E. Mechanical)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	CHEM	F211	Physical Chemistry I	3			or	
	CHEM	F212	Organic Chemistry I	3	MGTS	F211	Principles of Management	3
	CHEM	F213	Physical Chemistry II	3	CHEM	F241	Inorganic Chemistry II	3
II	CHEM	F214	Inorganic Chemistry I	3	CHEM	F242	Chemical Experimentation I	3
	PHY	F212	Electromagnetic Theory I	3	CHEM	F243	Organic Chemistry II	3
			Humanities Elective	3	CHEM	F244	Physical Chemistry III	3
							Humanities Electives	5
					BITS	F225	Environmental Studies	3
				21				**23**
Summer	**BITS F221 Practice School -1(for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
	CHEM	F313	Instrumental Methods of Analysis	4	CHEM	F341	Chemical Experimentation II	4
	CHEM	F311	Organic Chemistry III	3	CHEM	F342	Organic Chemistry IV	3
	CHEM	F312	Physical Chemistry IV	3	CHEM	F343	Inorganic Chemistry III	3
III	ME	F211	Mechanics of Solids	3	ME	F218	Advanced Mechanics of Solids	2
	ME	F212	Fluid Mechanics	3	ME	F219	Manufacturing Processes	4
	ME	F216	Materials Science & Engineering	3	ME	F220	Heat Transfer	4
	ME	F217	Applied Thermodynamics	4	ME	F221	Mechanisms and Machines	3
				23				**23**
	First Semester			**U**	**Second Semester**			**U**
	ME	F314	Design of Machine Elements	3	ME	F318	Computer-Aided Design	3
	ME	F315	Advanced Manufacturing Processes	3	ME	F319	Vibrations & Control	3
	ME	F316	Manufacturing Management	2	ME	F320	Engineering Optimization	3
IV	ME	F317	Engines, Motors, and Mobility	2	ME	F341	Prime Movers & Fluid Machines	3
			First Discipline Electives	6				
			Second Discipline Electives	3			First Discipline Electives	6
							Second Discipline Electives	3
				19				**21**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			3	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Economics with B.E. Chemical)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	MGTS	F211	Principles of Management	3
	ECON	F211	Principles of Economics	3	ECON	F241	Econometric Methods	3
	ECON	F212	Fundamentals of Finance & Accounts	3	ECON	F242	Microeconomics	3
	ECON	F213	Mathematical & Statistical Methods	3	ECON	F243	Macroeconomics	3
	ECON	F214	Economic Environment of Business	3	ECON	F244	Economics of Growth & Development	3
			Humanities Elective	3			Humanities Electives	5
	BITS	F225	Environmental Studies	3				
				21				**20**
Summer	**BITS F221 Practice School -1(for PS Option Only)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	ECON	F311	International Economics	3	ECON	F341	Public Finance Theory & Policy	3
	ECON	F312	Money Banking & Financial Markets	3	ECON	F342	Applied Econometrics	3
	ECON	F313	Issues in Economic Development	3	ECON	F343	Economic Analysis of Public Policy	3
			First Discipline Elective	3			First Discipline Elective	3
	CHE	F211	Chemical Process Calculations	3	CHE	F241	Heat Transfer	3
	CHE	F212	Fluid Mechanics	3	CHE	F242	Numerical Methods for Chemical Engineers	3
	CHE	F214	Engineering Chemistry	3	CHE	F243	Material Science & Engineering	3
	CHE	F213	Chemical Engineering Thermodynamics	3	CHE	F244	Separation Processes I	3
				24				**24**
IV	**First Semester**			**U**	**Second Semester**			**U**
	CHE	F311	Kinetics & Reactor Design	3	CHE	F341	Chemical Engineering Laboratory II	3
	CHE	F312	Chemical Engineering Laboratory I	3	CHE	F342	Process Dynamics & Control	3
	CHE	F313	Separation Processes II	3	CHE	F343	Process Design Principles II	3
	CHE	F314	Process Design Principles I	3			First Discipline Electives	6
			First Discipline Electives	6			Second Discipline Electives	6
			Second Discipline Electives	3				
				21				**21**
V	**First Semester**			**U**	**Second Semester**			**U**
	Second Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Economics with B.E. Civil)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	MGTS	F211	Principles of Management	3
	ECON	F211	Principles of Economics	3	ECON	F241	Econometric Methods	3
	ECON	F212	Fundamentals of Finance & Accounts	3	ECON	F242	Microeconomics	3
	ECON	F213	Mathematical & Statistical Methods	3	ECON	F243	Macroeconomics	3
	ECON	F214	Economic Environment of Business	3	ECON	F244	Economics of Growth & Development	3
			Humanities Elective	3			Humanities Electives	5
	BITS	F225	Environmental Studies	3				
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	ECON	F311	International Economics	3	ECON	F341	Public Finance Theory & Policy	3
	ECON	F312	Money Banking & Financial Markets	3	ECON	F342	Applied Econometrics	3
	ECON	F313	Issues in Economic Development	3	ECON	F343	Economic Analysis of Public Policy	3
	CE	F211	Mechanics of Solids	3	CE	F241	Analysis of Structures	3
	CE	F213	Surveying	4	CE	F242	Construction Planning & Technology	3
	CE	F230	Civil Engineering Materials	4	CE	F243	Soil Mechanics	4
	CE	F231	Fluid Mechanics	3	CE	F244	Highway Engineering	4
				23				**23**
	First Semester			**U**	**Second Semester**			**U**
IV	CE	F312	Hydraulic Engineering	4	CE	F321	Engineering Hydrology	3
	CE	F313	Foundation Engineering	3	CE	F342	Water & Waste Water	4
	CE	F320	Design of Reinforced Concrete Structures	3	CE	F343	Design of Steel Structures	3
							First Discipline Electives	6
			First Discipline Electives	6			Second Discipline Electives	6
			Second Discipline Electives	6				
				22				**22**
V	**First Semester**			**U**	**Second Semester**			**U**
	First Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from **August 2017** onwards.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Economics with B.E. Computer Science)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	MGTS	F211	Principles of Management	3
	ECON	F211	Principles of Economics	3	ECON	F241	Econometric Methods	3
	ECON	F212	Fundamentals of Finance & Accounts	3	ECON	F242	Microeconomics	3
	ECON	F213	Mathematical & Statistical Methods	3	ECON	F243	Macroeconomics	3
	ECON	F214	Economic Environment of Business	3	ECON	F244	Economics of Growth & Development	3
			Humanities Elective	3			Humanities Electives	5
	BITS	F225	Environmental Studies	3				
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	ECON	F311	International Economics	3	ECON	F341	Public Finance Theory & Policy	
	ECON	F312	Money Banking & Financial Markets	3	ECON	F342	Applied Econometrics	3
	ECON	F313	Issues in Economic Development	3	ECON	F343	Economic Analysis of Public Policy	3
	CS	F215	Digital Design	4	CS	F241	Microprocessors & Interfacing	4
	CS	F214	Logic in Computer Science	3	CS	F212	Database Systems	4
	CS	F222	Discrete Structures for Computer Science	3	CS	F211	Data Structures & Algorithms	4
	CS	F213	Object Oriented Programming	4				
				23				**21**
IV	**First Semester**			**U**	**Second Semester**			**U**
	CS	F351	Theory of Computation	3	CS	F363	Compiler Construction	3
	CS	F372	Operating Systems	3	CS	F364	Design and Analysis of Algorithms	3
	CS	F342	Computer Architecture	4	CS	F303	Computer Networks	4
	CS	F301	Principles of Programming Languages	2			First Discipline Electives	6
			First Discipline Electives	6			Second Discipline Electives	6
			Second Discipline Electives	6				
				24				**22**
V	**First Semester**			**U**	**Second Semester**			**U**
	First Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Economics with B.E. Electrical & Electronics)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	MGTS	F211	Principles of Management	3
	ECON	F211	Principles of Economics	3	ECON	F241	Econometric Methods	3
	ECON	F212	Fundamentals of Finance & Accounts	3	ECON	F242	Microeconomics	3
	ECON	F213	Mathematical & Statistical Methods	3	ECON	F243	Macroeconomics	3
	ECON	F214	Economic Environment of Business	3	ECON	F244	Economics of Growth & Development	3
			Humanities Electives	3			Humanities Electives	5
	BITS	F225	Environmental Studies	3				
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	ECON	F311	International Economics	3	ECON	F341	Public Finance Theory & Policy	3
	ECON	F312	Money Banking & Financial Markets	3	ECON	F342	Applied Econometrics	3
	ECON	F313	Issues in Economic Development	3	ECON	F343	Economic Analysis of Public Policy	3
	EEE	F212	Electromagnetic Theory	3	EEE	F243	Signals and Systems	3
	EEE	F211	Electrical Machines	4	EEE	F244	Microelectronic Circuits	3
	EEE	F214	Electronic Devices	3	EEE	F241	Microprocessors & Interfacing	4
	EEE	F215	Digital Design	4	EEE	F242	Control Systems	3
				23				**22**
	First Semester			**U**	**Second Semester**			**U**
IV	EEE	F311	Communication Systems	4	EEE	F341	Analog Electronics	4
	MATH	F212	Optimization	3	EEE	F342	Power Electronics	4
			or		EEE	F312	Power Systems	3
	ME	F344	Engineering Optimization	2			First Discipline Electives	6
	EEE	F313	Analog & Digital VLSI Design	3			Second Discipline Elective	4
			First Discipline Electives	6				
			Second Discipline Electives	8				
				23/24				**21**
	First Semester			**U**	**Second Semester**			**U**
V	First Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Economics with B.E. Electronics & Communication)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	MGTS	F211	Principles of Management	3
	ECON	F211	Principles of Economics	3	ECON	F241	Econometric Methods	3
	ECON	F212	Fundamentals of Finance & Accounts	3	ECON	F242	Microeconomics	3
	ECON	F213	Mathematical & Statistical Methods	3	ECON	F243	Macroeconomics	3
	ECON	F214	Economic Environment of Business	3	ECON	F244	Economics of Growth & Development	3
			Humanities Elective	3			Humanities Electives	5
	BITS	F225	Environmental Studies	3				
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	ECON	F311	International Economics	3	ECON	F341	Public Finance Theory & Policy	3
	ECON	F312	Money Banking & Financial Markets	3	ECON	F342	Applied Econometrics	3
	ECON	F313	Issues in Economic Development	3	ECON	F343	Economic Analysis of Public Policy	3
	ECE	F212	Electromagnetic Theory	3	ECE	F241	Microprocessors & Interfacing	4
	ECE	F215	Digital Design	4	ECE	F242	Control Systems	3
	ECE	F211	Electrical Machines	4	ECE	F243	Signals and Systems	3
	ECE	F214	Electronic Devices	3	ECE	F244	Microelectronic Circuits	3
				23				**22**
	First Semester			**U**	**Second Semester**			**U**
IV	ECE	F311	Communication Systems	4	ECE	F341	Analog Electronics	4
	ECE	F434	Digital Signal Processing	4	ECE	F344	Information Theory & Coding	3
	ECE	F314	Electromagnetic Fields &		ECE	F343	Communication Networks	3
			Microwave Engineering	3			First Discipline Electives	6
			First Discipline Electives	6			Second Discipline Electives	5
			Second Discipline Electives	7				
				24				**21**
V	**First Semester**			**U**	**Second Semester**			**U**
	First Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Economics with B.E. Electronics & Instrumentation)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
II	**First Semester**			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	MGTS	F211	Principles of Management	3
	ECON	F211	Principles of Economics	3	ECON	F241	Econometric Methods	3
	ECON	F212	Fundamentals of Finance & Accounts	3	ECON	F242	Microeconomics	3
	ECON	F213	Mathematical & Statistical Methods	3	ECON	F243	Macroeconomics	3
	ECON	F214	Economic Environment of Business	3	ECON	F244	Economics of Growth & Development	3
			Humanities Elective	3			Humanities Electives	5
	BITS	F225	Environmental Studies	3				
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	ECON	F311	International Economics	3	ECON	F341	Public Finance Theory & Policy	3
	ECON	F312	Money Banking & Financial Markets	3	ECON	F342	Applied Econometrics	3
	ECON	F313	Issues in Economic Development	3	ECON	F343	Economic Analysis of Public Policy	3
	INSTR	F212	Electromagnetic Theory	3	INSTR	F241	Microprocessors & Interfacing	4
	INSTR	F215	Digital Design	4	INSTR	F242	Control Systems	3
	INSTR	F211	Electrical Machines	4	INSTR	F243	Signals & Systems	3
	INSTR	F214	Electronic Devices	3	INSTR	F244	Microelectronic Circuits	3
				23				**22**
IV	**First Semester**			**U**	**Second Semester**			**U**
	INSTR	F311	Electronic Instruments & Instrumentation Technology	4	INSTR	F341	Analog Electronics	4
	INSTR	F312	Transducers and Measurement Systems	3	INSTR	F342	Power Electronics	4
	INSTR	F313	Analog & Digital VLSI Design	3	INSTR	F343	Industrial Instrumentation & Control	3
			First Discipline Electives	6			First Discipline Electives	6
			Second Discipline Electives	8			Second Discipline Electives	4
				24				**21**
V	**First Semester**			**U**	**Second Semester**			**U**
	First Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Economics with B.E. Manufacturing)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	MGTS	F211	Principles of Management	3
	ECON	F211	Principles of Economics	3	ECON	F241	Econometric Methods	3
	ECON	F212	Fundamentals of Finance & Accounts	3	ECON	F242	Microeconomics	3
	ECON	F213	Mathematical & Statistical Methods	3	ECON	F243	Macroeconomics	3
	ECON	F214	Economic Environment of Business	3	ECON	F244	Economics of Growth & Development	3
			Humanities Elective	3			Humanities Electives	5
	BITS	F225	Environmental Studies	3				
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	ECON	F311	International Economics	3	ECON	F341	Public Finance Theory & Policy	3
	ECON	F312	Money Banking & Financial Markets	3	ECON	F342	Applied Econometrics	3
	ECON	F313	Issues in Economic Development	3	ECON	F343	Economic Analysis of Public Policy	3
	MF	F211	Mechanics of Solids	3	MF	F219	Operations Management	3
	MF	F216	Materials Science & Engineering	3	MF	F220	Metrology and Quality Assurance	3
	MF	F217	Machine Drawing	2	MF	F221	Mechanisms and Machines	3
	MF	F218	Transport Phenomena in Manufacturing	4	MF	F222	Casting, Forming and Welding	4
							First Discipline Elective	3
				21				**25**
IV	**First Semester**			**U**	**Second Semester**			**U**
	MF	F314	Design of Machine Elements	3	MF	F317	Computer Aided Design and Manufacturing	3
	MF	F315	Automation and Control	4	MF	F318	Non Traditional Manufacturing Processes	3
	MF	F316	Machining and Machine Tools	4	MF	F319	Supply Chain Management	3
					MF	F320	Engineering Optimization	3
			First Discipline Electives	6			First Discipline Elective	3
			Second Discipline Electives	6			Second Discipline Electives	6
				23				**21**
V	**First Semester**			**U**	**Second Semester**			**U**
	First Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Economics with B.E. Mechanical)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	MGTS	F211	Principles of Management	3
	ECON	F211	Principles of Economics	3	ECON	F241	Econometric Methods	3
	ECON	F212	Fundamentals of Finance & Accounts	3	ECON	F242	Microeconomics	3
					ECON	F243	Macroeconomics	3
	ECON	F213	Mathematical & Statistical Methods	3	ECON	F244	Economics of Growth & Development	3
	ECON	F214	Economic Environment of Business	3			Humanities Electives	5
			Humanities Electives	3				
	BITS	F225	Environmental Studies	3				
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	ECON	F311	International Economics	3	ECON	F341	Public Finance Theory & Policy	3
	ECON	F312	Money Banking & Financial Markets	3	ECON	F342	Applied Econometrics	3
	ECON	F313	Issues in Economic Development	3	ECON	F343	Economic Analysis of Public Policy	3
	ME	F211	Mechanics of Solids	3	ME	F218	Advanced Mechanics of Solids	2
	ME	F212	Fluid Mechanics	3	ME	F219	Manufacturing Processes	4
	ME	F216	Materials Science & Engineering	3	ME	F220	Heat Transfer	4
	ME	F217	Applied Thermodynamics	4	ME	F221	Mechanisms and Machines	3
				22				**22**
IV	**First Semester**			**U**	**Second Semester**			**U**
	ME	F314	Design of Machine Elements	3	ME	F318	Computer-Aided Design	3
	ME	F315	Advanced Manufacturing Processes	3	ME	F319	Vibrations & Control	3
	ME	F316	Manufacturing Management	2	ME	F320	Engineering Optimization	3
	ME	F317	Engines, Motors, and Mobility	2	ME	F341	Prime Movers & Fluid Machines	3
			First Discipline Electives	6			First Discipline Electives	6
			Second Discipline Electives	6			Second Discipline Electives	6
				22				**24**
V	**First Semester**			**U**	**Second Semester**			**U**
	First Discipline Electives			6	BITS F412		Practice School - II	20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Mathematics with B.E. Chemical)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	MATH	F212	Optimization	3			or	
	MATH	F213	Discrete Mathematics	3	MGTS	F211	Principles of Management	3
	MATH	F214	Elementary Real Analysis	3	MATH	F241	Mathematical Methods	3
	MATH	F215	Algebra I	3	MATH	F242	Operations Research	3
			Humanities Elective	3	MATH	F243	Graphs & Networks	3
	BITS	F225	Environmental Studies	3	MATH	F244	Measure & Integration	3
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	MATH	F311	Introduction to Topology	3	MATH	F341	Introduction to Functional Analysis	3
	MATH	F312	Ordinary Differential Equations	3	MATH	F342	Differential Geometry	3
	MATH	F313	Numerical Analysis	3	MATH	F343	Partial Differential Equations	3
	CHE	F211	Chemical Process Calculations	3	CHE	F241	Heat Transfer	3
	CHE	F212	Fluid Mechanics	3	CHE	F242	Numerical Methods for Chemical Engineers	3
	CHE	F214	Engineering Chemistry	3	CHE	F243	Material Science & Engineering	3
	CHE	F213	Chemical Engineering Thermodynamics	3	CHE	F244	Separation Processes I	3
				21				**21**
IV	**First Semester**			**U**	**Second Semester**			**U**
	CHE	F311	Kinetics & Reactor Design	3	CHE	F341	Chemical Engineering Laboratory II	3
	CHE	F312	Chemical Engineering Laboratory I	3	CHE	F342	Process Dynamics & Control	3
	CHE	F313	Separation Processes II	3	CHE	F343	Process Design Principles II	3
	CHE	F314	Process Design Principles I	3			First Discipline Electives	9
			First Discipline Electives	6			Second Discipline Electives	6
			Second Discipline Electives	3				
				21				**24**
V	**First Semester**			**U**	**Second Semester**			**U**
	Second Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Mathematics with B.E. Civil Engineering)							
Year	**First Semester**			**U**	**Second Semester**		**U**
I	**Same as First degree Programme**				**Same as First degree Programme**		
	First Semester			**U**	**Second Semester**		**U**
II	MATH F211 Mathematics III			3	ECON F211 Principles of Economics		3
	MATH F212 Optimization			3	or		
	MATH F213 Discrete Mathematics			3	MGTS F211 Principles of Management		3
	MATH F214 Elementary Real Analysis			3	MATH F241 Mathematical Methods		3
	MATH F215 Algebra I			3	MATH F242 Operations Research		3
	Humanities Elective			3	MATH F243 Graphs & Networks		3
	BITS F225 Environmental Studies			3	MATH F244 Measure & Integration		3
					Humanities Electives		5
				21			**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**						
III	**First Semester**			**U**	**Second Semester**		**U**
	MATH F311 Introduction to Topology			3	MATH F341 Introduction to Functional Analysis		3
	MATH F312 Ordinary Differential Equations			3	MATH F342 Differential Geometry		3
	MATH F313 Numerical Analysis			3	MATH F343 Partial Differential Equations		3
	CE F211 Mechanics of Solids			3	CE F241 Analysis of structures		3
	CE F231 Fluid Mechanics			**3**	CE F242 Construction Planning & Technology		3
	CE F230 Civil Engineering Materials			**4**	CE F243 Soil Mechanics		4
	CE F213 Surveying			4	CE F244 Highway Engineering		4
				23			**23**
IV	**First Semester**			**U**	**Second Semester**		**U**
	CE F320 Design of Reinforced Concrete Structures			**3**	CE F342 Water & Waste Water Treatment		4
	CE F312 Hydraulic Engineering			4	CE F321 Engineering Hydrology		**3**
	CE F313 Foundation Engineering			3	CE F343 Design of Steel Structures		3
	First Discipline Electives			6	First Discipline Electives		9
	Second Discipline Electives			3	Second Discipline Electives		3
				19			**22**
V	**First Semester**			**U**	**Second Semester**		**U**
	Second Discipline Electives			6	BITS F412 Practice School - II		20
	BITS F423T Thesis			9			

Note: This is operative pattern for the students who are admitted from **August 2017** onwards.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Mathematics with B.E. Computer Science)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	MATH	F212	Optimization	3			or	
	MATH	F213	Discrete Mathematics	3	MGTS	F211	Principles of Management	3
	MATH	F214	Elementary Real Analysis	3	MATH	F241	Mathematical Methods	3
	MATH	F215	Algebra I	3	MATH	F242	Operations Research	3
			Humanities Elective	3	MATH	F243	Graphs & Networks	3
	BITS	F225	Environmental Studies	3	MATH	F244	Measure & Integration	3
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	MATH	F311	Introduction to Topology	3	MATH	F341	Introduction to Functional	
	MATH	F312	Ordinary Differential Equations	3			Analysis	3
					MATH	F342	Differential Geometry	3
	MATH	F313	Numerical Analysis	3	MATH	F343	Partial Differential Equations	3
	CS	F215	Digital Design	4	CS	F241	Microprocessors & Interfacing	4
	CS	F214	Logic in Computer Science	3	CS	F212	Database Systems	4
	CS	F213	Object Oriented Programming	4	CS	F211	Data Structures & Algorithms	4
				20				**21**
	First Semester			**U**	**Second Semester**			**U**
IV	CS	F351	Theory of Computation	3	CS	F363	Compiler Construction	3
	CS	F372	Operating Systems	3	CS	F364	Design and Analysis of Algorithms	3
	CS	F342	Computer Architecture	4	CS	F303	Computer Networks	4
	CS	F301	Principles of Programming Languages	2			Fist Discipline Elective	6
			First Discipline Electives	3			Second Discipline Electives	6
			Second Discipline Electives	6				
				21				**22**
V	**First Semester**			**U**	**Second Semester**			**U**
	First Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Mathematics with B.E. Electrical & Electronics)							
Year	**First Semester**			**U**	**Second Semester**		**U**
I	**Same as First degree Programme**				**Same as First degree Programme**		
	First Semester			**U**	**Second Semester**		**U**
	MATH F211		Mathematics III	3	ECON F211	Principles of Economics	3
	MATH F212		Optimization	3		or	
	MATH F213		Discrete Mathematics	3	MGTS F211	Principles of Management	3
	MATH F214		Elementary Real Analysis	3	MATH F241	Mathematical Methods	3
II	MATH F215		Algebra I	3	MATH F242	Operations Research	3
					MATH F243	Graphs & Networks	3
			Humanities Elective	3	MATH F244	Measure & Integration	3
	BITS F225		Environmental Studies	3			
						Humanities Electives	5
				21			**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**						
	First Semester			**U**	**Second Semester**		**U**
	MATH F311		Introduction to Topology	3	MATH F341	Introduction to Functional	
	MATH F312		Ordinary Differential Equations	3		Analysis	3
	MATH F313		Numerical Analysis	3	MATH F342	Differential Geometry	3
	EEE F212		Electromagnetic Theory	3	MATH F343	Partial Differential Equations	3
III	EEE F211		Electrical Machines	4	EEE F243	Signals and Systems	3
	EEE F214		Electronic Devices	3	EEE F244	Microelectronic Circuits	3
	EEE F215		Digital Design	4	EEE F241	Microprocessors &	
						Interfacing	4
					EEE F242	Control Systems	3
				23			**22**
	First Semester			**U**	**Second Semester**		**U**
	EEE F311		Communication Systems	4	EEE F341	Analog Electronics	4
	EEE F313		Analog & Digital VLSI Design	3	EEE F342	Power Electronics	4
					EEE F312	Power Systems	3
IV			First Discipline Electives	6		Fist Discipline Elective	6
			Second Discipline Electives	8		Second Discipline Elective	4
				21			**21**
	First Semester			**U**	**Second Semester**		**U**
V	First Discipline Electives			3	BITS F412 Practice School - II		20
	BITS F423T		Thesis	9			

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Mathematics with B.E. Electronics & Communication)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	MATH	F212	Optimization	3			or	
	MATH	F213	Discrete Mathematics	3	MGTS	F211	Principles of Management	3
	MATH	F214	Elementary Real Analysis	3	MATH	F241	Mathematical Methods	3
II	MATH	F215	Algebra I	3	MATH	F242	Operations Research	3
					MATH	F243	Graphs & Networks	3
			Humanities Elective	3	MATH	F244	Measure & Integration	3
	BITS	F225	Environmental Studies	3			Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
	MATH	F311	Introduction to Topology	3	MATH	F341	Introduction to Functional Analysis	3
	MATH	F312	Ordinary Differential Equations	3	MATH	F342	Differential Geometry	3
	MATH	F313	Numerical Analysis	3	MATH	F343	Partial Differential Equations	3
III	ECE	F212	Electromagnetic Theory	3	ECE	F241	Microprocessors & Interfacing	4
	ECE	F215	Digital Design	4	ECE	F242	Control Systems	3
	ECE	F211	Electrical Machines	4	ECE	F243	Signals and Systems	3
	ECE	F214	Electronic Devices	3	ECE	F244	Microelectronic Circuits	3
				23				**22**
	First Semester			**U**	**Second Semester**			**U**
	ECE	F311	Communication Systems	4	ECE	F341	Analog Electronics	4
	ECE	F434	Digital Signal Processing	4	ECE	F344	Information Theory & Coding	3
V	ECE	F314	Electromagnetic Fields & Microwave Engineering	3	ECE	F343	Communication Networks	3
			First Discipline Electives	3			First Discipline Electives	6
			Second Discipline Electives	7			Second Discipline Electives	5
				21				**21**
	First Semester			**U**	**Second Semester**			**U**
V	First Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Mathematics with B.E. Electronics & Instrumentation)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	MATH	F212	Optimization	3			or	
	MATH	F213	Discrete Mathematics	3	MGTS	F211	Principles of Management	3
	MATH	F214	Elementary Real Analysis	3	MATH	F241	Mathematical Methods	3
	MATH	F215	Algebra I	3	MATH	F242	Operations Research	3
			Humanities Elective	3	MATH	F243	Graphs & Networks	3
	BITS	F225	Environmental Studies	3	MATH	F244	Measure & Integration	3
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	MATH	F311	Introduction to Topology	3	MATH	F341	Introduction to Functional Analysis	3
	MATH	F312	Ordinary Differential Equations	3	MATH	F342	Differential Geometry	3
	MATH	F313	Numerical Analysis	3	MATH	F343	Partial Differential Equations	3
	INSTR	F212	Electromagnetic Theory	3	INSTR	F241	Microprocessors & Interfacing	4
	INSTR	F215	Digital Design	4	INSTR	F242	Control Systems	3
	INSTR	F211	Electrical Machines	4	INSTR	F243	Signals & Systems	3
	INSTR	F214	Electronic Devices	3	INSTR	F244	Microelectronic Circuits	3
				23				**22**
IV	**First Semester**			**U**	**Second Semester**			**U**
	INSTR	F311	Electronic Instruments & Instrumentation Technology	4	INSTR	F341	Analog Electronics	4
	INSTR	F312	Transducers and Measurement Systems	3	INSTR	F342	Power Electronics	4
	INSTR	F313	Analog & Digital VLSI Design	3	INSTR	F343	Industrial Instrumentation & Control	3
			First Discipline Electives	3			Fist Discipline Elective	6
			Second Discipline Electives	8			Second Discipline Electives	4
				21				**21**
V	**First Semester**			**U**	**Second Semester**			**U**
	First Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Mathematics with B.E. Manufacturing)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	MATH	F212	Optimization	3			or	
	MATH	F213	Discrete Mathematics	3	MGTS	F211	Principles of Management	3
	MATH	F214	Elementary Real Analysis	3	MATH	F241	Mathematical Methods	3
II	MATH	F215	Algebra I	3	MATH	F242	Operations Research	3
			Humanities Elective	3	MATH	F243	Graphs & Networks	3
	BITS	F225	Environmental Studies	3	MATH	F244	Measure & Integration	3
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
	MATH	F311	Introduction to Topology	3	MATH	F341	Introduction to Functional Analysis	3
	MATH	F312	Ordinary Differential Equations	3	MATH	F342	Differential Geometry	3
	MATH	F313	Numerical Analysis	3	MATH	F343	Partial Differential Equations	3
	MF	F211	Mechanics of Solids	3	MF	F219	Operations Management	3
III	MF	F216	Materials Science & Engineering	3	MF	F220	Metrology and Quality Assurance	3
	MF	F217	Machine Drawing	2	MF	F221	Mechanisms and Machines	3
	MF	F218	Transport Phenomena in Manufacturing	4	MF	F222	Casting, Forming and Welding	4
				21				**22**
	First Semester			**U**	**Second Semester**			**U**
	MF	F314	Design of Machine Elements	3	MF	F317	Computer Aided Design and Manufacturing	3
	MF	F315	Automation and Control	4	MF	F318	Non Traditional Manufacturing Processes	3
IV	MF	F316	Machining and Machine Tools	4	MF	F319	Supply Chain Management	3
			First Discipline Electives	6	MF	F320	Engineering Optimization	3
			Second Discipline Elective	6			First Discipline Electives	3
							Second Discipline Elective	6
				22				**21**
	First Semester			**U**	**Second Semester**			**U**
V	First Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Mathematics with B.E. Mechanical)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	MATH	F212	Optimization	3			or	
	MATH	F213	Discrete Mathematics	3	MGTS	F211	Principles of Management	3
	MATH	F214	Elementary Real Analysis	3	MATH	F241	Mathematical Methods	3
	MATH	F215	Algebra I	3	MATH	F242	Operations Research	3
			Humanities Elective	3	MATH	F243	Graphs & Networks	3
	BITS	F225	Environmental Studies	3	MATH	F244	Measure & Integration	3
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	MATH	F311	Introduction to Topology	3	MATH	F341	Introduction to Functional Analysis	3
	MATH	F312	Ordinary Differential Equations	3	MATH	F342	Differential Geometry	3
	MATH	F313	Numerical Analysis	3	MATH	F343	Partial Differential Equations	3
	ME	F211	Mechanics of Solids	3	ME	F218	Advanced Mechanics of Solids	2
	ME	F212	Fluid Mechanics	3	ME	F219	Manufacturing Processes	4
	ME	F216	Materials Science & Engineering	3	ME	F220	Heat Transfer	4
	ME	F217	Applied Thermodynamics	4	ME	F221	Mechanisms and Machines	3
				22				**22**
IV	**First Semester**			**U**	**Second Semester**			**U**
	ME	F314	Design of Machine Elements	3	ME	F318	Computer-Aided Design	3
	ME	F315	Advanced Manufacturing Processes	3	ME	F319	Vibrations & Control	3
	ME	F316	Manufacturing Management	2	ME	F320	Engineering Optimization	3
	ME	F317	Engines, Motors, and Mobility	2	ME	F341	Prime Movers & Fluid Machines	3
			First Discipline Electives	6			First Discipline Electives	9
			Second Discipline Electives	3			Second Discipline Electives	3
				19				**24**
V	**First Semester**			**U**	**Second Semester**			**U**
	Second Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Physics with B.E. Chemical)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	PHY	F211	Classical Mechanics	4			or	
	PHY	F212	Electromagnetic Theory I	3	MGTS	F211	Principles of Management	3
	PHY	F213	Optics	3	PHY	F241	Electromagnetic Theory II	4
	PHY	F214	Electricity, Magnetism & Optics Laboratory	2	PHY	F242	Quantum Mechanics I	3
			Humanities Elective	3	PHY	F243	Mathematical Methods of Physics	3
	BITS	F225	Environmental Studies	3	PHY	F244	Modern Physics Laboratory	2
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1(for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	PHY	F311	Quantum Mechanics II	3	PHY	F341	Solid State Physics	3
	PHY	F312	Statistical Mechanics	3	PHY	F342	Atomic & Molecular Physics	3
	PHY	F313	Computational Physics	3	PHY	F343	Nuclear & Particle Physics	3
	CHE	F211	Chemical Process Calculations	3	PHY	F344	Advanced Physics Laboratory	3
	CHE	F212	Fluid Mechanics	3	CHE	F241	Heat Transfer	3
	CHE	F214	Engineering Chemistry	3	CHE	F242	Numerical Methods for Chemical Engineers	3
	CHE	F213	Chemical Engineering Thermodynamics	3	CHE	F243	Material Science & Engineering	3
					CHE	F244	Separation Processes I	3
				21				**24**
	First Semester			**U**	**Second Semester**			**U**
IV	CHE	F311	Kinetics & Reactor Design	3	CHE	F341	Chemical Engineering Laboratory II	3
	CHE	F312	Chemical Engineering Laboratory I	3	CHE	F342	Process Dynamics & Control	3
	CHE	F313	Separation Processes II	3	CHE	F343	Process Design Principles II	3
	CHE	F314	Process Design Principles I	3			First Discipline Electives	9
			First Discipline Electives	6			Second Discipline Electives	6
			Second Discipline Electives	3				
				21				**24**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Physics with B.E. Civil)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
II	**First Semester**			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	PHY	F211	Classical Mechanics	4			or	
	PHY	F212	Electromagnetic Theory I	3	MGTS	F211	Principles of Management	3
	PHY	F213	Optics	3	PHY	F241	Electromagnetic Theory II	4
	PHY	F214	Electricity, Magnetism & Optics Laboratory	2	PHY	F242	Quantum Mechanics I	3
			Humanities Elective	3	PHY	F243	Mathematical Methods of Physics	3
	BITS	F225	Environmental Studies	3	PHY	F244	Modern Physics Laboratory	2
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1(for PS Option Only)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	PHY	F311	Quantum Mechanics II	3	PHY	F341	Solid State Physics	3
	PHY	F312	Statistical Mechanics	3	PHY	F342	Atomic & Molecular Physics	3
	PHY	F313	Computational Physics	3	PHY	F343	Nuclear & Particle Physics	3
	CE	F211	Mechanics of Solids	3	CE	F241	Analysis of structures	3
	CE	F231	Fluid Mechanics	**3**	CE	F242	Construction Planning & Technology	3
	CE	F230	Civil Engineering Materials	**4**	CE	F243	Soil Mechanics	4
	CE	F213	Surveying	4	CE	F244	Highway Engineering	4
				23				**23**
IV	**First Semester**			**U**	**Second Semester**			**U**
	CE	**F320**	**Design of Reinforced Concrete Structures**	**3**	CE	F342	Water & Waste Water Treatment	4
	CE	F312	Hydraulic Engineering	4	**CE**	**F321**	**Engineering Hydrology**	**3**
	CE	F313	Foundation Engineering	3				
			First Discipline Electives	9	CE	F343	Design of Steel Structures	3
			Second Discipline Electives	3	PHY	F344	Advanced Physics Laboratory	3
							First Discipline Electives	6
							Second Discipline Electives	3
				22				**22**
V	**First Semester**			**U**	**Second Semester**			**U**
	Second Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from **August 2017** onwards.

Semester-wise pattern for composite Dual Degree Programmes
(M.Sc. Physics with B.E. Computer Science)

Year	First Semester	U	Second Semester	U
I	**Same as First degree Programme**		**Same as First degree Programme**	
	First Semester	**U**	**Second Semester**	**U**
II	MATH F211 Mathematics III	3	ECON F211 Principles of Economics	3
	PHY F211 Classical Mechanics	4	or	
	PHY F212 Electromagnetic Theory I	3	MGTS F211 Principles of Management	3
	PHY F213 Optics	3	PHY F241 Electromagnetic Theory II	4
	PHY F214 Electricity, Magnetism & Optics Laboratory	2	PHY F242 Quantum Mechanics I	3
	Humanities Elective	3	PHY F243 Mathematical Methods of Physics	3
	BITS F225 Environmental Studies	3	PHY F244 Modern Physics Laboratory	2
			Humanities Electives	5
		21		**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**			
	First Semester	**U**	**Second Semester**	**U**
III	PHY F311 Quantum Mechanics II	3	PHY F341 Solid State Physics	3
	PHY F312 Statistical Mechanics	3	PHY F342 Atomic & Molecular Physics	3
	PHY F313 Computational Physics	3	PHY F343 Nuclear & Particle Physics	3
	CS F215 Digital Design	4	PHY F344 Advanced Physics Laboratory	3
	CS F214 Logic in Computer Science	3	CS F241 Microprocessors & Interfacing	4
	CS F222 Discrete Structures For Computer Science	3	CS F212 Database Systems	4
	CS F213 Object Oriented Programming	4	CS F211 Data Structures & Algorithms	4
		23		**24**
IV	**First Semester**	**U**	**Second Semester**	**U**
	CS F351 Theory of Computation	3	CS F363 Compiler Construction	3
	CS F372 Operating Systems	3	CS F364 Design and Analysis of Algorithms	3
	CS F342 Computer Architecture	4	CS F303 Computer Networks	4
	CS F301 Principles of Programming Languages	2	First Discipline Electives	9
	First Discipline Electives	6	Second Discipline Electives	3
	Second Discipline Electives	3		
		21		**22**
V	**First Semester**	**U**	**Second Semester**	**U**
	Second Discipline Electives	6	BITS F412 Practice School - II	20
	BITS F423T Thesis	9		

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Physics with B.E. Electrical & Electronics)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	PHY	F211	Classical Mechanics	4			or	
	PHY	F212	Electromagnetic Theory I	3	MGTS	F211	Principles of Management	3
	PHY	F213	Optics	3	PHY	F241	Electromagnetic Theory II	4
	PHY	F214	Electricity, Magnetism &Optics Laboratory	2	PHY	F242	Quantum Mechanics I	3
			Humanities Elective	3	PHY	F243	Mathematical Methods of Physics	3
	BITS	F225	Environmental Studies	3	PHY	F244	Modern Physics Laboratory	2
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1(for PS Option Only)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	PHY	F311	Quantum Mechanics II	3	PHY	F341	Solid State Physics	3
	PHY	F312	Statistical Mechanics	3	PHY	F342	Atomic & Molecular Physics	3
	PHY	F313	Computational Physics	3	PHY	F343	Nuclear & Particle Physics	3
	EEE	F211	Electrical Machines	4	EEE	F243	Signals and Systems	3
	EEE	F214	Electronic Devices	3	EEE	F244	Microelectronic Circuits	3
	EEE	F215	Digital Design	4	EEE	F241	Microprocessors & Interfacing	4
					EEE	F242	Control Systems	3
				20				**22**
IV	**First Semester**			**U**	**Second Semester**			**U**
	EEE	F311	Communication Systems	4	EEE	F341	Analog Electronics	4
	MATH	F212	Optimization	3	EEE	F342	Power Electronics	4
			or		EEE	F312	Power Systems	3
	ME	F344	Engineering Optimization	2	PHY	F344	Advanced Physics Laboratory	3
	EEE	F313	Analog & Digital VLSI Design	3			First Discipline Electives	6
			First Discipline Electives	9			Second Discipline Electives	4
			Second Discipline Electives	5				
				23/24				**24**
V	**First Semester**			**U**	**Second Semester**			**U**
	Second Discipline Electives			3	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Physics with B.E. Electronics & Communication)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	PHY	F211	Classical Mechanics	4			or	
	PHY	F212	Electromagnetic Theory I	3	MGTS	F211	Principles of Management	3
	PHY	F213	Optics	3	PHY	F241	Electromagnetic Theory II	4
	PHY	F214	Electricity, Magnetism & Optics Laboratory	2	PHY	F242	Quantum Mechanics I	3
			Humanities Elective	3	PHY	F243	Mathematical Methods of Physics	3
	BITS	F225	Environmental Studies	3	PHY	F244	Modern Physics Laboratory	2
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	PHY	F311	Quantum Mechanics II	3	PHY	F341	Solid State Physics	3
	PHY	F312	Statistical Mechanics	3	PHY	F342	Atomic & Molecular Physics	3
	PHY	F313	Computational Physics	3	PHY	F343	Nuclear & Particle Physics	3
	ECE	F215	Digital Design	4	ECE	F241	Microprocessors & Interfacing	4
	ECE	F211	Electrical Machines	4	ECE	F242	Control Systems	3
	ECE	F214	Electronic Devices	3	ECE	F243	Signals and Systems	3
					ECE	F244	Microelectronic Circuits	3
				20				**22**
	First Semester			**U**	**Second Semester**			**U**
IV	ECE	F311	Communication Systems	4	ECE	F341	Analog Electronics	4
	ECE	F434	Digital Signal Processing	4	ECE	F344	Information Theory & Coding	3
	ECE	F314	Electromagnetic Fields & Microwave Engineering	3	ECE	F343	Communication Networks	3
			First Discipline Electives	9	PHY	F344	Advanced Physics Laboratory	3
			Second Discipline Electives	3			First Discipline Electives	6
							Second Discipline Electives	5
				23				**24**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			4	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Physics with B.E. Electronics & Instrumentation)									
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	PHY	F211	Classical Mechanics	4			or	
	PHY	F212	Electromagnetic Theory I	3	MGTS	F211	Principles of Management	3
	PHY	F213	Optics	3	PHY	F241	Electromagnetic Theory II	4
	PHY	F214	Electricity, Magnetism &Optics Laboratory	2	PHY	F242	Quantum Mechanics I	3
			Humanities Elective	3	PHY	F243	Mathematical Methods of Physics	3
	BITS	F225	Environmental Studies	3	PHY	F244	Modern Physics Laboratory	2
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1(for PS Option Only)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	PHY	F311	Quantum Mechanics II	3	PHY	F341	Solid State Physics	3
	PHY	F312	Statistical Mechanics	3	PHY	F342	Atomic & Molecular Physics	3
	PHY	F313	Computational Physics	3	PHY	F343	Nuclear & Particle Physics	3
	INSTR	F215	Digital Design	4	INSTR	F241	Microprocessors & Interfacing	4
	INSTR	F211	Electrical Machines	4	INSTR	F242	Control Systems	3
	INSTR	F214	Electronic Devices	3	INSTR	F243	Signals & Systems	3
					INSTR	F244	Microelectronic Circuits	3
				20				**22**
IV	**First Semester**			**U**	**Second Semester**			**U**
	INSTR	F311	Electronic Instruments & Instrumentation Technology	4	INSTR	F341	Analog Electronics	4
	INSTR	F312	Transducers and Measurement Systems	3	INSTR	F342	Power Electronics	4
	INSTR	F313	Analog & Digital VLSI Design	3	INSTR	F343	Industrial Instrumentation & Control	3
			First Discipline Electives	9	PHY	F344	Advanced Physics Laboratory	3
			Second Discipline Electives	3			First Discipline Electives	6
							Second Discipline Electives	4
				22				**24**
V	**First Semester**			**U**	**Second Semester**			**U**
	Second Discipline Electives			5	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2011 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Physics with B.E. Manufacturing)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
II	**First Semester**			**U**	**Second Semester**			**U**
	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	PHY	F211	Classical Mechanics	4			or	
	PHY	F212	Electromagnetic Theory I	3	MGTS	F211	Principles of Management	3
	PHY	F213	Optics	3	PHY	F241	Electromagnetic Theory II	4
	PHY	F214	Electricity, Magnetism &Optics Laboratory	2	PHY	F242	Quantum Mechanics I	3
			Humanities Elective	3	PHY	F243	Mathematical Methods of Physics	3
	BITS	F225	Environmental Studies	3	PHY	F244	Modern Physics Laboratory	2
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
III	**First Semester**			**U**	**Second Semester**			**U**
	PHY	F311	Quantum Mechanics II	3	PHY	F341	Solid State Physics	3
	PHY	F312	Statistical Mechanics	3	PHY	F342	Atomic & Molecular Physics	3
	PHY	F313	Computational Physics	3	PHY	F343	Nuclear & Particle Physics	3
	MF	F211	Mechanics of Solids	3	PHY	F344	Advanced Physics Laboratory	3
	MF	F216	Materials Science & Engineering	3	MF	F219	Operations Management	3
	MF	F217	Machine Drawing	2	MF	F220	Metrology and Quality Assurance	3
	MF	F218	Transport Phenomena in Manufacturing	4	MF	F221	Mechanisms and Machines	3
					MF	F222	Casting, Forming and Welding	4
				21				**25**
IV	**First Semester**			**U**	**Second Semester**			**U**
	MF	F314	Design of Machine Elements	3	MF	F317	Computer Aided Design and Manufacturing	3
	MF	F315	Automation and Control	4	MF	F318	Non Traditional Manufacturing Processes	3
	MF	F316	Machining and Machine Tools	4	MF	F319	Supply Chain Management	3
			First Discipline Electives	9	MF	F320	Engineering Optimization	3
			Second Discipline Electives	3			First Discipline Electives	6
							Second Discipline Electives	4
				23				**22**
V	**First Semester**			**U**	**Second Semester**			**U**
	Second Discipline Electives			5	BITS F412 Practice School - II			20
	BITS F423T Thesis			9				

Note: This is operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

Semester-wise pattern for composite Dual Degree Programmes (M.Sc. Physics with B.E. Mechanical)								
Year	**First Semester**			**U**	**Second Semester**			**U**
I	**Same as First degree Programme**				**Same as First degree Programme**			
	First Semester			**U**	**Second Semester**			**U**
II	MATH	F211	Mathematics III	3	ECON	F211	Principles of Economics	3
	PHY	F211	Classical Mechanics	4			or	
	PHY	F212	Electromagnetic Theory I	3	MGTS	F211	Principles of Management	3
	PHY	F213	Optics	3	PHY	F241	Electromagnetic Theory II	4
	PHY	F214	Electricity, Magnetism & Optics Laboratory	2	PHY	F242	Quantum Mechanics I	3
			Humanities Elective	3	PHY	F243	Mathematical Methods of Physics	3
	BITS	F225	Environmental Studies	3	PHY	F244	Modern Physics Laboratory	2
							Humanities Electives	5
				21				**20**
Summer	**BITS F221 Practice School -1 (for PS Option Only)**							
	First Semester			**U**	**Second Semester**			**U**
III	PHY	F311	Quantum Mechanics II	3	PHY	F341	Solid State Physics	3
	PHY	F312	Statistical Mechanics	3	PHY	F342	Atomic & Molecular Physics	3
	PHY	F313	Computational Physics	3	PHY	F343	Nuclear & Particle Physics	3
	ME	F211	Mechanics of Solids	3	PHY	F344	Advanced Physics Laboratory	3
	ME	F212	Fluid Mechanics	3	ME	F218	Advanced Mechanics of Solids	2
	ME	F216	Materials Science & Engineering	3	ME	F219	Manufacturing Processes	4
	ME	F217	Applied Thermodynamics	4	ME	F220	Heat Transfer	4
					ME	F221	Mechanisms and Machines	3
				22				**25**
	First Semester			**U**	**Second Semester**			**U**
IV	ME	F314	Design of Machine Elements	3	ME	F318	Computer-Aided Design	3
	ME	F315	Advanced Manufacturing Processes	3	ME	F319	Vibrations & Control	3
	ME	F316	Manufacturing Management	2	ME	F320	Engineering Optimization	3
	ME	F317	Engines, Motors, and Mobility	2	ME	F341	Prime Movers & Fluid Machines	3
			First Discipline Electives	9			First Discipline Electives	6
			Second Discipline Electives	3			Second Discipline Electives	3
				22				**21**
	First Semester			**U**	**Second Semester**			**U**
V	Second Discipline Electives			6	BITS F412 Practice School - II			20
	BITS F423T		Thesis	9				

Note: This is operative pattern for the students who are admitted from August 2019 onwards as approved by the Senate-appointed committee, subject to change if the situation warrants.

List of Courses for B.E. / M.Sc. / B.Pharm. Programmes:

The list of Discipline Core Courses and Discipline Electives for all the first degree programmes is given below. To complete the requirements of Humanities electives, a student can take courses which are normally listed under Languages and Literature, History and Philosophy, Political and social Sciences, Fine arts and Professional Arts which have also been mentioned in subsequent paragraphs.

Course No	Course Title	L	P	U
BIOTECHNOLOGY				
CORE COURSES				
BIOT F211	Biological Chemistry	3	0	3
BIOT F212	Microbiology	3	1	4
BIOT F213	Cell biology	3	0	3
BIOT F215	Biophysics	3	0	3
BIOT F241	Genetic Engineering Techniques	1	3	4
BIOT F243	Genetics	3	0	3
BIOT F244	Instrumental Methods of Analysis	1	3	4
BIOT F245	Intro to Environmental Biotechnology	3	0	3
BIOT F311	Recombinant DNA Technology	3	0	3
BIOT F314	Industrial Microbiology and Bioprocess Engineering	2	2	4
BIOT F342	Immunology	3	0	3
BIOT F343	Experiments in Biotechnology	0	3	3
BIOT F344	Downstream Processing	2	1	3
DISCIPLINE ELECTIVE COURSES				
BIOT F242	Introduction to Bioinformatics	3	0	3
BIOT F345	Proteomics	3	0	3
BIOT F346	Genomics	3	0	3
BIOT F347	Immunotechnology	3	0	3
BIOT F352	Cell and Tissue Culture Technology	3	0	3
BIOT F413	Molecular Biology of the Cell	3	0	3
BIOT F416	Introduction to Pharmaceutical Biotechnology	3	0	3
BIOT F417	Biomolecular Modeling	3	0	3
BIOT F420	Introduction to Plant Biotechnology	3	0	3
BIOT F422	Nanobiotechnology	3	0	3
BIOT F423	Drug design and delivery	3	0	3
BIOT F424	Food Biotechnology	3	0	3
BITS F467	Bioethics and Biosafety	3	0	3

CHEMICAL ENGINEERING CORE COURSES		L	P	U
CHE F211	Chemical Process Calculations	3	0	3
CHE F212	Fluid Mechanics	3	0	3
CHE F213	Chemical Engineering Thermodynamics	3	0	3
CHE F214	Engineering Chemistry	3	0	3
CHE F241	Heat Transfer	3	0	3
CHE F242	Numerical Methods for Chemical Engineers	3	0	3
CHE F243	Material Science and Engg.	3	0	3
CHE F244	Separation Processes I	3	0	3
CHE F311	Kinetics and Reactor Design	3	0	3
CHE F312	Chemical Engineering Lab I	0	3	3
CHE F313	Separation Processes II	3	0	3
CHE F314	Process Design Principles I	3	0	3
CHE F341	Chemical Engineering Lab II	0	3	3
CHE F342	Process Dynamics and Control	3	0	3
CHE F343	Process Design Principles II	3	0	3
DISCIPLINE ELECTIVE COURSES				
BIO G671	Bioconversion Technology	3	2	5
BIOT F245	Introduction to Environmental Biotechnology	3	0	3
BIOT F344	Downstream processing	2	1	3
BITS F415	Introduction to MEMS	3	1	4
BITS F416	Introduction to Nanoscience	3	0	3
BITS F417	Microfluidics and its application			4
BITS F418	Introduction to Biomedical Engineering	3	1	4
BITS F429	Nanotechnology for Renewable Energy and Environment	3	1	4
CHE F411	Environmental Pollution	3	0	3

	Control			
CHE F412	Process Equipment Design	3	0	3
CHE F413	Process Plant Safety	3	0	3
CHE F414	Transport Phenomena	3	0	3
CHE F415	Molecular and Statistical Thermodynamics	3	0	3
CHE F416	Process Plant Design Project I	-	-	3
CHE F417	Process Plant Design Project II	-	-	3
CHE F418	Modelling and Simulation in Chemical Engineering	3	0	3
CHE F419	Chemical Process Technology	3	0	3
CHE F421	Bio-chemical Engineering	3	0	3
CHE F422	Petroleum Refining Technology	3	0	3
CHE F423	Membrane Science and Engineering	3	0	3
CHE F424	Rheology of Complex Fluids	3	0	3
CHE F433	Corrosion Engineering	3	0	3
CHE F471	Advanced Process Control	3	0	3
CHE F497	Atomic and Molecular Simulations			3
CHE F498	Colloids and Interface Engineering			3
CHE G511	Fluidization Engineering	3	1	4
CHE G512	Petroleum Refining and Petrochemicals	3	1	4
CHE G513	Environmental Management Systems	3	2	5
CHE G522	Polymer Technology	3	1	4
CHE G523	Mathematical Methods in Chemical Engineering			5
CHE G524	Introduction to Multiphase flow	3	1	4
CHE G526	Nuclear Engineering	3	1	4
CHE G527	Energy Conservation and Management	3	1	4
CHE G528	Introduction to Nanoscience & Technology	3	1	4
CHE G529	Pulp & Paper Technology	3	1	4
CHE G532	Alternate Energy Resources	3	1	4
CHE G533	Petroleum Product Characterization	3	2	5
CHE G551	Advanced Separation Technology	3	2	5
CHE G552	Advanced Transport Phenomena			5
CHE G554	Computational Fluid Dynamics			4
CHE G556	Electrochemical Engineering	3	1	4
CHE G557	Energy Systems Engineering			4
CHE G558	Chemical Process Optimization			4
CHE G568	Modeling and Simulation in Petroleum Refining			4
CHE G613	Advanced Mass Transfer	3	2	5
CHE G614	Advanced Heat Transfer	3	2	5
CHE G616	Petroleum Reservoir Engineering			5
CHE G617	Petroleum Refinery Engg.	3	2	5
CHE G618	Petroleum Downstream Processing	3	2	5
CHE G619	Process Intensification	3	2	5
CHE G620	Energy Integration Analysis	3	1	4
CHE G622	Advanced Chemical Engineering Thermodynamics			5
CHE G641	Reaction Engineering			5
CHEM F325	Polymer Chemistry	3	0	3
ME F323	Energy Storage Technologies	3	0	3
MST G521	Material Characterization Techniques	3	2	5

CIVIL ENGINEERING				
CORE COURSES		**L**	**P**	**U**
CE F211	Mechanics of Solids	3	0	3
CE F213	Surveying	3	1	4
CE F230	Civil Engineering Materials			4
CE F231	Fluid Mechanics			3
CE F241	Analysis of Structures	3	0	3
CE F242	Construction Planning and Technology	3	0	3
CE F243	Soil Mechanics	3	1	4
CE F244	Highway Engineering	3	1	4
CE F312	Hydraulics Engineering	3	1	4
CE F313	Foundation Engineering	3	0	3
CE F320	Design of Reinforced Concrete Structures			3
CE F321	Engineering Hydrology			3
CE F342	Water & Waste Water Treatment	3	1	4
CE F343	Design of Steel Structures	3	0	3
DISCIPLINE ELECTIVE COURSES				
BITS F313	Multicriterion Decision Making in Engg. and Management	3	0	3
CE F323	Introduction to Environmental Engineering	3	0	3

CE F324	Numerical Analysis	3	0	3
CE F325	Fundamentals of Rock Mechanics	3	0	3
CE F345	Computational Geomechanics	3	0	3
CE F411	Operation Research for Engineers	3	0	3
CE F412	Disaster Management	3	0	3
CE F413	Advanced Structural Design	3	0	3
CE F415	Design of Prestressed Concrete Structure	3	0	3
CE F416	Computer Applications in Civil Engineering	3	1	4
CE F417	Applications of Artificial Intelligence in Civil Engg.	3	0	3
CE F419	Geotechnical Earthquake Engg. and Machine Foundation	3	0	3
CE F420	Introduction to Bridge Engineering	3	0	3
CE F421	Analysis and Design of FRP Reinforced Concrete Structures	3	0	3
CE F422	Urban Hydrology	2	1	3
CE F423	Green Buildings and Energy Conservation	3	0	3
CE F425	Airport, Railways and Waterways	3	0	3
CE F426	Geosynthetics and Reinforced Soil Structure	3	0	3

Course No	**Course Title**	**L**	**P**	**U**
CE F427	System Modeling and Analysis	3	0	3
CE F428	Earthquake Resistant Design and Construction	3	0	3
CE F429	Design of Foundation Systems	3	0	3
CE F430	Design of Advanced Concrete Structures	3	0	3
CE F431	Principles of Geographical Information Systems	3	1	4
CE F432	Structural Dynamics	3	0	3
CE F433	Remote Sensing and Image Processing	3	1	4
CE F434	Environmental Impact Assessment	3	0	3
CE F435	Introduction to Finite Element Methods	3	0	3

COMPUTER SCIENCE

CORE COURSES		**L**	**P**	**U**
CS F211	Data Structures & Algorithms	3	1	4
CS F212	Database Systems	3	1	4
CS F213	Object Oriented Programming	3	1	4
CS F214	Logic in Computer Science	3	0	3
CS F215	Digital Design	3	1	4
CS F222	Discrete Structures for Computer Science	3	0	3
CS F241	Microprocessors & Interfacing	3	1	4
CS F301	Principles of Programming Languages	2	0	2
CS F303	Computer Networks	3	1	4
CS F342	Computer Architecture	3	1	4
CS F351	Theory of Computation	3	0	3
CS F363	Compiler Construction	2	1	3
CS F364	Design & Analysis of Algorithms	3	0	3
CS F372	Operating Systems	3	0	3

DISCIPLINE ELECTIVE COURSES				
BITS F311	Image Processing	3	0	3
BITS F312	Neural Networks and Fuzzy Logic	3	0	3
BITS F343	Fuzzy Logic and Applications	3	0	3
BITS F364	Human – Computer Interaction	3	0	3
BITS F386	Quantum Information and Computation	3	0	3
BITS F452	Blockchain Technology	3	0	3
BITS F453	Computational Learning Theory	3	0	3
BITS F454	Bio-Inspired Intelligence: Algorithms and Applications	3	0	3
BITS F463	Cryptography	3	0	3
BITS F464	Machine Learning	3	0	3
BITS F465	Enterprise Computing	3	1	4
BITS F466	Service Oriented Computing	3	1	4
CS F314	Software Development for Portable Devices	2	1	3
CS F315	Information and Communication Technologies and Development	3	0	3
CS F316	Quantum Architecture and Programming	3	0	3
CS F317	Reinforcement Learning	3	0	3
CS F320	Foundations of Data Science	3	0	3
CS F401	Multimedia Computing	3	0	3
CS F402	Computational Geometry	3	0	3
CS F407	Artificial Intelligence	3	0	3

Course No	Course Title	L	P	U
CS F413	Internetworking Technologies	3	0	3
CS F415	Data Mining	3	0	3
CS F422	Parallel Computing	3	0	3
CS F424	Software for Embedded Systems	3	1	4
CS F425	Deep Learning	3	0	3
CS F426	Graph Mining	3	1	4
CS F427	Performance Analysis of Computer Networks	3	0	3
CS F428	Special topic in Computer Science	1	0	1
CS F429	Natural Language Processing	3	0	3
CS F430	Approximation Algorithms	3	0	3
CS F431	Combinatorial Optimization	3	0	3
CS F432	Brain-inspired Deep Learning	3	0	3
CS F433	Computational Neuroscience	3	0	3
CS F441	Selected Topics from Computer Science	-	-	3
CS F444	Real Time Systems	3	0	3
CS F446	Data Storage Technologies and Networks	3	0	3
CS F468	Information Security Project	0	3	3
CS F469	Information Retrieval	3	0	3
CS G513	Network Security	3	1	4
CS G519	Social Media Analytics	3	1	4
CS G520	Advanced Data Mining	3	1	4
CS G527	Cloud Computing			5
IS F311	Computer Graphics	3	0	3
IS F341	Software Engineering	3	1	4
IS F462	Network Programming	3	0	3
MATH F231	Number Theory	3	0	3
MATH F421	Combinatorial Mathematics	3	0	3
MATH F441	Discrete Mathematical Structures	3	0	3
ELECTRICAL AND ELECTRONICS ENGINEERING				
CORE COURSES				
EEE F211	Electrical Machines	3	1	4
EEE F212	Electromagnetic Theory	3	0	3
EEE F214	Electronic Devices	3	0	3
EEE F215	Digital Design	3	1	4
EEE F241	Microprocessors and interfacing	3	1	4
EEE F242	Control Systems	3	0	3
EEE F243	Signals & Systems	3	0	3
EEE F244	Microelectronic Circuits	3	0	3
EEE F311	Communication Systems	3	1	4
EEE F312	Power Systems	3	0	3
EEE F313	Analog & Digital VLSI Design	3	0	3
EEE F341	Analog Electronics	3	1	4
EEE F342	Power Electronics	3	1	4
MATH F212 OR ME F344	Optimization OR Engineering Optimization	3	0	3
		2	0	2
DISCIPLINE ELECTIVE COURSES				
BITS F312	Neural Networks and Fuzzy Logic	3	0	3
BITS F415	Introduction To MEMS	3	1	4
CS F213	Object Oriented Programming	3	1	4
CS F342	Computer Architecture	3	1	4
CS F372	Operating Systems	3	0	3
CS F451	Combinatorial Mathematics	3	0	3
CS G553	Reconfigurable Computing			5
ECE F312	EM Fields and Microwave Engineering Laboratory	0	1	1
ECE F343	Communication Networks	3	0	3
EEE F216	Electronic Devices Simulation Laboratory	0	2	2
EEE F245	Control System Laboratory	0	1	1
EEE F246	Electrical and Electronic Circuits Laboratory	0	2	2
EEE F312	EM Fields and Microwave Engineering	3	0	3
EEE F345	Power Apparatus & Networks	3	0	3
EEE F346	Data Communication Networks	2	0	2
EEE F348	FPGA Based System Design Laboratory	0	2	2
EEE F411	Internet of Things	3	1	4
EEE F414	Telecommunication Switching Systems & Networks	3	0	3
EEE F416	Digital Communication	3	0	3
EEE F417	Computer Based Control System	3	0	3
EEE F418	Modern Communication Technologies	3	0	3
EEE F419	Flexible and Stretchable Electronics	3	1	4
EEE F420	Biomedical Signal Processing	3	1	4
EEE F422	Modern Control Systems	3	0	3
EEE F424	Smart Grid for Sustainable	3	0	3

Course No	Course Title	L	P	U
	Energy			
EEE F425	Power System Analysis and control	3	0	3
EEE F426	Fiber Optics & Optoelectronics	3	0	3
EEE F427	Electric Power Utilization and Illumination	3	0	3
EEE F428	Energy Storage Systems	3	0	3
EEE F429	Smart Materials and Applications	3	1	4
EEE F430	Green Communications and Networks	3	0	3
EEE F431	Mobile Telecommunication Networks	3	0	3
EEE F432	Medical Instrumentation	3	0	3
EEE F433	Electromagnetic Fields & Waves	3	0	3
EEE F434	Digital Signal Processing	3	1	4
EEE F435	Digital Image Processing	3	0	3
EEE F436	Electromagnetic Compatibility	3	1	4
EEE F462	Advanced Power Systems	3	0	3
EEE F472	Satellite Communication	3	0	3
EEE F473	Wind Electrical Systems	3	0	3
EEE F474	Antenna Theory and Design	3	1	4
EEE F475	Special Electrical Machines	3	1	4
EEE F476	Switchgear and Protection	3	1	4
EEE F477	Modelling of Field-Effect NanoDevices	3	0	3
EEE F478	Power Systems Laboratory	0	2	2
EEE G512	Embedded System Design	3	1	4
EEE G626	Hardware Software Co-Design			4

ELECTRONICS AND COMMUNICATION ENGINEERING				
CORE COURSES		**L**	**P**	**U**
ECE F211	Electrical Machines	3	1	4
ECE F212	Electromagnetic Theory	3	0	3
ECE F214	Electronic Devices	3	0	3
ECE F215	Digital Design	3	1	4
ECE F241	Microprocessors and interfacing	3	1	4
ECE F242	Control Systems	3	0	3
ECE F243	Signals & Systems	3	0	3
ECE F244	Microelectronic Circuits	3	0	3
ECE F311	Communication Systems	3	1	4
ECE F314	Electromagnetic Fields & Microwave Engineering	3	0	3
ECE F341	Analog Electronics	3	1	4
ECE F343	Communication Networks	3	0	3
ECE F344	Information Theory & Coding	3	0	3
ECE F434	Digital Signal Processing	3	1	4
DISCIPLINE ELECTIVE COURSES		**L**	**P**	**U**
BITS F415	Introduction to MEMS	3	1	4
BITS F463	Cryptography	3	0	3
CS F213	Object Oriented Programming	3	1	4
CS F342	Computer Architecture	3	1	4
CS F372	Operating Systems	3	0	3
CS F451	Combinatorial Mathematics	3	0	3
CS G553	Reconfigurable Computing			5
ECE F216	Electronic Devices Simulation Laboratory	0	2	2
ECE F312	EM Fields and Microwave Engineering Laboratory	0	1	1
ECE F414	Telecommunication Switching Systems & Networks	3	0	3
ECE F416	Digital Communication	3	0	3
ECE F418	Modern Communication Technologies	3	0	3
ECE F424	Smart Grid for Sustainable Energy	3	0	3
ECE F428	Energy Storage Systems	3	0	3
ECE F429	Smart Materials and Applications	3	1	4
ECE F430	Green Communications and Networks	3	0	3
ECE F431	Mobile Telecommunication Networks	3	0	3
ECE F472	Satellite Communication	3	0	3
EEE F245	Control System Laboratory	0	1	1
EEE F246	Electrical and Electronic Circuits Laboratory	0	2	2
EEE F313	Analog & Digital VLSI Design	3	0	3
EEE F345	Power Apparatus & Networks	3	0	3
EEE F346	Data Communication Networks	2	0	2
EEE F348	FPGA Based System Design Laboratory	0	2	2
EEE F411	Internet of Things	3	1	4
EEE F417	Computer Based Control System	3	0	3
EEE F419	Flexible and Stretchable Electronics	3	1	4
EEE F420	Biomedical Signal Processing	3	1	4
EEE F422	Modern Control Systems	3	0	3
EEE F426	Fiber Optics and Optoelectronics	3	0	3

Course No	Course Title	L	P	U
EEE F429	Smart Materials and Applications	3	1	4
EEE F430	Green Communications and Networks	3	0	3
EEE F432	Medical Instrumentation	3	0	3
EEE F435	Digital Image Processing	3	0	3
EEE F436	Electromagnetic Compatibility	3	1	4
EEE F474	Antenna Theory and Design	3	1	4
EEE F475	Special Electrical Machines	3	1	4
EEE F476	Switchgear and Protection	3	1	4
EEE F477	Modelling of Field-Effect Nano Devices	3	0	3
EEE F478	Power Systems Laboratory	0	2	2
EEE G512	Embedded System Design	3	1	4
EEE G626	Hardware Software Co-Design			4
INSTR F412	Analysis Instrumentation	3	0	3

ELECTRONICS AND INSTRUMENTATION ENGINEERING

CORE COURSES		L	P	U
INSTR F211	Electrical Machines	3	1	4
INSTR F212	Electromagnetic Theory	3	0	3
INSTR F214	Electronic Devices	3	0	3
INSTR F215	Digital Design	3	1	4
INSTR F241	Microprocessors and interfacing	3	1	4
INSTR F242	Control Systems	3	0	3
INSTR F243	Signals & Systems	3	0	3
INSTR F244	Microelectronic Circuits	3	0	3
INSTR F311	Electronic Instrumentation & Instrumentation Technology	3	1	4
INSTR F312	Transducers and Measurement Systems	3	0	3
INSTR F313	Analog & Digital VLSI Design	3	0	3
INSTR F341	Analog Electronics	3	1	4
INSTR F342	Power Electronics	3	1	4
INSTR F343	Industrial Instrumentation & Control	3	0	3

Course No	Course Title	L	P	U
DISCIPLINE ELECTIVE COURSES		**L**	**P**	**U**
BITS F312	Neural Network & Fuzzy Logic	3	0	3
BITS F415	Introduction To MEMS	3	1	4
CS F213	Object Oriented Programming	3	1	4
CS F342	Computer Architecture	3	1	4
CS F372	Operating Systems	3	0	3
CS F451	Combinatorial Mathematics	3	0	3
CS G553	Reconfigurable Computing			5
ECE F312	EM Fields and Microwave Engineering Laboratory	0	1	1
ECE F314	Electromagnetic Fields & Microwave Engineering	3	0	3
EEE F245	Control System Laboratory	0	1	1
EEE F246	Electrical and Electronic Circuits Laboratory	0	2	2
EEE F311	Communication Systems	3	1	4
EEE F345	Power Apparatus & Networks	3	0	3
EEE F346	Data Communication Networks	2	0	2
EEE F348	FPGA Based System Design Laboratory	0	2	2
EEE F411	Internet of Things	3	1	4
EEE F417	Computer Based Control System	3	0	3
EEE F419	Flexible and Stretchable Electronics	3	1	4
EEE F420	Biomedical Signal Processing	3	1	4
EEE F422	Modern Control Systems	3	0	3
EEE F426	Fiber optics & Optoelectronics	3	0	3
EEE F427	Electric Power Utilization and Illumination	3	0	3
EEE F429	Smart Materials and Applications	3	1	4
EEE F430	Green Communications and Networks	3	0	3
EEE F431	Mobile Telecommunication Networks	3	0	3
EEE F433	Electromagnetic Fields & Waves	3	0	3
EEE F434	Digital Signal Processing	3	1	4
EEE F435	Digital Image Processing (check number and description with BITS Image Processing)	3	0	3
EEE F436	Electromagnetic Compatibility	3	1	4
EEE F472	Satellite Communication	3	0	3

Course No	Course Title	L	P	U
EEE F474	Antenna Theory and Design	3	1	4
EEE F475	Special Electrical Machines	3	1	4
EEE F476	Switchgear and Protection	3	1	4
EEE F477	Modelling of Field-Effect Nano Devices	3	0	3
EEE F478	Power Systems Laboratory	0	2	2
EEE G512	Embedded System Design	3	1	4
EEE G626	Hardware Software Co-Design			4
INSTR F216	Electronic Devices Simulation Laboratory	0	2	2
INSTR F413	Advanced Process Control	3	0	3
INSTR F414	Telecommunication Switching Systems & Networks	3	0	3
INSTR F415	Digital Control	3	0	3
INSTR F419	Virtual Instrumentation	3	1	4
INSTR F420	Design of Instrumentation Systems	3	0	3
INSTR F422	Instrumentation for Petrochemical Industry	3	0	3
INSTR F424	Smart Grid for Sustainable Energy	3	0	3
INSTR F428	Energy Storage Systems	3	0	3
INSTR F429	Smart Materials and Applications	3	1	4
INSTR F430	Green Communications and Networks	3	0	3
INSTR F432	Medical Instrumentation	3	0	3
INSTR F473	Wind Electrical Systems	3	0	3

MANUFACTURING ENGINEERING

CORE COURSES		L	P	U
MF F211	Mechanics of Solids	3	0	3
MF F216	Materials Science and Engineering	2	1	3
MF F217	Machine Drawing	0	2	2
MF F218	Transport Phenomena in Manufacturing	3	1	4
MF F219	Operations Management	3	0	3
MF F220	Metrology and Quality Assurance	2	1	3
MF F221	Mechanisms and Machines	3	0	3
MF F222	Casting, Forming and Welding	3	1	4
MF F314	Design of Machine Elements	3	0	3
MF F315	Automation and Control	3	1	4
MF F316	Machining and Machine Tools	3	1	4
MF F317	Computer Aided Design and Manufacturing	2	1	3
MF F318	Non Traditional Manufacturing Processes	3	0	3
MF F319	Supply Chain Management	3	0	3
MF F320	Engineering Optimization	3	0	3

DISCIPLINE ELECTIVE COURSES

BITS F415	Introduction To MEMS	3	1	4
ECON F411	Project Appraisal	3	0	3
ME F321	Data Mining in Mechanical Sciences	2	1	3
ME F323	Energy Storage Technologies	3	0	3
ME F340	Introduction to Sports Engg.	3	0	3
ME F416	Reverse Engineering and Rapid Prototyping	3	0	3
ME F417	Advanced Metal Forming	3	0	3
ME F419	Total Product Integration Engineering	3	0	3
ME F424	Energy Management	3	0	3
ME F425	Additive Manufacturing	3	0	3
ME F426	Industry 4.0 in Manufacturing	3	0	3
ME F428	Smart Materials	3	1	4
ME F432	Computer Aided Manufacturing	2	1	3
ME F443	Quality Control Assurance and Reliability	3	0	3
ME F484	Automotive Technology	3	0	3
MF F321	Procurement Management	3	0	3
MF F411	Fluid Power Systems	3	1	4
MF F412	Automotive Systems	3	0	3
MF F413	Mechanical Vibrations and Acoustics	3	0	3
MF F414	Manufacturing Excellence	3	0	3
MF F418	Lean Manufacturing	3	0	3
MF F422	Supply Chain Modelling and Empirical Analysis	3	1	4
MF F442	Advances in Materials Science	3	0	3
MF F453	Industrial Relations	3	0	3
MF F463	Maintenance and Safety	3	0	3
MF F471	Instrumentation and Control	3	0	3
MF F472	Precision Engineering	3	0	3
MF F473	Product Design and Development	3	0	3

Course No	Course Title	L	P	U
MF F474	Product Design and Development Projects	0	0	3
MF F485	Sustainable Manufacturing	3	0	3
MECHANICAL ENGINEERING CORE COURSES		**L**	**P**	**U**
ME F211	Mechanics of Solids	3	0	3
ME F212	Fluid Mechanics	3	0	3
ME F216	Materials Science and Engineering	2	1	3
ME F217	Applied Thermodynamics	3	1	4
ME F218	Advanced Mechanics of Solids	2	0	2
ME F219	Manufacturing Processes	3	1	4
ME F220	Heat Transfer	3	1	4
ME F221	Mechanisms and Machines	3	0	3
ME F314	Design of Machine Elements	3	0	3
ME F315	Advanced Manufacturing Processes	2	1	3
ME F316	Manufacturing Management	2	0	2
ME F317	Engines, Motors, and Mobility	2	0	2
ME F318	Computer-Aided Design	1	2	3
ME F319	Vibrations and Control	3	0	3
ME F320	Engineering Optimization	3	0	3
ME F341	Prime Movers & Fluid Machines	2	1	3
DISCIPLINE ELECTIVE COURSES				
AN F311	Principles of Aerodynamics	3	0	3
AN F312	Aircraft Propulsion	3	0	3
AN F313	Flight Mechanics and Controls	3	0	3
AN F314	Introduction to Flight	3	0	3
AN F315	Aircraft Structures	3	0	3
BITS F327	Artificial Intelligence for Robotics	2	1	3
BITS F415	Introduction to MEMS	3	1	4
DE G513	Tribology	3	2	5
DE G514	Fracture Mechanics	3	2	5
DE G531	Product Design	3	2	5
ECE F242	Control Systems	3	0	3
ECON F411	Project Appraisal	3	0	3
EEE F242	Control Systems	3	0	3
INSTR F242	Control Systems	3	0	3
MATH F313	Numerical Analysis	3	0	3
ME F321	Data Mining in Mechanical Sciences	2	1	3

Course No	Course Title	L	P	U
ME F323	Energy Storage Technologies	3	0	3
ME F340	Introduction to Sports Engineering	3	0	3
ME F411	Fluid Power Systems	3	1	4
ME F413	Nonlinear Vibrations	3	0	3
ME F414	Fuel Cell Science and Technology			3*
ME F415	Gas Dynamics	3	0	3
ME F416	Reverse Engineering and Rapid Prototyping	3	0	3
ME F417	Advanced Metal Forming	3	0	3
ME F418	Rocket and Spacecraft Propulsion	3	0	3
ME F419	Total Product Integration Engg.	3	0	3
ME F420	Power Plant Engineering	3	0	3
ME F423	Microfluidics and Applications			4*
ME F424	Energy Management	3	0	3
ME F425	Additive Manufacturing	3	0	3
ME F426	Industry 4.0 in Manufacturing	3	0	3
ME F427	Continuum Mechanics	3	1	4
ME F428	Smart Materials	3	1	4
ME F429	Micro-Nanoscale Heat Transport	3	1	4
ME F432	Computer Aided manufacturing	2	1	3
ME F433	Solar Thermal Process Engineering	3	1	4
ME F441	Automotive Vehicles	3	0	3
ME F443	Quality Control, Assurance and Reliability	3	0	3
ME F451	Mechanical Equipment Design	3	0	3
ME F452	Composite Materials & Design	3	0	3
ME F461	Refrigeration and Air conditioning	3	0	3
ME F472	Precision Engineering	3	0	3
ME F482	Combustion	3	0	3
ME F483	Wind Energy	3	0	3
ME F484	Automotive Technology	3	0	3
ME F485	Numerical Techniques for Fluid Flow and Heat Transfer	3	0	3
ME G511	Mechanism and Robotics	3	2	5
ME G512	Finite Element Methods	3	2	5
ME G514	Turbomachinery	3	2	5
ME G515	Computational Fluid Dynamics	3	2	5

Course No	Course Title	L	P	U
ME G533	Conduction and Radiation Heat Transfer	3	2	5
ME G534	Convective Heat and Mass Transfer	3	2	5
MF F311	Mechatronics and Automation	2	1	3
MF F321	Procurement Management	3	0	3
MF F418	Lean Manufacturing	3	0	3
MF F421	Supply chain management			4
MF F422	Supply Chain Modelling and Empirical Analysis	3	1	4
MF F485	Sustainable Manufacturing	3	0	3
MST G522	Advanced Composites	3	2	5

PHARMACY

CORE COURSES		L	P	U
BITS F219	Process Engineering	2	1	3
PHA F211	Pharmaceutical Analysis	2	1	3
PHA F214	Anatomy, Physiology & Hygiene	2	1	3
PHA F215*	Introduction to Molecular Biology and Immunology	3	0	3
PHA F216	Pharmaceutical Formulations I	2	1	3
PHA F217	Pharmaceutical Microbiology	2	1	3
PHA F241	Pharmaceutical Chemistry	2	1	3
PHA F242	Biological Chemistry	2	1	3
PHA F243	Industrial Pharmacy	2	1	3
PHA F244	Physical Pharmacy	2	1	3
PHA F311	Pharmacology I	2	1	3
PHA F312	Medicinal Chemistry I	2	1	3
PHA F313	Instrumental Methods of Analysis	2	1	4
PHA F315	Pharmaceutical Formulations II	2	1	3
PHA F341	Pharmacology II	2	1	3
PHA F342	Medicinal Chemistry II	2	1	3
PHA F343	Forensic Pharmacy	2	-	2
PHA F344	Natural Drugs	2	1	3

*** To be offered to B.Pharm. students admitted in 2014 onwards in place of PHA F243**

DISCIPLINE ELECTIVE COURSES		L	P	U
BITS F467	Bioethics and Biosafety	3	0	3
MATH F212	Optimization	3	0	3
PHA F316	Pharmaceutical Regulatory Science	3	0	3
PHA F317	Safety Pharmacology and Toxicology	3	0	3
PHA F413	Pharmaceutical Management and Quality Control	3	0	3
PHA F414	Biopharmaceutics	3	0	3
PHA F415	Pathophysiology	3	0	3
PHA F416	Chemistry of Synthetic Drugs	3	0	3
PHA F417	Pharmacoeconomics	3	0	3
PHA F418	Biopharmaceutics and Pharmacokinetics	3	0	3
PHA F419	Herbal Drug Technology	3	0	3
PHA F422	Cosmetic Science	2	1	3
PHA F432	Hospital Pharmacy	3	0	3
PHA F441	Biochemical Engineering	3	0	3
PHA F442	Applied Pharmaceutical Chemistry	3	0	3
PHA F461	Phytochemistry	2	1	3
PHA G546	Pharmaceutical Biostatistics	3	0	3

BIOLOGICAL SCIENCES

CORE COURSES		L	P	U
BIO F211	Biological Chemistry	3	0	3
BIO F212	Microbiology	3	1	4
BIO F213	Cell Biology	3	0	3
BIO F214	Integrated Biology	3	0	3
BIO F215	Biophysics	3	0	3
BIO F241	Ecology & Environmental Science	3	0	3
BIO F242	Introduction to Bioinformatics	3	0	3
BIO F243	Genetics	3	0	3
BIO F244	Instrumental Methods of Analysis	1	3	4
BIO F311	Recombinant DNA Technology	3	0	3
BIO F312	Plant Physiology	3	0	3
BIO F313	Animal Physiology	3	0	3
BIO F341	Developmental Biology	3	0	3
BIO F342	Immunology	3	0	3

DISCIPLINE ELECTIVE COURSES		L	P	U
BIO F216	Water, Sanitation and Solid Waste Management	3	0	3
BIO F217	Laboratory for Water, Sanitation and Solid waste Management	1	2	3
BIO F231	Biology Project Laboratory			3
BIO F314	Conservation Biology	2	1	3
BIO F315	Applied Nutrition and Nutraceuticals	2	0	2
BIO F352	Cell and Tissue Culture Technology	3	1	4
BIO F411	Laboratory	0	3	3
BIO F413	Molecular Biology of Cell	3	0	3

Course No	Course Title	L	P	U
BIO F417	Biomolecular Modelling	3	0	3
BIO F418	Genetic Engineering Techniques	1	3	4
BIO F419	Molecular Evolution	3	0	3
BIO F421	Enzymology	3	0	3
BIO F431	Reproductive Physiology	3	0	3
BIO F441	Biochemical Engineering	3	0	3
BIO F451	Bioprocess Technology	3	0	3
BIO G512	Molecular Mechanism of Gene Expression	3	2	5
BIO G513	Microbial and Fermentation Technology	3	2	5
BIO G515	Stem Cell and Regenerative Biology	3	1	4
BIO G522	Interferon Technology	3	1	4
BIO G523	Advanced and Applied Microbiology	3	2	5
BIO G524	Animal Cell Technology	3	2	5
BIO G525	Environmental Biotechnology & Waste Mgnt	3	2	5
BIO G526	Cancer Biology	3	2	5
BIO G544	Bioremediation and biometallurgy	5	0	5
BIO G545	Molecular Parasitology and Vector Biology			5
BIO G561	Advances in Recombinant DNA Technology	3	2	5
BIO G570	Recent Developments in Biology	1	0	1
BIO G612	Human Genetics	3	2	5
BIO G631	Membrane and Liposome Technology	3	1	4
BIO G632	Transgenic Technology	3	2	5
BIO G642	Experimental Techniques		4	4
BIO G643	Plant Biotechnology	3	2	5
BIO G651	Protein and Enzyme Bioengineering	3	2	5
BIO G661	Gene Toxicology	3	1	4
BIO G671	Bioconversion Technology	3	2	5
BIOT F345	Proteomics	3	0	3
BIOT F346	Genomics	3	0	3
BIOT F347	Immunotechnology	3	0	3
BIOT F416	Introduction to Pharmaceutical Biotechnology	3	0	3
BIOT F422	Nanobiotechnology	3	0	3
BIOT F424	Food Biotechnology	3	0	3
BITS F418	Introduction to Biomedical Engineering	3	1	4
BITS F467	Bioethics and Biosafety	3	0	3
CHEM F212	Organic Chemistry I	3	0	3
CHEM F213	Physical Chemistry II	3	0	3
MATH F212	Optimization	3	0	3

CHEMISTRY CORE COURSES		L	P	U
CHEM F211	Physical Chemistry I	3	0	3
CHEM F212	Organic Chemistry I	3	0	3
CHEM F213	Physical Chemistry II	3	0	3
CHEM F214	Inorganic Chemistry I	3	0	3
CHEM F241	Inorganic Chemistry II	3	0	3
CHEM F242	Chemical Experimentation I	0	3	3
CHEM F243	Organic Chemistry II	3	0	3
CHEM F244	Physical Chemistry III	3	0	3
CHEM F311	Organic Chemistry III	3	0	3
CHEM F312	Physical Chemistry IV	3	0	3
CHEM F313	Instrumental Methods of Analysis	3	1	4
CHEM F341	Chemical Experimentation II	0	4	4
CHEM F342	Organic Chemistry IV	3	0	3
CHEM F343	Inorganic Chemistry III	3	0	3
PHY F212	Electromagnetic Theory I	3	0	3

DISCIPLINE ELECTIVE COURSES		L	P	U
CHEM F223	Colloid and Surface Chemistry	3	0	3
CHEM F320	Introductory Computational Chemistry Laboratory	0	4	2
CHEM F323	Biophysical Chemistry	3	0	3
CHEM F324	Numerical Methods in Chemistry	3	3	4
CHEM F325	Polymer Chemistry	3	0	3
CHEM F326	Solid State Chemistry	3	0	3
CHEM F327	Electrochemistry: Fundamentals and Applications	3	0	3
CHEM	Supramolecular Chemistry	3	0	3

Course No	Course Title	L	P	U
F328				
CHEM F329	Analytical Chemistry	3	1	4
CHEM F330	Photophysical Chemistry	3	1	4
CHEM F333	Chemistry of Materials	3	0	3
CHEM F334	Magnetic Resonance	3	0	3
CHEM F335	Organic Chemistry and Drug Design	3	0	3
CHEM F336	Nanochemistry	3	1	4
CHEM F337	Green Chemistry and Catalysis	3	0	3
CHEM F412	Photochemistry and Laser Spectroscopy	3	0	3
CHEM F413	Electron Correlation In Atoms And Molecules	3	1	4
CHEM F414	Bio and Chemical Sensors	3	0	3
CHEM F415	Frontiers in Organic Synthesis	3	0	3
CHEM F422	Statistical Thermodynamics	3	0	3
CHEM F423	Astrochemistry	3	0	3
CHEM F430	Atmospheric Chemistry	3	0	3
CHEM F431	Sustainable Chemistry using Renewables	3	0	3
CHEM G521	Environmental Chemistry			5
ECONOMICS				
CORE COURSES		**L**	**P**	**U**
ECON F211	Principles of Economics	3	0	3
ECON F212	Fundamentals of Finance and Accounts	3	0	3
ECON F213	Mathematical and Statistical Methods	3	0	3
ECON F214	Economic Environment of Business	3	0	3
ECON F241	Econometric Methods	3	0	3
ECON F242	Microeconomics	3	0	3
ECON F243	Macroeconomics	3	0	3
ECON F244	Economics of Growth and Development	3	0	3
ECON F311	International Economics	3	0	3
ECON F312	Money, Banking and Financial Markets	3	0	3
ECON F313	Issues in Economic Development	3	0	3
ECON F341	Public Finance Theory and Policy	3	0	3
ECON F342	Applied Econometrics	3	0	3
ECON F343	Economic Analysis of Public Policy	3	0	3
DISCIPLINE ELECTIVE COURSES		**L**	**P**	**U**
ECON F215	Computational Methods for Economics	3	0	3
BITS F314	Game Theory and It's Applications	3	0	3
ECON F315	Financial Management	3	0	3
ECON F314	Industrial Economics	3	0	3
ECON F345	Behavioral Economics	3	0	3
ECON F351	Indian Economic Development	3	0	3
ECON F352	Management of Banks and Financial Institutions	3	0	3
ECON F353	Energy Economics and Policy	3	0	3
ECON F354	Derivatives and Risk Management	3	0	3
ECON F355	Business Analysis and Valuation	3	0	3
ECON F356	Strategic Financial Management	3	0	3
ECON F357	Management Control System	3	0	3
ECON F411	Project Appraisal	3	0	3
ECON F412	Security Analysis and Portfolio Management	3	0	3
ECON F413	Financial Engineering	3	0	3
ECON F414	Creating and Leading Entrepreneurial Organizations	3	0	3
ECON F415	New Venture Creation	3	0	3
ECON F417	Risk Management and Insurance	3	0	3
ECON F418	Quantitative Analysis of International Trade	3	0	3
ECON F419	Advanced Microeconomics	3	0	3
ECON	Applied Macroeconometrics	3	0	3

Course No	Course Title	L	P	U
F420				
ECON F422	Functions and Working of Stock Exchanges	3	0	3
ECON F434	International Business	3	0	3
ECON F435	Marketing Research	3	0	3
ECON F471	Resources and Environmental Economics	3	0	3
FIN F314	Investment Banking and Financial Services	3	0	3
FIN F414	Financial Risk Analytics and Management	3	0	3
MATH F212	Optimization	3	0	3
MATH F242	Operations Research	3	0	3
MATH F424	Applied Stochastic Process	3	1	4
MATHEMATICS				
CORE COURSES		**L**	**P**	**U**
MATH F212	Optimization	3	0	3
MATH F213	Discrete Mathematics	3	0	3
MATH F214	Elementary Real Analysis	3	0	3
MATH F215	Algebra I	3	0	3
MATH F241	Mathematical Methods	3	0	3
MATH F242	Operations Research	3	0	3
MATH F243	Graphs and Networks	3	0	3
MATH F244	Measure & Integration	3	0	3
MATH F311	Introduction to Topology	3	0	3
MATH F312	Ordinary Differential Equations	3	0	3
MATH F313	Numerical Analysis	3	0	3
MATH F341	Introduction to Functional Analysis	3	0	3
MATH F342	Differential Geometry	3	0	3
MATH F343	Partial Differential Equations	3	0	3
DISCIPLINE ELECTIVE COURSES		**L**	**P**	**U**
BITS F314	Game Theory and Its Applications	3	0	3
BITS F343	Fuzzy Logic and Applications	3	0	3
BITS F463	Cryptography	3	0	3
CS F211	Data Structures and Algorithms	3	1	4
CS F364	Design and Analysis of Algorithms	3	0	3
MATH F231	Number Theory	3	0	3
MATH F314	Algebra II	3	0	3
MATH F353	Statistical Inference and Applications	3	0	3
MATH F354	Complex Analysis	3	0	3
MATH F378	Advanced Probability Theory	3	0	3
MATH F420	Mathematical Modeling	3	0	4
MATH F421	Combinatorial Mathematics	3	0	3
MATH F422	Numerical Methodology for Partial Differential Equations	3	1	4
MATH F423	Introduction to Algebraic Topology	3	0	3
MATH F424	Applied Stochastic Process	3	1	4
MATH F425	Numerical Linear Algebra	3	1	4
MATH F426	Mathematical Theory of Finite Element Methods	3	1	4
MATH F431	Distribution Theory	3	0	3
MATH F432	Applied Statistical Methods	3	0	3
MATH F441	Discrete Mathematical Structures	3	0	3
MATH F444	Numerical Solutions of Ordinary Differential Equations	3	0	3
MATH F445	Mathematical Fluid Dynamics	3	0	3
MATH F456	Cosmology	3	0	3
MATH F471	Nonlinear Optimization	3	0	3
MATH F481	Commutative Algebra	3	0	3
MATH F492	Wavelet analysis and applications	3	1	4
PHYSICS				
CORE COURSES		**L**	**P**	**U**
PHY F211	Classical Mechanics	3	1	4

Course No	Course Title	L	P	U
PHY F212	Electromagnetic Theory I	3	0	3
PHY F213	Optics	3	0	3
PHY F214	Electricity, Magnetism & Optics Laboratory	0	2	2
PHY F241	Electromagnetic Theory II	3	1	4
PHY F242	Quantum Mechanics I	3	0	3
PHY F243	Mathematical Methods of Physics	3	0	3
PHY F244	Modern Physics Laboratory	0	2	2
PHY F311	Quantum Mechanics II	3	0	3
PHY F312	Statistical Mechanics	3	0	3
PHY F313	Computational Physics	3	0	3
PHY F341	Solid State Physics	3	0	3
PHY F342	Atomic & Molecular Physics	3	0	3
PHY F343	Nuclear & Particle Physics	3	0	3
PHY F344	Advanced Physics Laboratory	0	3	3
DISCIPLINE ELECTIVE COURSES		**L**	**P**	**U**
BIO F215	Biophysics	3	0	3
BITS F316	Nonlinear Dynamics and Chaos	3	0	3
BITS F317	Theoretical Neuroscience	3	0	3
PHY F346	Laser Science and Technology	3	0	3
BITS F386	Quantum Information and Computation	3	0	3
BITS F416	Introduction to Nanoscience	3	0	3
BITS F417	Microfluidics & its Applications			4
BITS F446	Pattern Recognition			3
EEE F426	Fibre Optics & Optoelectronics	3	0	3
MATH F424	Applied Stochastic Processess	3	1	4
MATH F456	Cosmology	3	0	3
PHY F215	Introduction to Astronomy & Astrophysics	3	0	3
PHY F315	Theory of Relativity	3	0	3
PHY F316	Musical Acoustics	3	0	3
PHY F317	Introduction to Radio Astronomy	3	0	3
PHY F378	Plasma Physics and its Applications	3	0	3
PHY F379	Thin Film Technology	3	0	3
PHY F412	Introduction To Quantum Field Theory	3	1	4
PHY F413	Particle Physics	3	1	4
PHY F414	Physics of Advanced Materials	3	1	4
PHY F415	General Theory of Relativity and Cosmology	3	1	4
PHY F416	Soft Condensed Matter Physics	3	1	4
PHY F417	Experimental Methods of Physics	3	1	4
PHY F418	Lasers and Applications	3	1	4
PHY F419	Advanced Solid State Physics	3	1	4
PHY F420	Quantum Optics	3	1	4
PHY F421	Advanced Quantum Mechanics	3	1	4
PHY F422	Group Theory and Applications	3	1	4
PHY F423	Special Topics in Statistical Mechanics	3	1	4
PHY F424	Advanced Electrodynamics	3	1	4
PHY F425	Advanced Mathematical Methods of Physics	3	1	4
PHY F426	Physics of Semiconductor Devices	3	1	4
PHY F427	Atmospheric Physics	3	0	3
PHY F428	Quantum Information Theory	3	0	3
PHY F431	Geometrical Methods in Physics	3	0	3
PHY F432	Classical Theory of Fields: A Symmetry Perspective			4*
PHY F433	Topics in Nonlinear Optics	3	0	3
PHY G512	Advanced Quantum Field Theory	3	0	3

GENERAL STUDIES – COMMUNICATION AND MEDIA STUDIES STREAM

CORE COURSES		L	P	U
GS F221	Business Communication	3	0	3
GS F222	Language Lab Practice	0	3	3
GS F223	Introduction to Mass Communication	3	0	3
GS F224	Print and Audio Visual Advertising	2	1	3
GS F241	Creative Writing	2	1	3
GS F243	Current Affairs	3	0	3
GS F244	Reporting and Writing for Media	3	0	3
GS F245	Effective Public Speaking	2	1	3
GS F321	Mass Media Content and Design	2	1	3
GS F322	Critical Analysis of Literature and Cinema	3	0	3
GS F342	Computer Mediated Communication	3	0	3
GS F343	Short Film and Video	2	1	3

Course No	Course Title	L	P	U
	Production			
DISCIPLINE ELECTIVE COURSES		**L**	**P**	**U**
BITS F385	Introduction to Gender Studies	3	0	3
GS F211	Modern Political Concepts	3	0	3
GS F212	Environment, Development & Climate Change	3	0	3
GS F231	Dynamics of Social Change	3	0	3
GS F232	Introductory Psychology	3	0	3
GS F242	Cultural Studies	3	0	3
GS F311	Introduction to Conflict Management	3	0	3
GS F325	Journalism	3	0	3
GS F326	Creative Thinking	2	1	3
GS F327	Selected Reading	3	0	3
GS F333	Public Administration	3	0	3
GS F334	Global Business Technology & Knowledge Sharing	3	0	3
GS F344	Copywriting	2	0	2
HSS F227	Cross Cultural Skills	3	0	3
HSS F232	Introduction to Development Studies	3	0	3
HSS F315	Society, Business, and Politics	3	0	3
HSS F317	Introduction to Globalization	3	0	3
HSS F319	Lighting for Theatre and Films			2
HSS F323	Organizational Psychology	3	0	3
HSS F328	Human Resource Development	3	0	3
HSS F341	Performance Design	1	2	3
HSS F343	Professional Ethics	3	0	3
HSS F346	International Relations	3	0	3

GENERAL STUDIES – DEVELOPMENT STUDIES STREAM

CORE COURSES		L	P	U
ECON F211	Principles of Economics	3	0	3
GS F211	Modern Political Concepts	3	0	3
GS F212	Environment, Development & Climate Change	3	0	3
GS F213	Development Theories	3	0	3
GS F231	Dynamics of Social Change	3	0	3
GS F232	Introductory Psychology	3	0	3
GS F233	Public Policy	3	0	3
GS F234	Development Economics	3	0	3
GS F311	Introduction to Conflict Management	3	0	3
GS F312	Applied Philosophy	3	0	3
GS F331	Techniques in Social Research	3	0	3
GS F332	Contemporary India	3	0	3
GS F333	Public Administration	3	0	3
GS F334	Global Business Technology & Knowledge Sharing	3	0	3

DISCIPLINE ELECTIVE COURSES		L	P	U
BITS F214	Science, Technology and Modernity	3	0	3
BITS F385	Introduction to Gender Studies	3	0	3
BITS F399	Humanistic Theories of Science and Technology	3	0	3
GS F212	Environment, Development and Climate Change	3	0	3
GS F213	Development Theories	3	0	3
HSS F233	Main Trends in Indian History	3	0	3
DISCIPLINE ELECTIVE COURSES		**L**	**P**	**U**
HSS F234	Main Currents of Modern History	3	0	3
HSS F235	Introductory Philosophy	3	0	3
HSS F236	Symbolic Logic	3	0	3
HSS F312	Bureaucracy	3	0	3
HSS F315	Society, Business, and Politics	3	0	3
HSS F343	Professional Ethics	3	0	3
HSS F344	Heritage of India	3	0	3
HSS F345	Gandhian Thoughts	3	0	3
HSS F346	International Relations	3	0	3

Project Type Courses

In addition to discipline electives mentioned above, the following project type courses are also being offered by the departments for each of their respective programmes. These courses may be taken by the students to meet the discipline elective requirements.

XXX F266	Study Project	3
XXX F366	Laboratory Project	3
XXX F367	Laboratory Project	3
XXX F376	Design Project	3
XXX F377	Design Project	3
XXX F491	Special Project	3

where XXX indicates the Degree programme. For example, CHE F266 Study Project is intended for a student of B.E. Chemical Engineering.

A student may avail a maximum of 3 Project courses to meet the Discipline Electives Requirement under the head of (Discipline) Electives with the following limitations:

(a) All of these Project courses should be

(i) within the Discipline (for which the degree is being awarded) or

(ii) from an allied Discipline if so specified by the Department offering the degree

(b) The projects may be chosen from under these sub-heads.

(i) Study Projects (maximum of 1)

(ii) Laboratory (maximum of 2)

(iii) Design Projects (maximum of 2)

(iv) Special Projects (maximum of 1)

A student may avail a maximum of 3 Project courses (under any of the heads mentioned above offered by any discipline as an Open Elective. However, in total a student may avail at most 5 Project courses against Electives slots in any category.

Pool of Humanities courses for first degree programmes:

The following is the list of courses from which Humanities Electives can be taken by the students in different first degree programs to meet the general institutional requirement of eight units under the Humanities elective category:

Course No.	Course Title	L	P	U
BITS F214	Science, Technology and Modernity	3	0	3
BITS F226	Soft Skills for Professionals	3	0	3
BITS F385	Introduction to Gender Studies	3	0	3
BITS F399	Humanistic Theories of Science and Technology	3	0	3
BITS F419	Management of Cross Cultural Engineering Teams	3	0	3
GS F211	Modern Political Concepts	3	0	3
GS F212	Environment, Development & Climate Change	3	0	3
GS F213	Development Theories	3	0	3
GS F221	Business Communication	3	0	3
GS F222	Language Lab Practice	0	3	3
GS F223	Introduction to Mass Communication	3	0	3
GS F224	Print and Audio-Visual Advertisement	2	1	3
GS F231	Dynamics of Social Change	3	0	3
GS F232	Introductory Psychology	3	0	3
GS F233	Public Policy	3	0	3
GS F234	Development Economics	3	0	3
GS F241	Creative Writing			3*
GS F242	Cultural Studies	3	0	3
GS F243	Current Affairs	3	0	3
GS F244	Reporting and Writing for Media	2	1	3
GS F245	Effective Public Speaking	2	1	3
GS F311	Introduction to Conflict Management	3	0	3
GS F312	Applied Philosophy	3	0	3
GS F313	Marxian Thoughts	3	0	3
GS F321	Mass Media Content and Design	2	1	3
GS F322	Critical Analysis of Literature and Cinema	3	0	3
GS F325	Journalism	3	0	3
GS F326	Creative Thinking	2	1	3
GS F327	Selected Reading	3	0	3
GS F331	Techniques in Social Research	3	0	3
GS F332	Contemporary India	3	0	3
GS F333	Public Administration	3	0	3
GS F343	Short Film and Video Production	2	1	3
GS F344	Copywriting	2	0	2
HSS F211	Introduction to Arabic	3	0	3
HSS F221	Readings from Drama	3	0	3
HSS F222	Linguistics	3	0	3
HSS F223	Appreciation of Indian Music	3	0	3
HSS F224	English Skills for Academic	3	0	3

Course No.	Course Title	L	P	U
HSS F226	Postmodernism	3	0	3
HSS F227	Cross Cultural Skills	3	0	3
HSS F228	Phonetics & Spoken English	3	0	3
HSS F229	Introduction to Western Music	3	0	3
HSS F232	Introduction to Development Studies	3	0	3
HSS F233	Main Trends in Indian History	3	0	3
HSS F234	Main Currents of Modern History	3	0	3
HSS F235	Introductory Philosophy	3	0	3
HSS F236	Symbolic Logic	3	0	3
HSS F237	Contemporary Indian English Fiction	3	0	3
HSS F238	Sports and Society	3	0	3
HSS F244	Crime and New Media	3	0	3
HSS F245	Gender, Science and Technology	3	0	3
HSS F246	Philosophy of Nāgārjuna	3	0	3
HSS F247	Social Informatics	3	0	3
HSS F248	Introduction to Disability Studies	3	0	3
HSS F249	Politics in India	3	0	3
HSS F250	Comics and Visual Culture	3	0	3
HSS F251	Introduction to Discourse and Conversational Analysis	2	1	3
HSS F252	International Law	3	0	3
HSS F266	Study Project			3
HSS F311	Introduction to Videogame Studies	3	0	3
HSS F313	Introduction to Contemporary Arts	3	0	3
HSS F315	Society, Business, and Politics	3	0	3
HSS F316	Popular Literature and Culture of South Asia	3	0	3
HSS F317	Introduction to Globalization	3	0	3
HSS F318	Introduction to Anthropology	3	0	3
HSS F319	Lighting for Theatre and Films			2*
HSS F323	Organizational Psychology	3	0	3
HSS F325	Cinematic Adaptation	3	0	3

Course No.	Course Title	L	P	U
HSS F326	Humanities and Design	2	1	3
HSS F327	Contemporary Drama	3	0	3
HSS F328	Human Resource Development	3	0	3
HSS F329	Musicology – An – Introduction	3	0	3
HSS F330	Appreciation of Art	3	0	3
HSS F331	Sankara's Thoughts	3	0	3
HSS F332	Cinematic Art			3*
HSS F333	Comparative Religion	3	0	3
HSS F334	Srimad Bhagavad Gita	3	0	3
HSS F335	Literary Criticism	3	0	3
HSS F336	Modern Fiction	3	0	3
HSS F337	English Literary Forms and Movements	3	0	3
HSS F338	Comparative Indian Literature	3	0	3
HSS F339	Theatre Art Acting and Production	3	0	3
HSS F340	Post Colonial Literatures	3	0	3
HSS F341	Performance Design	1	2	3
HSS F342	Advanced Communicative English	3	0	3
HSS F343	Professional Ethics	3	0	3
HSS F344	Heritage of India	3	0	3
HSS F345	Gandhian Thoughts	3	0	3
HSS F346	International Relations	3	0	3
HSS F347	Introduction to Carnatic Music	3	0	3
HSS F348	Introduction to Hindustani Music	3	0	3
HSS F349	Ecocriticism	3	0	3
HSS F350	Human Rights: History, Theory & Practice	3	0	3
HSS F351	Social and Political Ecology	3	0	3
HSS F352	Technology, Work and Society	3	0	3
HSS F353	Philosophy of Aesthetics	3	0	3
HSS F354	Introduction to Islamic Economy	3	0	3
HSS F355	Dictatorship, Democracy & Development	3	0	3
HSS F356	Social Movements and	3	0	3

Course No.	Course Title	L	P	U
	Protest Politics			
HSS F364	Political Economy of Gulf Cooperation Council States	3	0	3
HSS F365	Science of Sustainable Happiness	3	0	3
HSS F368	Asian Cinemas and Cultures	3	0	3
HSS F369	Caste and Gender in India	3	0	3
HSS F371	Cities-Life, Issues and Conflicts	3	0	3
HSS F372	Introduction to Social Psychology	3	0	3
HSS F373	Shakespeare and Popular Culture	3	0	3
HSS F374	Urban Modernity and the Renewal of Paris	3	0	3
HSS F375	Business and Politics in Colonial and Post Colonial India: a historical approach	3	0	3
HSS F399	Introduction to American Literature	3	0	3
SANS F111	Sanskrit	3	0	3

It may be noted that a student cannot count a course (or its equivalent) of his/her own discipline (s) as a humanities elective even if it is listed in this pool of humanities electives.

Other Courses

BIO F231	Biology Project Laboratory	3
BITS C483	Indian Wisdom for Modern Management	3 0 3
BITS F211	Introduction to IPR	1
BITS F212	Introduction to Human Rights	1
BITS F213	Introduction to Environmental studies	1
BITS F215	Applications of Bio-Medical Instrumentation Techniques in Healthcare	2 0 2
BITS F217	Environment, Development and Climate Change	3 0 3
*BITS F225	Environmental Studies	3 0 3
BITS F311	Image Processing	3 0 3
BITS F319	Negotiation Skills and Techniques	2 0 2
BITS F320	Managerial Skills	2*
BITS F321	Legal and Economic Environment of Business	4*
BITS F333	Project on Organisational Aspects	3
BITS F334	Project on Organisational Aspects	3
BITS F372	Data Communications and Networks	3 0 3
BITS F381	TIC Projects	3
BITS F382	Reading Course	3
BITS F383	TIC Projects	3
BITS F398	Creative Multimedia	2 2 3
BITS F414	Introduction to Bioinformatics	3 0 3
BITS F416	Introduction to Nanoscience	3 0 3
BITS F417	Micro Fluidics and its Application	4*
BITS F428	Essentials of Strategic Management	3 0 3
BITS F431	Flexible Manufacturing Systems	3 2 3
BITS F441	Robotics	3
BITS F442	Remote Sensing and Image Processing	3
BITS F444	Artificial Intelligence	3
BITS F445	Neural Networks and Applications	3 0 3
BITS F446	Pattern Recognition	3
BITS F447	Multimedia Computing	3 0 3
BITS F448	Retail Management Systems	3 0 3
BITS F449	Financial Engineering	3 0 3
BITS F461	Software Engineering	3
BITS F462	Renewable Energy	3 0 3
BITS F468	New Venture Creation	3 0 3
BITS F469	Financing Infrastructure Projects	3 0 3
BITS F488	Services Management Systems	3 0 3
BITS F490	Project Management	4
BITS F493	Business Analysis and Valuation	3 0 3
BITS F494	Environmental Impact Assessment	3 1 4
BITS G516	Introduction to Business Sustainability	3 0 3
BITS G517	Cross Cultural Management	3 0 3
MGTS F351	Organisational Behaviour	3 0 3
MGTS	Advertising and Sales	3 0 3

F433	Promotion	
PHY F221	Modern Physics	3 0 3
PHY F345	Quantum Mechanics for Engineers	3 0 3

***[Students completing this course will be awarded a non-letter grade (GOOD or POOR)]**

List of Audit Type Courses

BITS N101T	PHY FITNESS HEALTH & WEL	1*
CHI N101T	BEGINNING CHINESE	3 0 3
FRE N101T	BEGINNING FRENCH	3*
FRE N102T	TECHNICAL FRENCH	3 0 3
GER N101T	BEGINNING GERMAN	3 0 3
GER N102T	TECHNICAL GERMAN	3 0 3
HSS N201T	INTRO TO PHOTOGRAPHY	3 0 3
HSS N202T	IND C DANCE BHARATNATYAM	3 0 3
HSS N203T	Basic Arabic	3 0 3
HSS N301T	ELEMENTS OF DANCE	1 1 2
JAP N101T	BEGINNING JAPANESE	3 0 3
MUSIC N103T	INDIAN CLASS MUSIC VOC I	3*
MUSIC N104T	INDIA CLASS MUSIC VOC II	3*
MUSIC N105T	WESTERN CLASS MUSIC I	3*
MUSIC N106T	WESTERN CLASS MUSIC II	3*
MUSIC N111T	HIND CLASS MUSIC (INST)I	3*
MUSIC N112T	HIND CLASS MUSIC(INST)II	3*
MUSIC N113T	INDIA CLASS MUSIC(INST)I	3*
MUSIC N114T	INDIA CLASS MUSIC(INST)II	3*
MUSIC N203T	INDIA CLASS MUSIC(VOC) III	3*
MUSIC N204T	IND CLASS MUSIC(VOC) IV	3*
MUSIC N205T	WESTERN CLASS MUSIC III	3*
MUSIC N206T	WESTERN CLASS MUSIC IV	3*
MUSIC N213T	IND CLASS MUSIC (INST) III	3*
MUSIC N214T	IND CLASS MUSIC(INST)IV	3*
MUSIC N303T	ADV IND MUSIC PRA(VOCAL)	-
MUSIC N313T	ADV IND MUSIC PRA (INST)	-
RUS N101T	BEGINNING RUSSIAN	3 0 3
RUS N102T	TECHNICAL RUSSIAN	3 0 3

MINOR PROGRAMMES FOR FIRST DEGREE STUDENTS

"Minor programs" are offered as options for first degree students with the intent of encouraging them to add focus to their supplemental learning (outside a major area) as well as recognizing and certifying the knowledge obtained in an area that is outside of their major area.

General Guidelines

- A minor would allow a Department (or multiple Departments) to offer a package of courses in an area/sub-area to students for whom this area/sub-area would not be part of their (major) program.
- A minor option would allow a student to pursue the study of an area or a sub-area through a set of courses but not as exhaustively as required to obtain a degree (i.e. a major) in that area.
- A minor may be inter-disciplinary (e.g. a minor in Computational Science may include courses in Numerical Analysis, Computational Physics, Computational Chemistry, and Bioinformatics among others).
- A minor will be recognized by means of a separate certificate.

Requirements for a minor

- Courses and Units Requirement:

  Each minor would be defined by coursework requirement with the following conditions:

Category	Courses	Units
Minor – Core	4 (max)	12 (max)
Minor – Electives	2 (min)	6 (min)
Minor – Total	5 (min)	15 (min)

- Elective Pool:

  - The pool of electives specific to a minor may include courses from one or more disciplines and may include project / seminar type courses.
  - A student may use at most one project / seminar type course to meet the requirements of a minor.

- Overlap in requirements:

  - At most 2 courses (and at most 6 units) out of the above requirement (of 5 courses and 15 units) may be met by mandatory courses of the student's degree i.e. major (or degrees i.e. majors) :

    i.e. from the general institutional requirement (excluding Humanities requirement) or the (Major) discipline Core(s).

  - There is no restriction of overlap requirement on electives (i.e. discipline elective or open elective or humanities elective).
  - No course may be used to meet the requirements of two different minors nor may a course be used to the meet the requirements of two majors and a minor.

- GPA requirement:
  - A student – on completion of the requirements for a minor – must have maintained a cumulative GPA of 4.5 or above (out of 10) in the courses applied to the minor.

Process for declaring / obtaining a minor

- A student – if he/she chooses to pursue a minor – must declare at the end of the 2nd year that he/she will pursue a specific minor. The student will charged a small fee for logistics.
- If and when he/she completes the requirements for the minor – as stipulated above and as stipulated for the specific minor, then he/she may apply for a "minor" certificate.
- If it is verified that the requirements are met then he/she will be awarded a "minor certificate" (separate from a degree – i.e. major – certificate).
- A minor certificate will be issued only on completion of a degree (i.e. a major).

At present Sixteen minor programs viz. Minor in Aeronautics, Computational Economics, Computing and Intelligence, Data Science, English Studies, Entrepreneurship, Film and Media, Finance, Management, Materials Science and Engineering, Philosophy, Economics and Politics (PEP), Physics, Public Policy, Robotics and Automation, Supply Chain Analytics and Water and Sanitation have been designed. The details of which are given below:

Minor in Aeronautics					
Description	Aeronautics is an exhilarating field encompassing the fundamentals of aerodynamics (interaction of air with objects in motion), propulsion (power systems responsible for the generation of thrust for providing motion), structures (design of airframes and material characteristics), and flight mechanics (trajectory study and optimization), as applied to air-borne vehicles within the Earth's atmosphere, and to rockets and spacecrafts outside.				
Courses & Units Req.	06 courses (min) 18 units (min)				
Core Courses	**Course Number**	**Course Title**	**L**	**P**	**U**
	AN F311	Principles of Aerodynamics	3	0	3
	AN F312	Aircraft Propulsion	3	0	3
	AN F313	Flight Mechanics and Controls	3	0	3
Electives	AN F314	Introduction to Flight	3	0	3
	AN F315	Aircraft Structures	3	0	3
	ME F415	Gas Dynamics	3	0	3
	ME F418	Rocket and Spacecraft Propulsion	3	0	3
	ME F452	Composite Materials and Design	3	0	3
	ME F482	Combustion	3	0	3
	ME F485	Numerical Techniques for Fluid Flow & Heat Transfer	3	0	3
	EEE F242	Control Systems	3	0	3
	EEE F417	Computer Based Control Systems	3	0	3
	ME F376	Design Project			3

Minor in Computational Economics					
Description	The joint field of economics, mathematics, and computer science have emerged from converging intellectual needs for interdisciplinary teaching and research. The contemporary tools and techniques used by computer scientists have become increasingly important for economists working with data to address complex business problems. Students interested in learning about computational mechanism design with applications to economics and especially those whose interest is more generally focused on data analytics will be highly benefitted from this programme. This programme is designed to cater to the needs of the cutting-edge industry thereby combining advanced computational tools with economic reasoning. It would help students to develop a deep background in advanced tools for analysis of economic data, which is essential for making sound economic decisions. The programme combines the strengths of multiple departments to educate students in these important computational skills linked to economics, and to prepare them for careers in economics, finance, and business. Reflecting on this strong interdisciplinary relationship, this programme will also be excellent preparation for graduate study in economics or decision sciences.				
Courses & Units Req.	**05 courses (min)** **15 units (min)**				
	Course Number	**Course Title**	L	P	U
Core Courses	ECON F215	Computational Methods for Economics	3	0	3
	ECON F241	Econometric Methods	3	0	3
	ECON F242	Microeconomics	3	0	3
Electives	BITS F314	Game Theory and its Applications	3	0	3
	BITS F464	Machine Learning	3	0	3
	CS F320	Foundations of Data Science	3	0	3
	ECON F342	Applied Econometrics	3	0	3
	ECON F419	Advanced Microeconomics	3	0	3
	ECON F420	Applied Macroeconometrics	3	0	3
	MATH F424	Applied Stochastic Process	3	1	4

Minor in Computing and Intelligence					
Description	The Minor in Computing and Intelligence aims to enable the students majoring in disciplines other than Computer Science to gain a deeper understanding of computing and artificial intelligence and apply the same in solving problems in diverse domains. While courses like Foundations of Data Structures and Algorithms would help the students with abstract thinking and problem solving, courses like Operating Systems, Artificial Intelligence etc., will give them exposure to the fundamental aspects of computing and intelligent systems. This minor programme is exclusively designed for first-degree students of non-Computer Science disciplines.				
Courses & Units Required	**06 courses (min)** **18 units (min)**				
	Course Number	**Course Title**	L	P	U
Core Courses	BITS F232	Foundations of Data Structures and Algorithms	3	1	4
	CS F372	Operating Systems	3	0	3
	CS F407	Artificial intelligence	3	0	3

Minor in Computing and Intelligence					
Electives	BITS F311	Image Processing	3	0	3
	BITS F452	Blockchain Technology	3	0	3
	BITS F463	Cryptography	3	0	3
	BITS F464	Machine Learning	3	0	3
	CS F212	Database Systems	3	1	4
	CS F213	Object Oriented Programming	3	1	4
	CS F301	Principles of Programming Languages	2	0	2
	CS F303	Computer Networks	3	1	4
	CS F314	Software Development for Portable Devices	2	1	3
	CS F315	Information and Communication Technologies and Development	3	0	3
	CS F415	Data Mining	3	0	3
	IS F311	Computer Graphics	3	0	3
	IS F341	Software Engineering	3	1	4

Minor in Data Science					
Description	The minor in Data Science aims to enable students to learn the basic skills required by Data Scientist for today's world. Data Science is becoming ubiquitous to all kinds of industry and opening up new avenues of business. This minor will help students to apply knowledge from Mathematics, Statistics and Computing for analyzing data collected from different kinds of sources in their respective engineering applications and make meaningful and actionable insights.				
Courses & Units Required	5 courses (min) 15 units (min)				
Core Courses	**Course Number**	**Course Title**	**L**	**P**	**U**
	BITS F464	Machine Learning	3	0	3
	CS F320	Foundations of Data Science	3	0	3
	MATH F432	Applied statistical Methods	3	0	3
Electives	BITS F453	Computational Learning Theory	3	0	3
	BITS F454	Bio-Inspired Intelligence: Algorithms and Applications	3	0	3
	CS F317	Reinforcement Learning	3	0	3
	CS F407	Artificial Intelligence	3	0	3
	CS F415	Data Mining	3	0	3
	CS F425	Deep Learning	3	0	3
	CS F426	Graph Mining	3	1	4
	CS F429	Natural Language Processing	3	0	3
	CS F432	Brain-inspired Deep Learning	3	0	3
	CS F433	Computational Neuroscience	3	0	3
	CS F469	Information Retrieval	3	0	3
	CS G519	Social Media Analytics	3	1	4
	MATH F212	Optimization	3	0	3
	MATH F353	Statistical Inference and applications	3	0	3

Minor in Data Science					
	MATH F424	Applied Stochastic Processes	3	1	4
	MATH F471	Nonlinear Optimization	3	0	3

Minor in English Studies					
Description	English has a rich linguistic, literary and cultural heritage. The classic literary masterpieces of English are still widely read and appreciated. English has also evolved over centuries and is now considered as the pre-eminent means of communication in the various sectors such as business, diplomacy, mass media, education, etc., across the globe. The Minor in English Studies introduces students to the language and literary canons, and renders them with adequate exposure not only to the cultural and linguistic aspects but also to practical applications of English language and literature. In particular, the core and elective courses included in the Minor would encourage students to acquire a critical understanding of literary and linguistic analyses, and the capacity to engage meaningfully in analysis, interpretation, and explanation. The Minor also gives an opportunity for students to choose modules and develop their own interests in language or literature. Students who follow the Minor will have an enhanced understanding of the nature of the English language and literature and also of the tools needed for further independent exploration of literary and linguistic phenomena.				
Courses & Units Required	5 courses (min) 15 units (min)				
Core Courses	**Course Number**	**Course Title**	**L**	**P**	**U**
	GS F241	Creative Writing	2	1	3
	HSS F337	English Literary Forms and Movements	3	0	3
Electives Pool – I (Language)	GS F221	Business Communication	3	0	3
	GS F244	Reporting and Writing for Media	3	0	3
	GS F245	Effective Public Speaking	3	0	3
	HSS F222	Linguistics	3	0	3
	HSS F227	Cross Cultural Skills	3	0	3
	HSS F228	Phonetics and Spoken English	3	0	3
	HSS F342	Advanced Communicative English	3	0	3
Elective Pool-II (Literature)	GS F242	Cultural Studies	3	0	3
	GS F322	Critical Analysis of Literature and Cinema	3	0	3
	HSS F221	Readings from Drama	3	0	3
	HSS F226	Postmodernism	3	0	3
	HSS F237	Contemporary Indian English Fiction	3	0	3
	HSS F316	Popular Literature and Culture of South Asia	3	0	3
	HSS F327	Contemporary Drama	3	0	3
	HSS F330	Appreciation of Art	3	0	3
	HSS F332	Cinematic Arts	3	0	3
	HSS F335	Literary Criticism	3	0	3
	HSS F336	Modern Fiction	3	0	3
	HSS F338	Comparative Indian Literature	3	0	3
	HSS F340	Postcolonial Literatures	3	0	3

Minor in English Studies					
	HSS F349	Ecocriticism	3	0	3
	HSS F373	Shakespeare and Popular Culture	3	0	3
	HSS F399	Introduction to American Literature	3	0	3

Minor in Entrepreneurship					
Description	Entrepreneurship has tremendous impact on development of economy as well as society addressing various market & societal problems through continuous value creation in terms of innovations and job creation. The minor in entrepreneurship aims to equip students from different disciplines with better understanding of entrepreneurial process, necessary skills and experience to translate ideas into real innovative products/services to new entrepreneurial ventures. In this programme, hands-on experiential learning is emphasized giving students an opportunity to learn in a team environment, design innovative products/services and create their own businesses. This will motivate students to pursue entrepreneurship as their career choice.				
Courses & Units Required	**5 courses (min)** **15 units (min)**				
Core Courses	**Course Number**	**Course Title**	**L**	**P**	**U**
	BITS F468	New Venture Creation	3	0	3
	BITS F482 or ECON F414	Creating and Leading Entrepreneurial Organizations	3	0	3
	ECON F212	Fundamentals of Finance and Accounting	3	0	3
Electives (minimum of 2 courses and additional units required to make the total to 15)	BITS F322	Venture Team Development and Organization	3	0	3
	BITS F323	Venture Finance	3	0	3
	BITS F324	Strategy for Entrepreneurs	3	0	3
	BITS F325	New Product and Service Design	3	0	3
	BITS F326	Design Thinking for Innovation & Entrepreneurship	3	0	3
	BITS F427	Digital Marketing	3	0	3

Minor in Film and Media					
Description	Film and its derivative forms of media such as television and advertising are dominant cultural forces in the contemporary world. The minor in Film and Media aims to provide: i. An introduction to media studies with a specific focus on film studies ii. A basic introduction to Print and Digital Media including film making and film appreciation iii. Hands-on training in writing for media and film production				
Courses & Units Required	6 courses (min) 18 units (min)				
Core Courses	**Course number**	**Course Title**	**L**	**P**	**U**
	GS F223	Introduction to Mass Communication	3	0	3
	GS F244	Reporting and Writing for Media	3	0	3
	GS F322	Critical Analysis of Literature and Cinema	3	0	3
Elective Courses	GS F224	Print and Audio Visual Advertising	3	0	3
	GS F242	Cultural Studies	3	0	3

Minor in Film and Media					
	GS F321	Mass Media Content and Design	3	0	3
	GS F343	Short Film and Video Production	3	0	3
	HSS F332	Cinematic Arts	3	0	3

Minor in Finance					
Description	The minor in Finance aims at providing the student a grounding in the basic concepts of accounting and finance so as to complement their existing disciplinary knowledge, enrich their educational experience, enable them to make better financial decisions, and expand their career opportunities. It will also give students an opportunity to learn more about investments and quantitative applications in finance.				
Courses & Units Required	5 courses (min) 15 units (min)				
Core Courses	**Course Number**	**Course Title**	**L**	**P**	**U**
	ECON F212	Fundamentals of Finance and Accounting	3	0	3
	FIN F315	Financial Management	3	0	3
Elective Courses	ECON F241	Econometric methods	3	0	3
	ECON F312	Money banking and Financial markets	3	0	3
	ECON F355	Business Analysis & Valuation	3	0	3
	ECON F411	Project Appraisal	3	0	3
	ECON F413	Financial Engineering	3	0	3
	FIN F242	Introduction to Financial Mathematics	3	0	3
	FIN F243	Functions & Working of Stock Exchanges	3	0	3
	FIN F311	Derivatives & Risk Management	3	0	3
	FIN F312	Fundamentals of Taxation and Audit	3	0	3
	FIN F313	Security Analysis & Portfolio Management	3	0	3
	FIN F314	Investment Banking & Financial Services	3	0	3
	FIN F414	Financial Risk Analytics and Management	3	0	3

Minor in Management					
Description	"Minor in Management" is designed for the student who wants a general introduction to the functioning of a business and develops a business acumen. By gaining an understanding of the areas of management, the student will have a competitive advantage in the marketplace and throughout their career. The student shall be better equipped to handle their projects in practice school by understanding organizational and managerial issues. It would also enable him/her to combine their technical and managerial skills and explore the field of business consulting, role of management trainees, etc. Those interested in pursuing an MBA would get an opportunity to explore the management field and assess its fit with their career interest.				
Courses & Units Required	**05 courses (min)** **15 units (min)**				
Core Courses	**Course Number**	**Course Title**	L	P	U
	BITS F428	Essentials of Strategic Management	3	0	3
	MGTS F211	Principles of Management	3	0	3
	MGTS F314	Essentials of Financial Management	3	0	3

Minor in Management					
Electives	BITS F326	Design Thinking for Innovation and Entrepreneurship	3	0	3
	ECON F415	New Venture Creation	3	0	3
	ECON F434	International Business	3	0	3
	ECON F435	Marketing Research	3	0	3
	HSS F328	Human Resources Development	3	0	3
	MF F219	Operations Management	3	0	3
	MF F319	Supply Chain Management	3	0	3
	ME F443	Quality Control, Assurance and Reliability	3	0	3
	MGTS F311	Marketing	3	0	3
	MGTS F313	Product and Brand Management	3	0	3
	MGTS F315	Foundations of Business Analytics	3	0	3
	MGTS F316	Managerial and Leadership Skills	3	0	3
	MGTS F351	Organizational Behaviour	3	0	3

Minor in Materials Science and Engineering					
Description	Materials Science and Engineering is an interdisciplinary subject that makes use of knowledge from Physics, Chemistry, Engineering, Mathematics, Biology and Biotechnology, but which has its own special character. It is always evolving – new and exciting materials such as nanomaterials, high-temperature and lightweight materials, green materials and sustainable biomaterials for tissue engineering are continually emerging. The field of Material Science combines a wide knowledge base and puts it to diverse practical and commercial use.				
Courses & Units Required	5 courses (min) 15 units (min)				
Core Courses	**Course Number**	**Course Title**	**L**	**P**	**U**
	CHE F243 / ME F213	Materials Science and Engineering	3 2	0 0	3 2
	MST F331	Materials Characterization	3	1	4
	MST F332	Materials Processing	3	0	3
Elective Courses	BITS F416	Introduction to Nanoscience	3	0	3
	CHE F433	Corrosion Engineering	3	0	3
	CHEM F223	Colloid and Surface Chemistry	3	0	3
	CHEM F326	Solid State Chemistry	3	0	3
	CHEM F336	Nanochemistry	3	1	4
	ME F452	Composite Materials and Design	3	0	3

Minor in Materials Science and Engineering					
	MST F333	Introduction to Biomaterials	3	0	3
	MST F334	Materials for Catalytic Applications	3	0	3
	MST F335	Coating and thin film technology	3	0	3
	MST F336	Glass Technology	3	0	3
	MST F337	Materials for Energy Applications	3	0	3
	MST F338	Metals and Alloys	3	0	3
	MST F339	Polymer Materials	3	0	3
	PHY F379	Thin Film Technology	3	0	3
	PHY F414	Physics of Advanced Materials	3	1	4
	PHY F416	Soft condensed Matter Physics	3	1	4

Minor in Philosophy, Economics, and Politics					
Description	The minor in *Philosophy, Economics & Politics & (PEP)* aims at introducing students to a wide range of approaches to understand the social and human world we live in and to develop skills useful for a range of career opportunities in national and international organizations. It would particularly interest and enthuse those students who wish to complement their core expertise in science and engineering with a good grasp of the humanities and social sciences. As a multi-disciplinary minor, this option will provide a judicious mix of knowledge in social sciences (economics, sociology and politics) and the humanities (philosophy) that would enable students to draw connections among political, economic, and social phenomena as well as equip them with the necessary skills to think through complex challenges of our society in a creative and critical manner.				
Courses & Units Required	6 courses (min) 18 units (min)				
Core Courses	**Course Number**	**Course Title**	**L**	**P**	**U**
	ECON F211	Principles of Economics	3	0	3
	GS F211	Modern Political Concepts	3	0	3
	HSS F235	Introductory Philosophy	3	0	3
Elective Courses	BITS F 385	Introduction to Gender Studies	3	0	3
	GS F231	Dynamics of Social Change	3	0	3
	GS F234	Development Economics	3	0	3
	GS F243	Current Affairs	3	0	3
	GS F312	Applied Philosophy	3	0	3
	GS F313	Marxian Thoughts	3	0	3
	GS F332	Contemporary India	3	0	3
	GS F333	Public Administration	3	0	3
	HSS F236	Symbolic Logic	3	0	3
	HSS F315	Society, Business, and Politics	3	0	3
	HSS F322	Social and Political Ecology	3	0	3

Minor in Philosophy, Economics, and Politics					
	HSS F331	Sankara's Thoughts	3	0	3
	HSS F333	Comparative Religion	3	0	3
	HSS F343	Professional Ethics	3	0	3
	HSS F345	Gandhian Thoughts	3	0	3
	HSS F346	International Relations	3	0	3
	HSS F350	Human Rights: History, Theory and Practice	3	0	3
	HSS F353	Philosophy of Aesthetics	3	0	3
	HSS F354	Introduction to Islamic Economy	3	0	3
	HSS F355	Dictatorship, Democracy & Development	3	0	3
	HSS F356	Social Movements and Protest Politics	3	0	3

Minor in Physics					
Description	The theories in physics are all-pervading and their applications are found in varied branches of engineering and sciences. The minor in Physics aims to introduce the student to fundamental theories in physics. The core courses cover the basics and by choosing from the large pool of electives, the student will be able to pursue to a deeper level the areas of her/his interest. This minor would equip the students with the skill and knowledge which will help them in gaining insights in their own primary area of study.				
Courses & Units Required	5 courses (min) 15 units (min)				
Core Courses	**Course Number**	**Course Title**	**L**	**P**	**U**
	PHY F212 **or** ECE F212/ EEE F212/ INSTR F212	Electromagnetic Theory – 1 **or** Electromagnetic Theory	3	0	3
	PHY F242	Quantum Mechanics – 1	3	0	3
	PHY F312	Statistical Mechanics	3	0	3
Elective Courses	BITS F316	Nonlinear Dynamics and Chaos	3	0	3
	BITS F386	Quantum Information and Computing	3	0	3
	PHY F211	Classical Mechanics	3	1	4
	PHY F213	Optics	3	0	3
	PHY F214	Electricity Magnetism and Optics Lab	0	2	2
	PHY F215	Introduction to Astronomy and Astrophysics	3	0	3
	PHY F241	Electromagnetic Theory – 2	3	1	4
	PHY F243	Mathematical Method of Physics	3	0	3
	PHY F244	Modern Physics Lab	0	2	2
	PHY F311	Quantum Mechanics – 2	3	0	3
	PHY F313	Computational Physics	3	0	3
	PHY F315	Theory of Relativity	3	0	3

Minor in Physics					
	PHY F341	Solid State Physics	3	0	3
	PHY F342	Atomic and Molecular Physics	3	0	3
	PHY F343	Nuclear and Particle Physics	3	0	3
	PHY F346	Laser Science and Technology	3	0	3
	PHY F418	Lasers and Applications	3	1	4
	PHY F426	Physics of Semiconductors Devices	3	1	4
	PHY F427	Atmospheric Physics	3	0	3
	PHY F428	Quantum Information Theory	3	0	3

Minor in Public Policy					
Description	The Minor in Public Policy aims at providing the students a clear and contextualised understanding of conceptual and empirical aspects of public policy, the nature of public policy interventions in India and their varying impacts. Also, it intends to provide the students an understanding of the dynamics of policymaking, central aspects of governance and core features and functions of institutions, and equip them with skills of policy analysis.				
Courses & Units Required	5 courses (min) 15 units (min)				
Core Courses	**Course Number**	**Course Title**	**L**	**P**	**U**
	GS F233	Public Policy	3	0	3
	GS F333	Public Administration	3	0	3
Elective Courses	HSS F232	Introduction to Development Studies	3	0	3
	HSS F317	Introduction to Globalisation	3	0	3
	HSS F322	Social and Political Ecology	3	0	3
	HSS F361	Urban Policy and Governance	3	0	3
	HSS F362	Local Governance and Participation	3	0	3

Minor in Robotics and Automation	
Description	This minor aims to impart specialized knowledge and skills in robotics and automation required by engineers to the current demands of various industrial sectors. Automobile, aerospace & defense, logistics engineering and factory automation companies are currently asking for engineering graduates with add-on skills in these areas. Feedback has established that several sectors of industry need the newly recruited employees with knowledge and skills in 'automation', 'robotics', and 'mechatronics'. Currently, the need of core courses of any B.E. programme of the Institute limits sufficient coverage of these topics in the existing core and hence the only way students can complement their learning with these specialized courses is through a minor programme. This minor programme has been designed by keeping that need in focus. This minor programme consists of a fairly generic core so as to be relevant to students of any discipline and a

Minor in Robotics and Automation					
	broad set of elective courses covering application of the fundamentals of robotics and automation to various industry sectors.				
Courses & Units Required	05 courses (min) 15 units (min)				
Core Courses	**Course Number**	**Course Title**	**L**	**P**	**U**
	BITS F441	Robotics	3	0	3
	EEE/INSTR/ECE F242	Control Systems	3	0	3
	BITS F327	Artificial Intelligence for Robotics	2	1	3
Electives	BITS F312	Neural Network & Fuzzy Logic	3	0	3
	BITS F415	Introduction To MEMS	3	1	4
	BITS F442	Remote Sensing and Image Processing	3	0	3
	BITS F464	Machine Learning	3	0	3
	ECE F434	Digital Signal Processing	3	1	4
	EEE F411	Internet of Things (IoT)	3	1	4
	EEE F422	Modern Control Systems	3	0	3
	EEE G512	Embedded System Design	3	1	4
	INSTR F343	Industrial Instrumentation and Control	3	0	3
	INSTR G611	Advanced Control Systems	3	2	5
	ME F244	Kinematics & Dynamics of Machinery	3	0	3
	ME F432	Computer Aided Manufacturing	2	1	3
	MF F311	Mechatronics & Automation	2	1	3
	MSE G511	Mechatronics	3	2	5

Minor in Supply Chain Analytics	
Description	Supply chain analytics help organizations to take better, faster and more informed decisions about their business operations. The global market for supply chain analytics is projected to exceed $10 billion by 2025 and has a compound annual growth rate (CAGR) of 16%. Today's supply chain analytics solutions already have impressive capabilities, and with future advancements will only become more of a game-changer for businesses across all industries. Supply chain analytics minor programme will enable the students to develop foundations and to broaden their knowledge base of supply chain in general and supply chain analytics in specific. It will cover three verticals such as supply chain management, supply chain modelling and empirical analysis (qualitative data analysis) & supply chain analytics (quantitative data analysis). The minor programme is designed to create supply chain professionals for present and future business environment.
Courses & Units Required	**05 courses (min)** **15 units (min)**

	Course Number	Course Title	L	P	U
Core Courses	BITS F455	Analytics for Supply Chain	3	0	3
	MF F319	Supply Chain Management	3	0	3
	MF F422	Supply Chain Modelling and Empirical Analysis	3	1	4
Electives	ME F443	Quality Control Assurance and Reliability	3	0	3
	MF F321	Procurement Management	3	0	3
	MF F418	Lean Manufacturing	3	0	3
	MF F485	Sustainable Manufacturing	3	0	3
	MATH F212 **OR** ME F320 **OR** MF F320	Optimization **OR** Engineering Optimization **OR** Engineering Optimization	3	0	3
	MATH F242	Operations Research	3	0	3
	MATH F353	Statistical Inference and Applications	3	0	3

Minor in Water and Sanitation					
Description	Sustainable Development Goal 6 (SDG 6) focusses on Water and Sanitation and the tasks mentioned in SDG 6. Sanitation is also high on agenda of the Indian Government as evident from Swachh Bharat Mission. Trained Postgraduate and working professionals are of high demand. Bill and Melinda Gates foundation had significantly invested in Water, Sanitation and Hygiene programme and they had funded UNESCO IHE and its 8 partners in developing e learning alliance. The foundation's investment strategy in sanitation requires qualified and trained professionals. This minor would equip the students with the skill and knowledge which will help them in gaining insights in the area of water and sanitation.				
Courses & Units Required	05 courses (min) 15 units (min)				
	Course Number	**Course Title**	L	P	U
Core Courses	BIO F216	Water Sanitation and Solid Waste Management	3	0	3
	BIO F217	Laboratory for Water Sanitation and Solid Waste management	1	2	3
Electives	BIO F266	Study Project			3
	SAN G511	Sanitation Technology	3	2	5
	SAN G512	Sanitation and Public Health	3	2	5
	SAN G513	Sanitation Governance Behaviour change and Advocacy			5*
	SAN G514	Sanitation Finance and Project Management			5*
	SAN G515	Emergency Sanitation & Leadership			5*