IDD Course Structure for Engineering Physics (2016-2017)					
Cat.	**Deviation**	**Programme Components**	**PHY**	**Recommended (V Years)**	
				Min	Max
HU	0	Humanities and Social Science	22	22	50
IS	0	Science	69	62	84
IE	0	Institute Requirement Engineering/ Pharmacy	48	41	60
EP	0	Engineering Drawing (Manual and Computer Aided),Manufacturing Practices and Practice course of Department/ School	18	18	24
LM	0	Language and Management	27	27	31
DC/ MC	0	Department/Programme Core (Includes Stream Courses)	155	105	175
DE/ BE	0	Department/Programme Elective (Includes Stream Courses)	72	60	105
OE	-1	Open Elective (Interdisciplinary Stream courses from Science/ Engineering/Pharmacy)	54	55	100
DP	0	Project/ Industrial visit/ Training	30	20	50
DT	0	Dissertation	70	70	80
		Total	**565**	**540**	**570**
		All Semester Total (Hons.)	**585**	**560**	**590**

L: Lecture Hours; T: Tutorial Hours; P: Laboratory/Practical Hours; C: Credits

Streams in Engineering Physics						
Stream	**Stream Code**	**Stream Title**				
SSP	X1X	Solar and Space Physics				
CMMP	X2X	Condensed Matter and Materials Physics				
PH	X3X	Photonics				
BP	X4X	Biophysics				
ES	X5X	Energy Studies				
RS	X6X	Remote Sensing				

One course to be selected, for respective stream in corresponding semester, on recommendation of DUGC

Stream - 1						
		Solar and Space Physics (X1X)				
IDD Pt. III (VI Sem.)	PHY311	Introduction to Astronomy & Astrophysics	3	0	0	9
IDD Pt. IV (VII Sem.)	PHY411	Magnetohydrodynamics	3	0	0	9
IDD Pt. IV (VIII Sem.)	PHY412	Physics of the Sun and its Atmosphere	3	0	0	9
IDD Pt. V (IX Sem.)	EP511	Atmospheric Physics & Environmental Sciences	3	0	0	9
	EP512	Space Weather	3	0	0	9

Stream-2						
		Condensed Matter and Materials Physics (X2X)				
IDD Pt. III (VI Sem.)	PHY321	Physics of Materials	3	0	0	9
IDD Pt. IV (VII Sem.)	EP421	Advanced Materials & Characterization techniques	3	0	0	9
IDD Pt. IV (VIII Sem.)	PHY421	Advanced Condensed Matter Physics	3	0	0	9
IDD Pt. V (IX Sem.)	PHY521	Low Dimensional Physics	3	0	0	9
Stream-3						
		Photonics (X3X)				
IDD Pt. III (VI Sem.)	EP331	Advanced Optical fiber & Components	2	0	3	9
IDD Pt. III (VI Sem.)	PHY332	Fourier Optics	2	0	0	6
IDD Pt. IV (VII Sem.)	EP431	Integrated Optics	3	0	0	9
IDD Pt. IV (VIII Sem.)	EP432	Photonics & Optoelectronics	3	0	0	9
IDD Pt. V (IX Sem.)	PHY531	PBG & Meta - Materials	3	0	0	9
Stream-4						
		Biophysics (X4X)				
IDD Pt. III (V Sem.)	EP341	Biophysics	3	0	0	9
IDD Pt. III (VI Sem.)	EP342	Biophysical Techniques	3	0	0	9
IDD Pt. IV (VIII Sem.)	EP441	Advanced Biophysics	3	0	0	9
Stream-5						
		Energy Studies (X5X)				
IDD Pt. III (V Sem.)	EP351	Renewable Energy Sources	3	0	0	9
IDD Pt. IV (VII Sem.)	EP451	Non-Conventional Energy Sources	3	0	0	9
IDD Pt. IV (VIII Sem.)	EP452	Fuel Cell	3	0	0	9
Stream-6						
		Remote Sensing (X5X)				
IDD Pt. III (V Sem.)	EP361	Remote Sensing	3	0	0	9
IDD Pt. III (VI Sem.)	EP362	Microwave Remote Sensing	2	0	3	9
IDD Pt. IV (VIII Sem.)	EP461	Antenna & Radar Engineering	3	0	0	9
IDD Pt. V (IX Sem.)	EP561	Satellite Image Processing	3	0	0	9

IDD Course Structure for Engineering Physics (2016-2017)

UG-CRC Code	Course Code	Course Name	L–T–P			Credits
Engineering Physics : 5-Year IDD I-Semester						
IH.H101.14	H101	Universal Human Values - I: Self and Family	2	0	0	6
GY.PE101.14	PE101	Elementary Physical Education	0	1	3	5
GY.CP101.14	CP101	Creative Practices #	0	1	3	5
		Total	**2**	**2**	**6**	**16**
LM.HL101.14	HL101	Basic English*	2	0	1	7
		Total	**4**	**2**	**7**	**23**
#Creative Practices course to be announced by Dean Academic Office						
*Basic English course to be taken by student as recommended after Diagnostic Test						
Engineering Physics: 5-Year IDD I-Semester						
IS.PHY102.14	PHY102	Physics-II Introduction to Engineering Electromagnetics	3	1	2	13
IS.CY101.14	CY101	Chemistry - I	2	1	2	10
IS.MA101.14	MA101	Engineering Mathematics - I	3	1	0	11
IE.CSO101.14	CSO101	Computer Programming	3	1	2	13
EP.ME106.14	ME106	Manufacturing Practice - II	0	0	3	3
EP.ME104.14	ME104	Engineering Drawing	1	0	3	6
		Total	**12**	**4**	**12**	**56**
Engineering Physics : 5-Year IDD II-Semester						
IS.PHY101.14	PHY101	Physics-I Classical, Quantum & Relativistic Mechanics	3	1	2	13
IS.MA102.14	MA102	Engineering Mathematics – II	3	1	0	11
IE.ME102.14	ME102	Engineering Mechanics	3	1	0	11
DC.PHY103.14	PHY103	Modern Physics	3	0	0	9
EP.EP101.14	EP101	Practices of Engineering Physics	1	0	3	6
EP.ME105.14	ME105	Manufacturing Practice I	0	0	3	3
IH.H105.14	H105	Philosophy	2	1	0	8
IH.H106.14	H106	Education and Self *				
		Total	**15**	**4**	**8**	**61**

Engineering Physics : 5-Year IDD III-Semester						
IE.CHO102.14	CHO102	Fluid Mechanics	3	1	0	11
IE.EO101.14	EO101	Fundamentals of Electrical Engineering	3	1	2	13
MC.PHY201.15	PHY201	Quantum Physics	3	1	0	11
DC.EC201.15	EC201	Solid State Electronic Devices	3	0	0	9
DC.EC271.15	EC271	Solid State Electronic Devices Lab	0	0	2	2
DC.EO237.15	EO237	Fibre Optics	3	0	0	9
IH.H103.14	H103	Development of Societies	2	1	0	8
IH.H104.14	H104	History and Civilization				
		Total	**17**	**4**	**4**	**63**
* The students have to choose one course from H103 & H104.						
Engineering Physics : 5-Year IDD IV-Semester						
IS.MA203.14	MA203	Mathematical Methods	3	1	0	11
MC.EO202.15	EO202	Analog Circuits and Systems	3	0	0	9
MC.EO272.15	EO272	Analog Circuits and Systems Lab	0	0	2	2
DC.PHY211.15	PHY211	Solar and Space Plasma Physics	3	0	0	9
DC.PHY221.15	PHY221	Condensed Matter Physics	3	0	2	11
DC.EP201.15	EP201	Instrumentation, Measurement and Analysis	2	0	0	6
DP.EP291.15	EP291	Exploratory Project	0	0	5	5
MC.PHY202.15	PHY202	Computational Physics	2	0	2	8
		Total	**16**	**1**	**11**	**61**
Engineering Physics : 5-Year IDD V-Semester						
MC.EO301.16	EO301	Digital Circuits and Systems	3	0	2	11
DC.PHY301.15	PHY301	Atomic and Molecular Physics	3	0	0	9
DC.PHY302.15	PHY302	Relativistic Electrodynamics	3	0	0	9
DC.PHY306.15	PHY306	Classical Mechanics	3	0	0	9
DE-1	DE-1	Departmental Elective (DE)– 1	3	0	0	9
OE-1	OE-1	Open Elective - 1	3	0	0	9
		Total	**18**	**0**	**2**	**56**
DP.EP391S.15	EP391S	Stream Project(Hons.)	0	0	10	10
		total	**18**	**0**	**12**	**66**
^^Courses to be selected such that recommended HU & LM programme comopents get satisfied separately.						
***List of Electives DE1**						
DE.EP341.15	EP341	Biophysics	3	0	0	9
DE.EP361.15	EP361	Remote Sensing	3	0	0	9
DE.PHY308.22	PHY308	Concept of Kinetics and Thermal Physics	3	0	0	9
Engineering Physics : 5-Year IDD VI-Semester						

DC.PHY303.15	PHY303	Statistical Physics	3	0	0	9
DC.PHY332.15	PHY332	Fourier Optics	2	0	0	6
DE-2	DE-2	Departmental Elective (DE) – 2	3	0	0	9
DE-3	DE-3	Departmental Elective (DE) – 3	3	0	0	9
OE-2	OE-2	Open Elective - 2	3	0	0	9
DP.EP392/S.15	EP392 / EP392S	UG or Stream Project	0	0	10	10
		Total	**14**	**0**	**10**	**52**

^^Courses to be selected such that recommended HU & LM programme comopents get satisfied separately.

***List of Electives DE2**						
DE.PHY305.15	PHY305	Advanced Quantum Mechanics	3	0	0	9
DE.PHY307.18	PHY307	Advanced Mathematical Methods	3	0	0	9
DE.PHY311.15	PHY311	Introduction to Astronomy & Astrophysics	3	0	0	9
DE.PHY321.15	PHY321	Physics of Materials	3	0	0	9
DE.EP331.15	EP331	Advanced Optical fiber & Components	2	0	3	9
DE.EP342.15	EP342	Biophysical Techniques	3	0	0	9
DE.EP351.15	EP351	Renewable Energy Sources	3	0	0	9
DE.EP362.15	EP362	Microwave Remote Sensing	2	0	3	9

Engineering Physics: 5-Year IDD Summer Term						
DP.EP393.15	EP393	Project/ Industrial Project/Industrial Training	0	0	5	5
		Total	**0**	**0**	**5**	**5**

Engineering Physics : 5-Year IDD VII-Semester						
DC.PHY401.15	PHY401	Nuclear and Particle Physics	3	0	2	11
DC.PHY402.15	PHY402	Quantum Electronics	2	0	0	6
DE-4	DE-4	Departmental Elective (DE) – 4	3	0	0	9
OE-3	OE-3	Open Elective - 3	3	0	0	9
DP.EP491.15	EP491	UG Project (Non-Hons. Students)	0	0	10	10
HU/LM	HU/LM	Humanities/Language and Management Course^^	3	0	0	9
		Total (Non-Hons Students)	**14**	**0**	**12**	**54**
DP.EP491S.15	EP491S	Stream Project (Hons. Students)	0	0	20	20
		Total (Hons Students)	**14**	**0**	**22**	**64**

^^Courses to be selected such that recommended HU & LM programme comopents get satisfied separately.

***VII Semester Elective / Stream DE-3 Courses**						
DE.PHY403.15	PHY403	Introduction to Quantum Field Theory	3	0	0	9
DE.PHY404.15	PHY404	Phase Transition & Critical Phenomena	3	0	0	9
DE.PHY411.15	PHY411	Magnetohydrodynamics	3	0	0	9
DE.EP421.15	EP421	Advanced Materials & Characterization techniques	3	0	0	9

DE.EP431.15	EP431	Integrated Optics	3	0	0	9
DE.EP451.15	EP451	Non-Conventional Energy Sources	3	0	0	9
Engineering Physics : 5-Year IDD VIII-Semester						
DE-5	DE-5	Departmental Elective (DE) – 5	3	0	0	9
DE-6	DE-6	Departmental Elective (DE) – 6	3	0	0	9
OE - 4	OE - 4	Open Elective - 4	3	0	0	9
HU/LM	HU/LM	Humanities/Language and Management Course^^	3	0	0	9
DT.EP492.15	EP492	Thesis	0	0	10	10
		Total	**12**	**0**	**10**	**46**
^^Courses to be selected such that recommended HU & LM programme comopents get satisfied separately.						
***VIII Semester Elective / Stream DE-4, DE-5 Courses**						
DE.PHY405.15	PHY405	Advanced Quantum Field Theory	3	0	0	9
DE.PHY406.15	PHY406	Advanced Nuclear Physics	3	0	0	9
DE.PHY407.21	PHY407	Simulation Methods in Statistical Physics	3	0	0	9
DE.PHY412.15	PHY412	Physics of the Sun and its Atmosphere	3	0	0	9
DE.PHY421.15	PHY421	Advanced Condensed Matter Physics	3	0	0	9
DE.EP432.15	EP432	Photonics & Optoelectronics	3	0	0	9
DE.EP441.15	EP441	Advanced Biophysics	3	0	0	9
DE.EP452.15	EP452	Fuel Cell	3	0	0	9
DE.EP461.15	EP461	Antenna & Radar Engineering	3	0	0	9
Engineering Physics : 5-Year IDD IX-Semester						
DE-7	DE-7	Departmental Elective (DE) - 7	3	0	0	9
DE-8	DE-8	Departmental Elective (DE) – 8	3	0	0	9
OE - 5	OE - 5	Open Elective - 5	3	0	0	9
OE - 6	OE - 6	Open Elective - 6	3	0	0	9
HU/LM	HU/LM	Humanities/Language and Management Course^^	3	0	0	9
DT.EP591.15	EP591	Thesis	0	0	10	10
		Total	**15**	**0**	**0**	**55**
^^Courses to be selected such that recommended HU & LM programme comopents get satisfied separately.						
***IX Semester Elective / Stream DE-6 & DE-7 Courses**						
DE.EP511.15	EP511	Atmospheric Physics & Environmental Sciences	3	0	0	9
DE.EP512.15	EP512	Space Weather	3	0	0	9
DE.PHY521.15	PHY521	Low Dimensional Physics	3	0	0	9
DE.PHY531.15	PHY531	PBG & Meta - Materials	3	0	0	9
DE.EP561.15	EP561	Satellite Image Processing	3	0	0	9
Engineering Physics : 5-Year IDD X-Semester						

DT.EP592.15	EP592	Thesis	0	0	50	**50**
		Total	**0**	**0**	**50**	**50**
L: Lecture hours; T: Tutorial hours; P: Laboratory/ Practical hours; C: Credits						