

## UG Course Structure for Computer Science and Engineering (2017-2018)

Cat.	Deviation	Programme Components	CSE	Recommended (V Years)	
				Min	Max
HU	0	Humanities and Social Science	44	41	50
IS	0	Science	68	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	21	20	24
LM	0	Language and Management*	18	20	24
DC/ MC	0	Department/Programme Core (Includes Stream Courses)	147	105	155
DE/ BE	0	Department/Programme Elective (Includes Stream Courses)	36	30	60
OE	0	Open Elective (Interdisciplinary Stream courses from Science/ Engineering/Pharmacy)	36	35	80
DP	0	Project/ Industrial visit/ Training	30	20	50
DT	0	Dissertation	0	0	0
		<b>Total</b>	<b>448</b>	<b>430</b>	<b>460</b>
		<b>All Semester Total (Hons.)</b>	<b>468</b>	<b>450</b>	<b>480</b>

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

### Streams in Computer Science and Engineering

1. Artificial Intelligence and Computer Vision (AICV)

2. High performance Computing and Data Engineering (HPCDE)

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

#### 1. Artificial Intelligence and Computer Vision (AICV) Electives

UG Pt. III (V Sem.)	DE.CSE342.16	Intelligent Computing (IC)	3	0	0	9
	DE.CSE443.16	Natural Language Processing (NLP)	3	0	0	9
UG Pt. III (VI Sem.)	DE.CSE352.16	Computer Vision	3	0	0	9
UG Pt. IV (VII Sem.)	DE.CSE443.16	Natural Language Processing (NLP)	3	0	0	9
	DE.CSE342.16	Intelligent Computing (IC)	3	0	0	9
UG Pt. IV (VIII Sem.)	DE.CSE454.17	Pattern Recognition	3	0	0	9
	DE.CSE464.17	Machine Learning	3	0	0	9
	DE.CSE456.17	Biometrics	3	0	0	9

#### 2. High performance Computing and Data Engineering (HPCDE) Electives

UG Pt. III (V Sem.)	DE.CSE362.16	Data Mining	3	0	0	9
UG Pt. III (VI Sem.)	DE.CSE371.16	Parallel Computing	3	0	0	9
UG Pt. IV (VII Sem.)	DE.CSE472.17	Distributed Computing	3	0	0	9
UG Pt. IV (VIII Sem.)	DE.CSE464.17	Machine Learning	3	0	0	9

UG-CRC Code	Course Code	Course Name	L-T-P			Credits
<b>Computer Science and Engineering : 4-Year B. Tech. I-Semester</b>						
IH.H101.14	H101	Universal Human Values - I: Self and Family	1	1	0	5
GY.PE101.14	PE101	Elementary Physical Education	0	1	3	5
GY.CP101.14	CP101	Creative Practices #	0	1	3	5
		<b>Total</b>	<b>1</b>	<b>3</b>	<b>6</b>	<b>15</b>
LM.HL101.14	HL101	Basic English *	2	0	1	7
		<b>Total</b>	<b>3</b>	<b>3</b>	<b>7</b>	<b>22</b>
#Creative Practices course to be announced by Dean Academic Office						
*Basic English course to be taken by student as recommended after Diagnostic Test						
<b>Computer Science and Engineering : 4-Year B.Tech. I-Semester</b>						
IS.BL 101.14	BL 101	Biology	3	1	0	11
IS.PHY 101.14	PHY 101	Physics I: Classical, Quantum & Relativistic Mechanics	3	1	2	13
IS.MA 101.14	MA 101	Engineering Mathematics- I	3	1	0	11
IE.CSO101.14	CSO 101	Computer Programming	3	1	2	13
EP.ME 106.14	ME 106	Manufacturing Practices-II	0	0	3	3
EP.ME 104.14	ME 104	Engineering Drawing	1	0	3	6
		<b>Total</b>	<b>13</b>	<b>4</b>	<b>10</b>	<b>57</b>
<b>Computer Science and Engineering : 4-Year B. Tech. II-Semester</b>						
IS.MA 102.14	MA 102	Engineering Mathematics- II	3	1	0	11
IE.EO 101.14	EO 101	Fundamentals of Electrical Engineering	3	1	2	13
MC.CSO 102.15	CSO 102	Data Structures	3	0	2	11
EP.CSE103.14	CSE103	Information Technology Workshop-I (ITW-1)	2	0	3	9
EP.ME 105.14	ME 105	Manufacturing Practices – I	0	0	3	3
IH.H105.14	H 105	Philosophy	2	1	0	8
IH.H 106.14	H 106	Education & Self #				
		<b>Total</b>	<b>13</b>	<b>3</b>	<b>10</b>	<b>55</b>
# The students have to choose one course from H105 & H106.						
<b>Computer Science and Engineering : 4-Year B. Tech. III-Semester</b>						
IS.MA202.14	MA202	Probability and Statistics	3	1	0	11
IE.CMO102.14	ME102	Engineering Mechanics	3	1	0	11
MC.CSO204.15	CSO204	Discrete Maths	3	0	0	9
MC.CSO211.15	CSO211	Computer System Organization	3	0	2	11
DC.CSE205.15	CSE205	Information Technology Workshop-II (ITW-II)	2	0	3	9
IH.H103.14	H103	Development of Societies	2	1	0	8
IH.H104. 14	H104	History & Civilization #				
		<b>Total</b>	<b>16</b>	<b>3</b>	<b>5</b>	<b>59</b>
# Students have to choose one course from H103 and H104.						

### Computer Science and Engineering : 4-Year B. Tech. IV-Semester

IS.MA 203.14	MA 203	Mathematical Methods	3	1	0	11
DC.CSE241.15	CSE241	Artificial Intelligence	3	0	2	11
MC.CSO221.15	CSO221	Algorithms	3	0	2	11
MC.CSO231.14	CSO231	Operating Systems	3	0	2	11
DP.CSE291.15	CSE 291	Exploratory Project	0	0	5	5
HU.H201.14	HL 201	Universal Human Values - II: Self, Society and Nature	1	2	0	5
<b>Total</b>			<b>13</b>	<b>3</b>	<b>11</b>	<b>54</b>

### Computer Science and Engineering : 4-Year B. Tech. V-Semester

IE.MO201.14	MO201	Materials Science and Engineering	3	1	0	11
DC.CSE361.16	CSE361	Database Management System	3	0	2	11
MC.CSO351.16	CSO351	Computer Graphics	3	0	2	11
DE - 1	DE - 1	Department Elective/Stream Elective (DE) - 1	3	0	0	9
		Non-Stream Elective ( (DE) - 1				
OE - 1	OE - 1	Open Elective - 1	3	0	0	9
HU/LM	HU/LM	Humanities/Language Management Courses^^	3	0	0	9
<b>Total Credits in the Semester</b>			<b>18</b>	<b>1</b>	<b>4</b>	<b>60</b>
(Regular-Non-Stream)						
DP.CSE391.16	CSE.391	Stream Project (Hons.)	0	0	10	10
<b>Total Credits (Stream, Hons.)</b>			<b>18</b>	<b>1</b>	<b>14</b>	<b>70</b>

^^ Courses to be selected such that recommended HU/LM programme components get satisfied separately.

#### \*V Semester Elective / Stream DE-1 Courses

DE.CSE342.16	CSE342	Intelligent Computing	3	0	0	9
DE.CSE362.16	CSE362	Data Mining	3	0	0	9
DE.CSE443.16	CSE443	Natural Language Processing	3	0	0	9

#### \*V Semester Elective / Non Stream DE-1 Courses

DE.CSO323.16	CSO323	Graph Theory and Applications	3	0	0	9
DE.CSE353.16	CSE353	Multimedia Systems	3	0	0	9
DE.CSO332.16	CSO332	Ubiquitous Computing	3	0	0	9
DE.CSE372.18	CSE372	Introduction to High Performance Computing	3	0	0	9

### Computer Science and Engineering : 4-Year B. Tech. VI-Semester

DC.CSE381.16	CSE381	Software Engineering	3	0	0	9
MC.CSO322.16	CSO322	Theory of Computation	3	0	0	9
DC.CSE312.16	CSE312	Computer Architecture	3	0	2	11
DE - 2	DE - 2	Department Elective/Stream Elective(DE) - 2	3	0	0	9
		Non-Stream Elective (DE) - 2				
OE - 2	OE - 2	Open Elective - 2	3	0	0	9
HU/LM	HU/LM	Humanities/Language Management Courses^^	3	0	0	9

DP.CSE392.16	CSE392/ CSE392S	UG or Stream Project	0	0	10	10
<b>Total Credits</b>			<b>18</b>	<b>0</b>	<b>12</b>	<b>66</b>
^^ Courses to be selected such that recommended HU/LM programme components get satisfied separately.						
<b>*VI Semester Elective / Stream DE - 2 Courses</b>						
DE.CSE352.16	CSE352	Computer Vision	3	0	0	9
DE.CSE371.16	CSE371	Parallel Computing	3	0	0	9
<b>*VI Semester Elective / Non Stream DE - 2 Courses</b>						
DE.CSE324.16	CSE324	Operations Research	3	0	0	9
DE.CSE363.16	CSE363	Information Retrieval	3	0	0	9
<b>Computer Science &amp; Engineering: 4-Year B.Tech. Summer Term (After VI Sem.)</b>						
DP.CSE393.15	CSE393	Project / Industrial Project / Industrial Training	0	0	5	5
<b>Total</b>			<b>0</b>	<b>0</b>	<b>5</b>	<b>5</b>
<b>Computer Science and Engineering: 4-Year B. Tech. VII-Semester</b>						
DC.CSE425.17	CSE425	Compiler Design	3	0	0	9
DE - 3	DE - 3	Department Elective/Stream Elective(DE) - 3	3	0	0	9
		Non-Stream Elective (DE) - 3				
OE - 3	OE - 3	Open Elective - 3	3	0	0	9
HU/LM	HU/LM	Humanities/Language Management Courses^^	3	0	0	9
DP.CSE491/S.17	CSE491/ CSE491S	UG or Stream Project	0	0	10	10
<b>Total Credits</b>			<b>12</b>	<b>0</b>	<b>10</b>	<b>46</b>
^^ Courses to be selected such that recommended HU/LM programme components get satisfied separately.						
<b>VII Semester Elective / Stream DE-3 Courses</b>						
DE.CSE342.16	CSE342	Intelligent Computing	3	0	0	9
DE.CSE443.16	CSE443	Natural Language Processing (NLP)	3	0	0	9
DE. CSE472.17	CSE472	Distributed Computing	3	0	0	9
<b>*VII Semester Elective / Non Stream DE - 3 Courses</b>						
DE.CSE444.17	CSE444	Neural Networks	3	0	0	9
DE.CSE434.17	CSE434	Fault Tolerant Computing	3	0	0	9
DE.CSE435.17	CSE435	Real Time Systems	3	0	0	9
DE.CSE583.18	CSE583	Advanced Software Engg.	3	0	0	9
DE.CSE559.18	CSE559	Medical Image Processing	3	0	0	9
DE.CSE529.18	CSE529	Bio-Informatics Algorithms	3	0	0	9
DE.CSE582.18	CSE582	Software Reuse and Re-engineering	3	0	0	9
DE.CSE539.18	CSE539	Social Network Analysis	3	0	0	9
DE.CSE573.18	CSE573	Parallel Algorithms	3	0	0	9
DE.CSE530.18	CSE530	Information Security	3	0	0	9
DE.CSE546.18	CSE546	Robotics	3	0	0	9
DE.CSE585.18	CSE585	Software Engineering Project Management	3	0	0	9

DE.CSE574.18	CSE574	Cloud Computing	3	0	0	9
<b>Computer Science and Engineering: 4-Year B. Tech. VIII-Semester</b>						
DC.CSE433.17	CSE433	Computer Networks	3	0	2	11
DE - 4	DE - 4	Department Elective/Stream Elective(DE) - 4	3	0	0	9
		Non-Stream Elective (DE) - 4				
OE - 4	OE - 4	Open Elective - 4	3	0	0	9
HU/LM	HU/LM	Humanities/Language Management Courses^^	3	0	0	9
DC.CSE403.17	CSE403	Seminar	0	0	3	3
DP.CSE492.17	CSE492	Stream Project (Hons.)	0	0	10	10
<b>Total Credits in Semester (Regular)</b>			<b>12</b>	<b>0</b>	<b>15</b>	<b>51</b>
^^ Courses to be selected such that recommended HU/LM programme components get satisfied separately.						
<b>VIII Semester Elective / Stream DE-4 Courses (Elective-IV)</b>						
DE.CSE454.17	CSE454	Pattern Recognition	3	0	0	9
DE.CSE456.17	CSE456	Biometrics	3	0	0	9
DE.CSE464.17	CSE464	Machine Learning	3	0	0	9
<b>VIII Semester Elective / Non Stream DE - 4 Courses (Elective-II)</b>						
DE.CSE436.17	CSE436	Cyber Security	3	0	0	9
DE.CSE426.17	CSE426	Cryptography	3	0	0	9
DE.CSE457.17	CSE457	Data Compression	3	0	0	9
DE.CSE458.17	CSE458	Soft Computing	3	0	0	9
DE.CSE465.17	CSE465	Advanced Databases	3	0	0	9
DE.CSE537.17	CSE537	Network Security	3	0	0	9
DE.CSE528.17	CSE528	Approximation Algorithms	3	0	0	9
DE.CSE538.17	CSE538	Semantic Web	3	0	0	9
DE.CSE568.17	CSE568	Web Mining	3	0	0	9
L: Lecture hours; T: Tutorial hours; P: Laboratory/ Practical hours; C: Credits						