Report of the Core Curriculum Committee

First (I) Semester of the Year 2024-25

1. Guidelines for Drawing Instructors and Tutors from Various Departments (As per the New Guidelines 2024 for preparation of CCC report).

Table 1:List of Core Courses and respective Departments handling them as per Committee and/or agreements between/among departments when Instructors are drawn from multiple Departments.

Course No. and Title	Departments					
	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
TA111(Engineering Graphics)	AE	AE	CE	CE	ME	ME
ESO201(Thermodynamics)	CHE	CHE	AE	CHE	CHE	ME
ESO202(Solid Mechanics)	CE	CE	ME	ME	AE	AE
ESO204(Fluid Mechanics)	ME	CHE	CHE	AE	CHE	CHE

Table 2: List of Core Courses and respective Departments handling them as per Committee when Instructors are drawn from a fixed Department

Department	Course(s)
BSBE	LIF111, ESO206
CE	ESO208, CE212
CHM	CHM111, CHM112M, CHM113M,
CSE	ESC111M, ESC112M, ESO207
DMS	DMS201
ECO	HSO201, ECO111
EE	ESC201, ESO203
ES	ESO213
HSS	HSS-1, HSS-2
ME	TA212
MSE	TA211, ESO225
MTH	MTH111M, MTH112M, MSO202M, MSO203M,MSO205
PHY	PHY111, PHY112, PHY113, PHY114, PHY115, PSO201

Table 3: List of Core Courses and Respective Departments that will provide Theory and Lab Tutors / Instructors

Course no.	Course Name	Departments That Provide Tutors / Lab Instructors
CHM111	Chemistry Lab	CHM
CHM112M	General Chemistry: Physical Chemistry	CHM
CHM113M	General Chemistry: Inorganic & Organic Chemistry	CHM
ESC111M	Fundamentals Of Computing - I	CSE
ESC112M	Fundamentals Of Computing - II	CSE
ESC201	Introduction to Electronics	EE
ESO201	Thermodynamics	CHE, ES, ME
ESO202	Mechanics of Solids	AE, CE, MSE
ESO204	Fluid Mechanics and Rate Processes	AE, CHE, ES
ESO206	Principles of Biotechnology	BSBE
ESO207	Data Structures and Algorithms	CSE
ESO208	Computational Methods in Engg.	CE
ESO213	Fundamentals of Earth Sciences	ES
ESO225	Nature and Properties of Materials	MSE
ETH111	Practical Ethics	All dept.
HSO201	Applied Probability And Statistics	CE, ECO
HSS-I	Humanities-I	HSS
HSS-II	Humanities-II	HSS
LIF111	Introduction To Biology	BSBE
MSO202M	Complex Variables	AE, EE, ME, MTH, PHY
MSO203M	Partial Differential Equations	AE, CE, EE, ME, MSE, MTH, PHY
MSO205	Introduction To Probability Theory	MTH
MTH111M	Single Variable Calculus	MTH
MTH112M	Application Of Single Variable Calculus & Several Variable Calculus	MTH
PHY111	Physics Laboratory	PHY
PHY112	Classical Dynamics	PHY
PHY113	Classical Electrodynamics	PHY
PHY114	Quantum Physics	PHY
PHY115	Oscillations And Waves	PHY
PSO201	Quantum Physics	PHY
EME-CE212	Environment And Sustainability	CE
EME-DMS201	Introduction To Management	DMS
EME-ECO111	Economy, Society & Public Policy	ECO

TA111	Engineering Graphics	AE, CE, ME,MSE
TA211	Manufacturing Processes I	MSE
TA212	Manufacturing Processes II	ME

2.Estimate of Number of Students in Core Courses in First (I) Semester during the Year 2024-25

Table 4: List of core courses and estimate of number of students

Course Group	Course No.	Course Title	L	T	P	Credit	Inst. Unit/ 90 Students	Tutorial Unit per Section	Estimated number of New Students	No. of students having fail backlogs	No. of students registered in 2023-24-I	Final estimate for 2024-25-I
First Semester IC Courses	CHM111	Chemistry Lab	0	0	3	3	1.5	1.5	600	0	600	600
	CHM112M	General Chemistry: Physical Chemistry	2	1	0	8	1.25	0.25	600	56	650	656
	CHM113M	General Chemistry: Inorganic & Organic Chemistry	2	1	0	8	1.25	0.25	600	30	630	630
	MTH111M	Single Variable Calculus	3	1	0	6	1.75	0.25	1220	140	1329	1360
	MTH112M	Application Of Single Variable Calculus & Several Variable Calculus	3	1	0	6	1.75	0.25	1220	150	1304	1370
	PHY111	Physics Laboratory	0	0	3	3	1.5	1.5	620	5	620	625
	PHY112	Classical Dynamics	3	1	0	11	3.5	0.5	368	35	368	403
	PHY113	Classical Electrodynamics	3	1	0	11	3.5	0.5	382	28	382	410
	PHY114	Quantum Physics	3	1	0	11	3.5	0.5	221	65	221	286

Course Group	Course No.	Course Title	L	T	P	Credit	Inst. Unit/ 90 Students	Tutorial Unit per Section	Estimated number of New Students	No. of students having fail backlogs	No. of students registered in 2023-24-I	Final estimate for 2024-25-I
	PHY115	Oscillations And Waves	3	1	0	11	3.5	0.5	249	19	249	268
	ESC111M	Fundamentals Of Computing - I	3	1	3	7	2.5	1	600	1	600	601
	ESC112M	Fundamentals Of Computing - II	3	1	3	7	2.5	1	600	0	600	600
	LIF111	Introduction To Biology	2	0	0	6	2		600	16	600	616
	TA111	Engineering Graphics	2	0	3	9	3.5	1.5	620	12	632	632
	ETH111	Practical Ethics	1	0	0	3	1		600	16	600	616
	ELC111/112/113	English Language & Communication							620	4	620	624
	PE111	Morning Exercise							1220	23	1220	1243
Engineering Science Options	ESO201	Thermodynamics	3	1	0	11	3.5	0.5	300	21	450	321
	ESO202	Solid Mechanics	3	1	0	11	3.5	0.5	302	13	320	315
	ESO204	Fluid Mechanics	3	1	0	11	3.5	0.5	216	74	334	290
	ESO206	Principles of Biotechnology	3	0	0	9	3		53	7	170	60
	ESO207	Data Structures and Algorithms	3	0	3	12	4.5		273	6	300	279
	ESO208	Computational Methods in Engg.	3	1	0	11	3.5	0.5	148	8	300	156
	ESO213	Fundamentals of Earth Sciences	3	0	0	9	3		43	52	260	95
	ESO225	Nature and Properties of Materials	2	1	0	8	2.5	0.5	85	6	99	91

Course Group	Course No.	Course Title	L	T	P	Credit	Inst. Unit/ 90 Students	Tutorial Unit per Section	Estimated number of New Students	No. of students having fail backlogs	No. of students registered in 2023-24-I	Final estimate for 2024-25-I
	TA211	Manufacturing Processes I	0	0	3	3	1.5	1.5	305	1	313	306
	TA212	Manufacturing Processes II	0	0	3	3	1.5	1.5	280	2	312	282
Science Options	HSO201	Applied Probability And Statistics	3	1	0	11	3.5	0.5	200	2	200	202
	MSO202M	Complex Variables	3	1	0	6	1.75	0.25	483	52	549	535
	MSO203M	Partial Differential Equations	3	1	0	6	1.75	0.25	603	70	622	673
	MSO205	Introduction To Probability Theory	3	1	0	11	3.5	0.5	100	10	149	160
Third Semester IC/SCHEME Courses	CE212	Environment and Sustainability	3	0	0	9	3		200	6	182	206
	ECO111	Economy, Society and Public Policy	3	1	0	11	3.5	0.5	200	6	228	206
	DMS201	Introduction to Management	3	0	0	9	3		200	5	189	205
	ESC201	Introduction to Electronics	3	1	3	14	5	2	602	6	639	608
	HSS-I	Humanities-I	3	1	0	11	3.5	0.5	600	50	650	650
SCHEME Course	HSS-II	Humanities-II	3	0	0	9	3		1800	100	1900	1900
Backlog Courses	MTH113M	Linear Algebra	3	1	0	6	1.75	0.25		140	08	140
	MTH114M	Ordinary Differential Equations	3	1	0	6	1.75	0.25		140	06	140

3. Department/IDP-wise Breakup of Instruction Unit and Tutorial Unit for Core Courses in First (I) Semester during the Year 2024-25

Instruction Unit () for a course with less than or equal to 90 students is defined as follows[1]:

$$IU = 1L + 0.5T + 0.5P$$

where number of 50 minutes lecture, number of 50 minutes tutorial, and number of 50 minutes practical. The number 90 is based on the IPSA model. For a course with students' strength , is defined as follows:

$$IU = \left\lceil \frac{N}{90} \right\rceil \times (1L + 0.5T + 0.5P)$$

where the smallest integer greater than or equal to . for each section of theory tutorial or laboratory instruction is defined as follows**Error! Unknown switch argument.**:

$$TU = 0.5T + 0.5P$$

where and are as defined earlier. For modular courses, the and calculated above will be multiplied by .

Table 5: Department/IDP-wise Breakup of Instruction Unit

Course No.	Course Title	Total IU	AE	BSBE	CE	CHE	CHM	CGS	CSE	DMS	DP	ECO	EE	ES	HSS	ME	MSE	MTH	PHY	SEE	SSA
CHM111	Chemistry Lab	10.5					10.5														
CHM112M	General Chemistry: Physical Chemistry	10					10														
CHM113M	General Chemistry: Inorganic & Organic Chemistry	8.75					8.75														
MTH111M	Single Variable Calculus	28																28			
MTH112M	Application Of Single Variable Calculus & Several Variable Calculus	28																28			
PHY111	Physics Laboratory	10.5																	10.5		
PHY112	Classical Dynamics	17.5																	17.5		
PHY113	Classical Electrodynamics	17.5																	17.5		

[1]The factor 0.5 for in the equation assumes equal effort from the instructor and tutor to conduct one tutorial.

Course No.	Course Title	Total IU	AE	BSBE	CE	CHE	CHM	CGS	CSE	DMS	DP	ECO	EE	ES	HSS	ME	MSE	MTH	PHY	SEE	SSA
PHY114	Quantum Physics	14																	14		
PHY115	Oscillations And Waves	10.5																	10.5		
ESC111M	Fundamentals Of Computing - I	17.5							17.5												
ESC112M	Fundamentals Of Computing - II	17.5							17.5												
LIF111	Introduction To Biology	14		14																	
TA111[2]	Engineering Graphics	28	28																		
ETH111	Practical Ethics	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1
ELC111/ 112/113	English Language & Communication	Instructor for ELC111/112/113 will be provided by the DOAA office. However, all the departments need to provide TAs to manage this course.																			
PE111	Morning Exercise	0																			
ESO201	Thermodynamics	14				14															
ESO202	Solid Mechanics	14			14																
ESO204	Fluid Mechanics	14														14					
ESO206	Principles of Biotechnology	3		3																	
ESO207	Data Structures and Algorithms	18							18												
ESO208	Computational Methods in Engg.	7			7																
ESO213	Fundamentals of Earth Sciences	6												6							

[2]Requires two instructors per semester.

Course No.	Course Title	Total IU	AE	BSBE	CE	CHE	CHM	CGS	CSE	DMS	DP	ECO	EE	ES	HSS	ME	MSE	MTH	PHY	SEE	SSA
ESO225	Nature and Properties of Materials	5															5				
TA211	Manufacturing Processes I	6															6				
TA212	Manufacturing Processes II	6														6					
HSO201	Applied Probability And Statistics	10.5										10.5									
MSO202M	Complex Variables	10.5																10.5			
MSO203M	Partial Differential Equations	14																14			
MSO205	Introduction To Probability Theory	7																7			
CE212	Environment and Sustainability	9			9																
ECO111	Economy, Society and Public Policy	10.5										10.5									
DMS201	Introduction to Management	9								9											
ESC201	Introduction to Electronics	35											35								
HSS-I	Humanities-I	28													28						
HSS-II	Humanities-II	66													66						
MTH113M	Linear Algebra	3.5																3.5			
MTH114M	Ordinary Differential Equations	3.5																3.5			
Total Instruction Unit			29	18	31	15	30.25	1	54	10	1	22	36	8	95	21	12	95.5	71	1	1
Approximate Faculty Strength			32	25	45	28	39	5	33	26	8	24	53	16	29	44	28	54	50	9	4

Course No.	Course Title	Total IU	AE	BSBE	CE	CHE	CHM	CGS	CSE	DMS	DP	ECO	EE	ES	HSS	ME	MSE	MTH	PHY	SEE	SSA
Total Instruction Unit per Faculty			**0.91**	**0.72**	**0.69**	**0.54**	**0.78**	**0.20**	**1.64**	**0.38**	**0.13**	**0.92**	**0.68**	**0.50**	**3.28**	**0.48**	**0.43**	**1.77**	**1.42**	**0.11**	**0.25**

Table 6: Department/IDP-wise Breakup of Tutor requirements

Course No.	Course Title	Total Sections	AE	BSBE	CE	CHE	CHM	CGS	CSE	DMS	DP	ECO	EE	ES	HSS	ME	MSE	MTH	PHY	SEE	SSA
CHM111	Chemistry Lab	20					20														
CHM112M	General Chemistry: Physical Chemistry	7					7														
CHM113M	General Chemistry: Inorganic & Organic Chemistry	7					7														
MTH111M	Single Variable Calculus	14																14			
MTH112M	Application Of Single Variable Calculus & Several Variable Calculus	14																14			
PHY111	Physics Laboratory	20																	20		
PHY112	Classical Dynamics	5																	5		
PHY113	Classical Electrodynamics	5																	5		
PHY114	Quantum Physics	3																	3		
PHY115	Oscillations And Waves	3																	3		
ESC111M	Fundamentals Of Computing - I	20							20												
ESC112M	Fundamentals Of Computing - II	20							20												
LIF111	Introduction To Biology																				

Course No.	Course Title	Total Sections	AE	BSBE	CE	CHE	CHM	CGS	CSE	DMS	DP	ECO	EE	ES	HSS	ME	MSE	MTH	PHY	SEE	SSA
TA111	Engineering Graphics	20	5		5											5	5				
ETH111	Practical Ethics																				
ELC111/112/113	English Language & Communication																				
PE111	Morning Exercise																				
ESO201	Thermodynamics	10				4								1		5					
ESO202	Solid Mechanics	9	2		4												3				
ESO204	Fluid Mechanics	9	4			4								1							
ESO206	Principles of Biotechnology																				
ESO207	Data Structures and Algorithms																				
ESO208	Computational Methods in Engg.	5			5																
ESO213	Fundamentals of Earth Sciences																				
ESO225	Nature and Properties of Materials	3															3				
TA211	Manufacturing Processes I	3															3				
TA212	Manufacturing Processes II	3														3					
HSO201	Applied Probability And Statistics	3			2							1									
MSO202M	Complex Variables	6	1										2			2			1		

Course No.	Course Title	Total Sections	AE	BSBE	CE	CHE	CHM	CGS	CSE	DMS	DP	ECO	EE	ES	HSS	ME	MSE	MTH	PHY	SEE	SSA
MSO203M	Partial Differential Equations	8	1		2								2			2			1		
MSO205	Introduction To Probability Theory	1																1			
CE212	Environment and Sustainability																				
ECO111	Economy, Society and Public Policy	3										3									
DMS201	Introduction to Management																				
ESC201	Introduction to Electronics	20											20								
HSS-I	Humanities-I	19													19						
HSS-II	Humanities-II																				
MTH113M	Linear Algebra	2																2			
MTH114M	Ordinary Differential Equations	2																2			

Table 7: Department/IDP-wise Breakup of Tutorial Unit

Course No.	Course Title	TotalTU	AE	BSBE	CE	CHE	CHM	CGS	CSE	DMS	DP	ECO	EE	ES	HSS	ME	MSE	MTH	PHY	SEE	SSA
CHM111	Chemistry Lab	30					30														
CHM112M	General Chemistry: Physical Chemistry	1.75					1.75														
CHM113M	General Chemistry: Inorganic & Organic Chemistry	1.75					1.75														
MTH111M	Single Variable Calculus	3.5																3.5			
MTH112M	Application Of Single Variable Calculus & Several Variable Calculus	3.5																3.5			
PHY111	Physics Laboratory	30																	30		
PHY112	Classical Dynamics	2.5																	2.5		
PHY113	Classical Electrodynamics	2.5																	2.5		
PHY114	Quantum Physics	1.5																	1.5		
PHY115	Oscillations And Waves	1.5																	1.5		
ESC111M	Fundamentals Of Computing - I	20							20												
ESC112M	Fundamentals Of Computing - II	20							20												
LIF111	Introduction To Biology																				
TA111	Engineering Graphics	30	7.5		7.5											7.5	7.5				

Course No.	Course Title	TotalTU	AE	BSBE	CE	CHE	CHM	CGS	CSE	DMS	DP	ECO	EE	ES	HSS	ME	MSE	MTH	PHY	SEE	SSA
ETH111	Practical Ethics																				
ELC111/112/113	English Language & Communication																				
PE111	Morning Exercise																				
ESO201	Thermodynamics	5				2								0.5		2.5					
ESO202	Solid Mechanics	4.5	1		2												1.5				
ESO204	Fluid Mechanics	4.5	2			2								0.5							
ESO206	Principles of Biotechnology																				
ESO207	Data Structures and Algorithms																				
ESO208	Computational Methods in Engg.	2.5			2.5																
ESO213	Fundamentals of Earth Sciences																				
ESO225	Nature and Properties of Materials	1.5															1.5				
TA211	Manufacturing Processes I	4.5															4.5				
TA212	Manufacturing Processes II	4.5														4.5					
HSO201	Applied Probability And Statistics	1.5			1							0.5									
MSO202M	Complex Variables	1.5	0.25										0.5			0.5			0.25		
MSO203M	Partial Differential Equations	2	0.25		0.5								0.5			0.5			0.25		
MSO205	Introduction To Probability Theory	0.5																0.5			
CE212	Environment and Sustainability																				

Course No.	Course Title	TotalTU	AE	BSBE	CE	CHE	CHM	CGS	CSE	DMS	DP	ECO	EE	ES	HSS	ME	MSE	MTH	PHY	SEE	SSA
ECO111	Economy, Society and Public Policy	1.5										1.5									
DMS201	Introduction to Management																				
ESC201	Introduction to Electronics	40											40								
HSS-I	Humanities-I	9.5													9.5						
HSS-II	Humanities-II																				
MTH113M	Linear Algebra	0.5																0.5			
MTH114M	Ordinary Differential Equations	0.5																0.5			
Total Tutorial Unit			11.0	0	13.5	4	33.5	0	40	0	0	2	41	1.0	9.5	15.5	15	8.5	38.5	0	0
Approximate Faculty Strength			32	25	45	28	39	5	33	26	8	24	53	16	29	44	28	54	50	9	4
Total Tutorial Unit per Faculty			**0.34**	**0.00**	**0.30**	**0.14**	**0.86**	**0.00**	**1.21**	**0.00**	**0.00**	**0.08**	**0.77**	**0.06**	**0.33**	**0.35**	**0.54**	**0.16**	**0.77**	**0.00**	**0.00**

Appendix

Important Information Regarding Individual Section Sizes for Various Courses and Work Load

1. Tutorial section sizes have been fixed based on last year's CCC data/report and with inputs from respective HODs.
2. One tutor will be assigned per section (normally 30 students) for PHY111 and CHM111 laboratory sessions.
3. One tutor will be assigned per day (i.e., per four sections, i.e., ~ 120 students) for TA211 and TA212 labs.
4. Tutors assigned for ESC111M, ESC111M and ESC201 tutorials will also take care of the laboratory sessions of the same sections.
5. Increasing the number of sections in any course is undesirable.
6. The student number in each section may be increased slightly, i.e., up to 40 in sections normally having 35 students and up to 110 in sections normally having 100 students to prevent an increase in the number of sections.
7. The total registration in some courses has to be restricted considering seating capacity of the lecture hall assigned for the course.
8. The number of sections in some ESO/SO courses may be reduced in certain cases after registration, in case the number of students registered is less than expected.
9. ELC111/ELC112/ELC113 will be managed by DOAA but TAs will be provided by all the departments.

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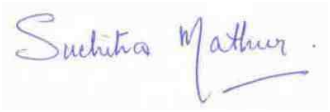
Core Curriculum Committee Members

Dr. Niraj Sinha

Dr. Onkar Dikshit

Dr. Arnab Samanta



Dr. Suchitra Mathur

(Convener)