COURSE STRUCTURE - MECHANICAL ENGINEERING

NUCLEAR ENGINEERING (FOUNDATION COURSES)

S.No.	Subject Title	Course Code	Hours	Credits	Marks
1	Accelerator Physics and Technology	EN501	40	4	150
2	Engineering Mathematics	EN502-505	30	4	125
3	Health Physics and Rad & Indl Safety	EN506	20	2	75
4	Nuclear Fuel Cycle Technology	EN508	35	4	150
5	NPP & Advanced Reactor Concepts	EN509	40	4	150
6	Reactor Physics and Engineering	EN510	55	6	225
	Foundation Total		**220**	**24**	**875**

CORE ENGINEERING (MECHANICAL)

S.No.	Subject Title	Course Code	Hours	Credits	Marks
1	Code design for PVP	EN610	60	6	250
2	Computational fluid Dynamics and Heat Transfer	EN611	50	6	200
3	Finite Element Method	EN621	30	4	125
4	Fracture Mechanics	EN622	40	4	150
5	Mechanics of Solids	EN624	40	4	150
	Core Total		**220**	**24**	**875**

ELECTIVES (MECHANICAL)- Any 3 Courses- 9 Credits

S.No.	Subject Title	Course Code	Hours	Credits	Marks
1	Advanced Computational Techniques	EN701	30	4	125
2	Fluid Power Technology	EN709	25	2	100
3	Machine Design	EN711	25	2	100
4	Material Science in Nuclear Engineering	EN712	25	2	100
5	Multi-scale material modelling	EN715	30	4	125
6	Nuclear Emergencies	EN716	35	4	150
7	Reliability Engineering	EN718	25	2	100
8	Vibration	EN721	25	2	100
	ELECTIVES TOTAL (APPROX)		**90**	**6-12**	**350**

THEORY TOTAL	**530**	**54-60**	**2100**	

NON-SUBJECT ASSIGNMENTS

S.No.	Subject Title	Course Code	Credits	Marks
1	VivaVoce–I& VivaVoce-II	EN591	2	200
2	Practicals	EN592	1	100
3	MiniProject	EN593	9	300
	TOTAL		**12**	**600**

M.TECH. THESIS WORK (SECOND YEAR)

1	Thesis Work	Dissertation	**32**

Total Contact Hrs: 530; Total Credits: 98-104; Total Marks: 2700

Note: Credit Requirement for M.Tech: 92 (60+32)
Credit Requirement for Non Trg Sch M.Sc.(Engg): 60

COURSE STRUCTURE - CHEMICAL ENGINEERING

NUCLEAR ENGINEERING (FOUNDATION COURSES)

S.No.	Subject Title	Course Code	Hours	Credits	Marks
1	Accelerator Physics and Technology	EN501	40	4	150
2	Engineering Mathematics	EN502-505	30	4	125
3	Health Physics and Rad & Indl Safety	EN506	20	2	75
4	Nuclear Fuel Cycle Technology	EN508	35	4	150
5	NPP & Advanced Reactor Concepts	EN509	40	4	150
6	Reactor Physics and Engineering	EN510	55	6	225
	Foundation Total		**220**	**24**	**875**

CORE ENGINEERING (CHEMICAL)

S.No.	Subject Title	Course Code	Hours	Credits	Marks
1	Advanced Chemical Reaction Engineering	EN601	25	2	100
2	Advanced Mass Transfer	EN604	25	2	100
3	Code design for PVP	EN610	30	4	125
4	Computational Fluid Dynamics and Heat Transfer	EN611	50	6	200
5	Nuclear Chemical Engineering	EN628	35	4	150
6	Process Dynamics and Control	EN634	45	6	200
7	Process Modeling, Simulation and Optimization	EN635	45	6	200
	CORE TOTAL		**225**	**30**	**950**

ELECTIVES (CHEMICAL) – Any 3 Courses - 9 CREDITS

S.No.	Subject Title	Course Code	Hours	Credits	Marks
1	Advanced Computational Techniques	EN701	30	4	125
2	Fluid Power Technology	EN709	25	2	100
3	Material Science in Nuclear Engineering	EN712	20	2	75
4	Membrane Technology	EN714	35	4	150
	ELECTIVES TOTAL (APPROX)		**90**	**8-10**	**350**

THEORY TOTAL	**535**	**62-64**	**2175**

NON-SUBJECT ASSIGNMENTS

S.No.	Subject Title	Course Code	Credits	Marks
1	VivaVoce–I& VivaVoce-II	EN591	2	200
2	Practicals	EN592	1	100
3	MiniProject	EN593	9	300
	TOTAL		**12**	**600**

M.TECH. THESIS WORK (SECOND YEAR)

1	Thesis Work	Dissertation	**32**

Total Contact Hrs: 535; Total Credits: 106-108; Total Marks: 2775

Note: Credit Requirement for M.Tech: 92 (60+32)
Credit Requirement for Non Trg Sch M.Sc.(Engg): 60

COURSE STRUCTURE - METALLURGY

NUCLEAR ENGINEERING (FOUNDATION COURSES)

S.No.	Subject Title	Course Code	Hours	Credits	Marks
1	Accelerator Physics and Technology	EN501	40	4	150
2	Engineering Mathematics	EN502-505	30	4	125
3	Health Physics and Rad & Indl Safety	EN506	20	2	75
4	Nuclear Fuel Cycle Technology	EN508	35	4	150
5	NPP & Advanced Reactor Concepts	EN509	40	4	150
6	Reactor Physics and Engineering	EN510	55	6	225
	Foundation Total		**220**	**24**	**875**

CORE ENGINEERING (METALLURGY)

S.No.	Subject Title	Course Code	Hours	Credits	Marks
1	Corrosion	EN615	15	2	75
2	Extractive Metallurgy	EN620	40	4	150
3	Mechanical Metallurgy	EN623	30	4	125
4	Nuclear Materials	EN628	50	6	200
5	Nuclear Metallurgy	EN629	30	4	125
6	Physical Metallurgy	EN630	40	4	150
7	Process Control & Instrumentation	EN631	25	2	100
	CORE TOTAL		**230**	**26**	**925**

ELECTIVES (METALLURGY) Any 3 Courses- 9 Credits

S.No.	Subject Title		Hours	Credits	Marks
1	Advanced Computational Techniques	EN701	30	4	125
2	Digital Signal Processing & Image Processing	EN706	30	4	125
3	Image processing and Machine Vision	EN710	30	4	125
4	Materials Characterization	EN713	20	2	75
5	Multi scale Material Modeling	EN715	30	4	125
6	Nuclear Chemical Engineering	EN628	35	4	150
7	Nuclear Emergencies	EN716	35	4	150
8	Welding Science & Technology	EN723	25	2	100
	ELECTIVES TOTAL (APPROX)		**90**	**8-12**	**350**

THEORY TOTAL	**540**	**58-62**	**2150**

NON-SUBJECT ASSIGNMENTS

S.No.	Subject Title	Course Code	Credits	Marks
1	VivaVoce–I& VivaVoce-II	EN591	2	200
2	Practicals	EN592	1	100
3	MiniProject	EN593	9	300
	TOTAL		**12**	**600**

M.TECH. THESIS WORK (SECOND YEAR)

1	Thesis Work	Dissertation	**32**

Total Contact Hrs: 540; Total Credits: 102-106; Total Marks: 2750

Note: Credit Requirement for M.Tech: 92 (60+32)
Credit Requirement for Non Trg Sch M.Sc.(Engg): 60(through course work and two viva)

COURSE STRUCTURE - CIVIL ENGINEERING

NUCLEAR ENGINEERING (FOUNDATION COURSES)

S.No.	Subject Title	Course Code	Hours	Credits	Marks
1	Accelerator Physics and Technology	EN501	40	4	150
2	Engineering Mathematics	EN502-505	30	4	125
3	Health Physics and Rad & Indl Safety	EN506	20	2	75
4	Nuclear Fuel Cycle Technology	EN508	35	4	150
5	NPP & Advanced Reactor Concepts	EN509	40	4	150
6	Reactor Physics and Engineering	EN510	55	6	225
	Foundation Total		**220**	**24**	**875**

CORE ENGINEERING (CIVIL)

S.No.	Subject Title	Course Code	Hours	Credits	Marks
1	Civil Engg Design of Concrete & Steel Strct I	EN608.1	30	4	125
2	Civil Engg Design of Concrete & Steel Strct II	EN608.2	30	4	125
3	Design Basis Hazards & Geotechnical Engg	EN621	40	4	150
4	Earthquake Engineeing & Structural Dyanmics	EN609	45	6	200
5	Finite Element Method	EN626	30	4	125
6	Mechanics of Solids	EN624	40	4	150
	Core Total		**215**	**26**	**875**

ELECTIVES (CIVIL)- Any 3 Courses- 9 Credits

S.No.	Subject Title	Course Code	Hours	Credits	Marks
1	Advanced Struct Dynamics & Earthquake Engg	EN724	30	4	100
2	Construction Materials, Management & Quality	EN614	30	4	100
3	Safety & Reliability of Civil Engineering	EN722	25	2	100
4	Project Management	EN717	25	2	100
	ELECTIVES TOTAL (APPROX)		**80**	**8-10**	**300**

THEORY TOTAL	**515**	**58-60**	**2100**

NON-SUBJECT ASSIGNMENTS

S.No.	Subject Title	Course Code	Credits	Marks
1	VivaVoce–I & VivaVoce-II	EN591	2	200
2	Practicals	EN592	1	100
3	MiniProject	EN593	9	300
	TOTAL		**12**	**600**

M.TECH. THESIS WORK (SECOND YEAR)

1	Thesis Work	Dissertation	**32**

Total Contact Hrs: 520; Total Credits: 102-104; Total Marks: 2600

Note: Credit Requirement for M.Tech: 92 (60+32)
Credit Requirement for Non Trg Sch M.Sc.(Engg): 60

COURSE STRUCTURE - ELECTRICAL ENGINEERING

NUCLEAR ENGINEERING (FOUNDATION COURSES)

S.No.	Subject Title	Course Code	Hours	Credits	Marks
1	Accelerator Physics and Technology	EN501	40	4	150
2	Engineering Mathematics	EN502-505	30	4	125
3	Health Physics and Rad & Indl Safety	EN506	20	2	75
4	Material Science in Nuclear Engineering (EE)	EN508	20	2	75
5	Nuclear Fuel Cycle Technology	EN509	35	4	150
6	NPP & Advanced Reactor Concepts	EN510	40	4	150
7	Reactor Physics and Engineering	EN501	55	6	225
	FOUNDATION TOTAL		**240**	**26**	**950**

CORE ENGINEERING (ELECRICAL)

S.No.	Subject Title	Course Code	Hours	Credits	Marks
1	Advanced Electrical Engg. Design I	EN602	20	2	75
2	Computer Based System Design I	EN612	25	2	100
3	Electrical Systems for Nuclear Power Plants	EN618	30	4	125
4	Modern Control Systems Design and Simulation	EN625	35	4	150
5	Process Control & Instrumentation	EN633	30	4	125
6	Reactor Control Engineering and Instrumentation	EN637-8	35	4	150
7	Reliability Engineering	EN639	20	2	75
	CORE TOTAL		**195**	**22**	**800**

ELECTIVES (ELECTRICAL) Any 3 Courses- 9 Credits

S.No.	Subject Title	Course Code	Hours	Credits	Marks
1	Advanced Electrical Engg. Design II	EN702	25	2	100
2	Artificial Intelligence and its Applications	EN703	30	4	125
3	Computer Based System Design II	EN704	25	2	100
4	Digital Signal Processing & Image Processing	EN706	30	4	125
5	Image Processing & Machine Vision	EN710	30	4	125
6	Signal Conditioning, Recovery and EMI Aspects	EN719	25	2	100
7	Software Engineering	EN720	25	2	100
	ELECTIVES TOTAL (APPROX)		**90**	**6-12**	**350**

THEORY TOTAL	**525**	**54-60**	**2100**

NON-SUBJECT ASSIGNMENTS

S.No.	Subject Title	Course Code	Credits	Marks
1	VivaVoce–I & VivaVoce-II	EN591	2	200
2	Practicals	EN592	1	100
3	MiniProject	EN593	9	300
	TOTAL		**12**	**600**

M.TECH. THESIS WORK (SECOND YEAR)

1	Thesis Work	Dissertation	**32**

Total Contact Hrs: 525; Total Credits: 98-104; Total Marks: 2700

Note: Credit Requirement for M.Tech: 92 (60+32)
Credit Requirement for Non Trg Sch M.Sc.(Engg): 60(through course work and two viva)

COURSE STRUCTURE - ELECTRONICS ENGINEERING

NUCLEAR ENGINEERING (FOUNDATION COURSES)

S.No.	Subject Title	Course Code	Hours	Credits	Marks
1	Accelerator Physics and Technology	EN501	40	4	150
2	Engineering Mathematics	EN502-505	30	4	125
3	Health Physics and Rad & Indl Safety	EN506	20	2	75
4	Material Science in Nuclear Engineering (EE)	EN508	20	2	75
5	Nuclear Fuel Cycle Technology	EN509	35	4	150
6	NPP & Advanced Reactor Concepts	EN510	40	4	150
7	Reactor Physics and Engineering	EN501	55	6	225
	FOUNDATION TOTAL		**240**	**26**	**950**

CORE ENGINEERING (ELECTRONICS)

S.No.	Subject Title	Course Code	Hours	Credits	Marks
1	Advanced Electronic Circuit Design Techniques	EN603	30	4	125
2	Advanced Nuclear Instrumentation	EN605	40	4	150
3	Embedded & Computer Based Sys. Design	EN619	45	6	200
4	Modern Control Systems Design and Simulation	EN625	35	4	150
5	Process Control & Instrumentation	EN633	30	4	125
6	Reactor Control Engineering and Instrumentation	EN637-8	35	4	150
7	Reliability Engineering	EN639	20	2	75
	CORE TOTAL		**200**	**28**	**825**

ELECTIVES (ELECTRONICS) Any 3 Courses— 9 Credits

S.No.	Subject Title	Course Code	Hours	Credits	Marks
1	Artificial Intelligence & Applications	EN703	30	4	100
2	Digital Signal Processing & Image Processing	EN706	30	4	125
3	Embedded Electronics Software	EN707	25	2	100
4	Image Processing & Machine Vision	EN710	30	4	125
5	Signal Conditioning, Recovery and EMI Aspects	EN719	25	2	100
6	Software Engineering	EN720	25	2	100
	ELECTIVES TOTAL (APPROX)		**90**	**6-12**	**350**

THEORY TOTAL	**530**	**60-66**	**2125**

NON-SUBJECT ASSIGNMENTS

S.No.	Subject Title	Course Code	Credits	Marks
1	VivaVoce–I & VivaVoce-II	EN591	2	200
2	Practicals	EN592	1	100
3	MiniProject	EN593	9	300
	TOTAL		**12**	**600**

M.TECH. THESIS WORK (SECOND YEAR)

1	Thesis Work	Dissertation	**32**

Total Contact Hrs: 530; Total Credits: 104-110; Total Marks: 2725

Note: Credit Requirement for M.Tech: 92 (60+32)
Credit Requirement for Non Trg Sch M.Sc.(Engg): 60 (through course work and two viva)

COURSE STRUCTURE - INSTRUMENTATION ENGINEERING

NUCLEAR ENGINEERING (FOUNDATION COURSES)

S.No.	Subject Title	Course Code	Hours	Credits	Marks
1	Accelerator Physics and Technology	EN501	40	4	150
2	Engineering Mathematics	EN502-505	30	4	125
3	Health Physics and Rad & Indl Safety	EN506	20	2	75
4	Material Science in Nuclear Engineering (EE)	EN508	20	2	75
5	Nuclear Fuel Cycle Technology	EN509	35	4	150
6	NPP & Advanced Reactor Concepts	EN510	40	4	150
7	Reactor Physics and Engineering	EN501	55	6	225
	FOUNDATION TOTAL		**240**	**26**	**950**

CORE ENGINEERING (INSTRUMENTATION)

S.No.	Subject Title	Course Code	Hours	Credits	Marks
1	Applied Process Instrumentation	EN607	40	4	150
2	Computer Based System Design I	EN612	25	2	100
3	Modern Control Systems Design and Simulation	EN625	35	4	150
4	Reactor C&I and Human Machine Interface	EN636	40	4	150
5	Reactor Control Engineering and Instrumentation	EN637-8	35	4	150
6	Reliability Engineering	EN639	20	2	75
	CORE TOTAL	EN639	**20**	**775**	

ELECTIVES (INSTRUMENTATION) Any 3 Courses-- 9 Credits

S.No.	Subject Title	Course Code	Hours	Credits	Marks
1	Artificial Intelligence & Applications	EN703	30	4	125
2	Computer Based System Design II	EN706	25	2	100
3	Digital Signal Processing & Image Processing	EN707	30	4	125
4	Image Processing & Machine Vision	EN710	30	4	125
5	Signal Conditioning, Recovery and EMI Aspects	EN719	25	2	100
6	Software Engineering	EN720	25	2	100
	ELECTIVES TOTAL (APPROX)		**90**	**8-12**	**350**

THEORY TOTAL	**525**	**54-58**	**2075**	

NON-SUBJECT ASSIGNMENTS

S.No.	Subject Title	Course Code	Credits	Marks
1	VivaVoce–I & VivaVoce-II	EN591	2	200
2	Practicals	EN592	1	100
3	MiniProject	EN593	9	300
	TOTAL		**12**	**600**

M.TECH. THESIS WORK (SECOND YEAR)

1	Thesis Work	Dissertation	**32**

Total Contact Hrs: 525; Total Credits: 98-102; Total Marks: 2675

Note: Credit Requirement for M.Tech: 92 (60+32)
Credit Requirement for Non Trg Sch M.Sc.(Engg): 60 (through course work and two viva)

COURSE STRUCTURE - COMPUTER SCIENCE

NUCLEAR ENGINEERING (FOUNDATION COURSES)

S.No.	Subject Title	Course Code	Hours	Credits	Marks
1	Accelerator Physics and Technology	EN501	40	4	150
2	Engineering Mathematics	EN502-505	30	4	125
3	Health Physics and Rad & Indl Safety	EN506	20	2	75
4	Material Science in Nuclear Engineering (EE)	EN508	20	2	75
5	Nuclear Fuel Cycle Technology	EN509	35	4	150
6	NPP & Advanced Reactor Concepts	EN510	40	4	150
7	Reactor Physics and Engineering	EN501	55	6	225
	FOUNDATION TOTAL		**240**	**26**	**950**

CORE ENGINEERING (COMPUTER SCIENCE AND ENGINEERING)

S.No.	Subject Title	Course Code	Hours	Credits	Marks
1	Advanced Operating Systems	EN606	25	2	100
2	Computer Graphics & Visualisation	EN613	35	4	150
3	Distributed Computing	EN616	45	6	200
4	Networking & Information Security	EN6627	40	4	150
5	Reactor Control Engineering	EN637	15	2	75
6	Software Engineering and Formal Methods	EN640	40	4	150
	CORE TOTAL		**200**	**22**	**825**

ELECTIVES (COMP. SCIENCE AND ENGINEERING) Any 3 Courses— 9 Credits

S.No.	Subject Title	Course Code	Hours	Credits	Marks
1	Artificial Intelligence & Applications	EN703	30	4	100
2	Data Base Management System & Web Technology	EN705	30	4	100
3	Digital Signal Processing & Image Processing	EN706	30	4	125
4	Embedded Electronics Software	EN707	25	2	100
5	Feedback Control System	EN708	25	2	100
6	Image Processing & Machine Vision	EN710	30	4	125
	3 ELECTIVES TOTAL (APPROX)		**90**	**6-12**	**350**

THEORY TOTAL	**530**	**54-60**	**2125**

NON-SUBJECT ASSIGNMENTS

S.No.	Subject Title	Course Code	Credits	Marks
1	VivaVoce–I & VivaVoce-II	EN591	2	200
2	Practicals	EN592	1	100
3	MiniProject	EN593	9	300
	TOTAL		**12**	**600**

M.TECH. THESIS WORK (SECOND YEAR)

1	Thesis Work	Dissertation	**32**

Total Contact Hrs: 530; Total Credits: 98-104; Total Marks: 2725

Note: Credit Requirement for M.Tech: 92 (60+32)
Credit Requirement for Non Trg Sch M.Sc.(Engg): 60 (through course work and two viva)