

School of Science
Department of Physics
NEP 2020 - Course Structure

Programme Name: B.Sc. Nanoscience and Nanotechnology
Level 4.5 (Semester – I)

Batch: AY 25-26 onwards

Sr. No.	Core	Course Code	Course Name	Teaching Scheme (Hrs./Week)				Examination Scheme				Total Marks
				L	T	P	C	Formative Assessment CIA		Summative Assessment ESE		
								Course	Lab	Course	Lab	
MAJOR(MANDATORY + ELECTIVES)												
1	Major	NYNT101	Introduction to Nanoscience	3	-	-	3	50	-	100	-	100
2	Major	NYNT102	Physico-Chemical aspects of Nanoscience and Nanotechnology	3	-	-	3	50	-	100	-	100
MINOR: NA												
NA												
Open Electives(OE)*												
3	Mandatory		Open Elective – I	4	-	-	4	50	-	100	-	100
Vocational and Skill Enhancement (VSEC)												
4	VSC	NYNT111	Nanoscience Fundamentals Laboratory	-	-	4	2	-	50	-	50	100
5	SEC	NYNT112	Physico-Chemical Characterization Laboratory	-	-	4	2	-	50	-	50	100
Ability/Value Education Courses/ Indian Knowledge System(AEC/VEC/IKS)*												
6	AEC		Ability Enhancement Courses – I	-	-	4	2	-	50	-	50	100
7	VEC		Value Education Courses- I	-	-	4	2	-	50	-	50	100
8	IKS		Indian Knowledge System	-	-	4	2	-	50	-	50	100
OJT/FP/CEP/CC/RP												
9	CC		Co-Curricular Course II	-	-	4	2	-	50	-	50	100
TOTAL				12	-	20	22	150	300	300	300	900

CIA: Continuous Internal Assessment ESE: End Semester Theory Exam. L: Theory Lecture, T: Tutorial, P: Practical	OJT – On Job Training FP – Field Project CEP – Community Engagement Project CC – Curricular Course RP – Research Project * - Refer University Notification	CIA	Weightage	Description
		CIA 1	10%	Home Assignment
		CIA 2	20%	Mid-Term Exam (MTE)
		CIA 3	10%	Activity/Project and research based learning along with seminar presentation
		CIA 4	10%	Behavioural Attitude +General Discipline Theory +Practical attendance
		CIA TOTAL	50%	
Written Examination – End Semester Exam (ESE)		50%		
		TOTAL	100%	

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NEP 2020 - Course Structure

**Programme Name: B.Sc. Nanoscience and Nanotechnology
Level 4.5 (Semester – II)**

For the Batch: AY 25-26 onwards

Sr. No.	Core	Course Code	Course Name	Teaching Scheme (Hrs./Week)				Examination Scheme				Total Marks
				L	T	P	C	Formative Assessment CIA		Summative Assessment ESE		
								Course	Lab	Course	Lab	
MAJOR(MANDATORY + ELECTIVES)												
1	Major	NYNT201	Material Science	3	-	-	3	50	-	100	-	100
2	Major	NYNT202	Properties of Nanomaterials	3	-	-	3	50	-	100	-	100
MINOR												
3	Minor		Minor I	2	-	-	2	50	-	100	-	100
Open Electives(OE)*												
4	Mandatory		Open Elective – II	4	-	-	4	50	-	100	-	100
Vocational and Skill Enhancement (VSEC)												
5	SEC	NYNT211	Material Science Laboratory	-	-	4	2	-	50	-	50	100
6	VSC	NYNT212	Nanomaterials Property Characterization Laboratory	-	-	4	2	-	50	-	50	100
Ability/Value Education Courses/ Indian Knowledge System(AEC/VEC/IKS)*												
7	AEC		Ability Enhancement Courses – II	-	-	4	2	-	50	-	50	100
8	VEC		Value Education Courses- II	-	-	4	2	-	50	-	50	100
OJT/FP/CEP/CC/RP												
9	CC		Co-Curricular Course II	-	-	4	2	-	50	-	50	100
TOTAL				12	-	20	22	200	250	400	250	900

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		CIA 1	10%	Home Assignment
		CIA 2	20%	Mid-Term Exam (MTE)
		CIA 3	10%	Activity/Project and research based learning along with seminar presentation
		CIA 4	10%	Behavioural Attitude +General Discipline Theory +Practical attendance
		CIA TOTAL	50%	
		Written Examination – End Semester Exam (ESE)		50%
		TOTAL	100%	

Exit option: Award of UG Certificate with 44 Credits.

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NEP 2020 - Course Structure

Programme Name: B.Sc. Nanoscience and Nanotechnology
Level 5.0 (Semester – III)

For the Batch: AY 25-26 onwards

Sr. No.	Core	Course Code	Course Name	Teaching Scheme (Hrs./Week)				Examination Scheme				Total Marks
				L	T	P	C	Formative Assessment CIA		Summative Assessment ESE		
								Course	Lab	Course	Lab	
MAJOR (MANDATORY + ELECTIVES)												
1	Major	NYNT301	Physical Techniques for synthesis of Nanomaterials	4	-	-	4	50	--	100	--	100
2	Major	NYNT302	Advanced Techniques for Characterization of Nanomaterials	4	-	-	4	50	--	100	--	100
MINOR												
3	Minor		Minor II	4	--		4	50	--	100	--	100
Open Electives (OE)*												
4	Mandatory		Open Elective - III	2	--		2	50	--	100	--	100
Vocational Skill Course (VSC)												
5	VSC	NYNT311	Characterization Techniques Laboratory	--	--	4	2	--	50	--	50	100
Ability/Value Education Courses/ Indian Knowledge System(AEC/VEC/IKS)*												
6	AEC		Ability Enhancement Courses - III	--	--	4	2	--	50	--	50	100
OJT/FP/CEP/CC/RP												
7	FP	NYNT312	Field Project	--	--	4	2	--	50	--	50	100
8	CC		Co – curricular course III	--	--	4	2	--	50	--	50	100
TOTAL				14	-	16	22	200	200	400	200	800

CIA: Continuous Internal Assessment ESE: End Semester Theory Exam. L: Theory Lecture, T: Tutorial, P: Practical	OJT – On Job Training FP – Field Project CEP – Community Engagement Project CC – Curricular Course RP – Research Project * - Refer University Notification	CIA	Weightage	Description
		CIA 1	10%	Home Assignment
		CIA 2	20%	Mid-Term Exam (MTE)
		CIA 3	10%	Activity/Project and research based learning along with seminar presentation
		CIA 4	10%	Behavioural Attitude +General Discipline Theory +Practical attendance
		CIA TOTAL	50%	
		Written Examination – End Semester Exam (ESE)		
TOTAL		100%		

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NEP 2020 - Course Structure

Programme Name: B.Sc. Nanoscience and Nanotechnology
Level 5.0 (Semester – IV)

For the Batch: AY 25-26 onwards

Sr. No.	Core	Course Code	Course Name	Teaching Scheme (Hrs./Week)				Examination Scheme				Total Marks
				L	T	P	C	Formative Assessment CIA		Summative Assessment ESE		
								Course	Lab	Course	Lab	
MAJOR (MANDATORY + ELECTIVES)												
1	Major	NYNT401	Organic and polymer science of nanomaterials	4	-	-	4	50	--	100	--	100
2	Major	NYNT402	Polymer and Composites	4	-	-	4	50	--	100	--	100
MINOR												
3	Minor		Minor III	4	--		4	50	--	100	--	100
Open Electives (OE)*												
4	Mandatory		Open Elective – IV	2	--		2	50	--	100	--	100
Skill Enhancement Course (SEC)												
5	SEC	NYNT411	Computer Simulations in Nanoscience	--	--	4	2	--	50	--	50	100
Ability/Value Education Courses/ Indian Knowledge System (AEC/VEC/IKS)*												
6	AEC		Ability Enhancement Courses – IV	--	--	4	2	--	50	--	50	100
OJT/FP/CEP/CC/RP												
7	CEP	NYNT412	Community Engagement Project	--	--	4	2	--	50	--	50	100
8	CC		Co – curricular course IV	--	--	4	2	--	50	--	50	100
TOTAL				14	-	16	22	200	200	400	200	800

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		CIA 1	10%	Home Assignment
		CIA 2	20%	Mid-Term Exam (MTE)
		CIA 3	10%	Activity/Project and research based learning along with seminar presentation
		CIA 4	10%	Behavioural Attitude +General Discipline Theory +Practical attendance
		CIA TOTAL	50%	
		Written Examination – End Semester Exam (ESE)		50%
		TOTAL	100%	

Exit option: Award of UG Diploma with 88 Credits.

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NEP 2020 - Course Structure

Programme Name: B.Sc. Nanoscience and Nanotechnology
Level 5.5 (Semester – V)

For the Batch: AY 25-26 onwards

Sr. No.	Core	Course Code	Course Name	Teaching Scheme (Hrs./Week)				Examination Scheme				Total Marks
				L	T	P	C	Formative Assessment CIA		Summative Assessment ESE		
								Course	Lab	Course	Lab	
MAJOR (MANDATORY + ELECTIVES)												
1	Major	NYNT501	Nanophysics	4	-	-	4	50	--	100	--	100
2	Major	NYNT502	Nanobiotechnology	4	-	-	4	50	--	100	--	100
3	Major	NYNT511	Thin Film Deposition and Analysis Lab	-	-	4	2	--	50	--	50	100
Major Elective– I												
4	Major	NYNTE--	Major Elective – I	4	-	-	4	50	-	100	-	100
Minor												
5	Minor		Minor IV	4	--		4	50	--	100	--	100
Vocational Skill Courses (VSC)												
6	VSC	NYNT512	Basic Nanofabrication and Cleanroom Practices	-	-	4	2	--	50	--	50	100
Ability Enhancement Course (AEC)												
7	AEC	NYNT513	AEC-V	-	-	4	2		50		50	100
FP/CEP												
8	FP / CEP	NYNT514	Filed Project /Community Engagement Project	--	--	4	2	--	50	--	50	100
TOTAL				16	-	16	24	200	200	400	200	800

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		CIA 1	10%	Home Assignment
		CIA 2	20%	Mid-Term Exam (MTE)
		CIA 3	10%	Activity/Project and research based learning along with seminar presentation
		CIA 4	10%	Behavioural Attitude +General Discipline Theory +Practical attendance
		CIA TOTAL	50%	
		Written Examination – End Semester Exam (ESE)		50%
		TOTAL	100%	

Course Code	Major Elective I
NYNTE01	Surface and Interface Science
NYNTE02	Green Nanotechnology
NYNTE03	Thin Film Technology

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Programme Name: B.Sc. Nanoscience and Nanotechnology
Level 5.5 (Semester – VI)

For the Batch: AY 25-26 onwards

Sr. No.	Core	Course Code	Course Name	Teaching Scheme (Hrs./Week)				Examination Scheme				Total Marks
				L	T	P	C	Formative Assessment CIA		Summative Assessment ESE		
								Course	Lab	Course	Lab	
MAJOR (MANDATORY + ELECTIVES)												
1	Major	NYNT601	Functional Nanomaterials	4	-	-	4	50	--	100	--	100
2	Major	NYNT602	Application of Nanotechnology	4	-	-	4	50	--	100	--	100
3	Major	NYNT611	Nanoelectronics & Optical Lab	-	-	4	2	--	50	--	50	100
Major Elective – II												
4	Major	NYNTE--	Major Elective – II	4	-	-	4	50	-	100	-	100
Minor												
5	Minor		Minor VI	4	--		4	50	--	100	--	100
Ability Enhancement Course (AEC)												
6	AEC	NYNT612	AEC-IV	--	--	4	2	--	50	--	50	100
OJT												
7	OJT	NYNT613	On Job Training	--	--	8	4	--	50	--	50	100
TOTAL				16	-	16	24	200	150	400	150	700

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		CIA 1	10%	Home Assignment
		CIA 2	20%	Mid-Term Exam (MTE)
		CIA 3	10%	Activity/Project and research based learning along with seminar presentation
		CIA 4	10%	Behavioural Attitude +General Discipline Theory +Practical attendance
		CIA TOTAL	50%	
		Written Examination – End Semester Exam (ESE)		
TOTAL		100%		

Course Code	Major Elective II
NYNTE04	Nanocatalysis
NYNTE05	Energy Materials and Applications
NYNTE06	Nanophotonics and Plasmonics

Exit option: Award of UG Degree with 132 Credits.

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Programme Name: B.Sc. Nanoscience and Nanotechnology
Level 6.0 (Semester – VII)

(UG Honours)
For the Batch: AY 25-26 onwards

Sr · No ·	Core	Course Code	Course Name	Teaching Scheme (Hrs./Week)				Examination Scheme				Total Marks
				L	T	P	C	Formative Assessment CIA		Summative Assessment ESE		
								Course	Lab	Course	Lab	
MAJOR (MANDATORY + ELECTIVES)												
1	Major	NYNT701	Advanced Nanomaterials (2D Materials, Carbon-based)	4	-	-	4	50	--	100	--	100
2	Major	NYNT702	Computational Nanoscience	4	-	-	4	50	--	100	--	100
3	Major	NYNT703	Micro and Nano Electro-Mechanical Systems	4			4	50	--	100	--	100
4	Major	NYNT711	Nanoscience and Nanotechnology Laboratory I	-	-	4	2		50		50	100-
Major Elective – III												
5	Major	NYNTE--	Major Elective – III	4	-	-	4	50	-	100	-	100
Minor												
6	Minor	17RDP101	Research Methodology	4	--		4	50	--	100	--	100
TOTAL				20	-	4	22	250	50	500	50	600

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		CIA 1	10%	Home Assignment
		CIA 2	20%	Mid-Term Exam (MTE)
		CIA 3	10%	Activity/Project and research based learning along with seminar presentation
		CIA 4	10%	Behavioural Attitude +General Discipline Theory +Practical attendance
		CIA TOTAL	50%	
		Written Examination – End Semester Exam (ESE)		50%
		TOTAL	100%	

Course Code	Major Elective III
NYNTE07	Nanomedicine and Therapeutics
NYNTE08	Photonic Crystals and Metamaterials
NYNTE09	Environmental Nanotechnology

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Department of Physics
NEP 2020 - Course Structure

Programme Name: B.Sc. Nanoscience and Nanotechnology
Level 6.0 (Semester – VIII)

(UG Honours)
For the Batch: AY 25-26 onwards

Sr. No.	Core	Course Code	Course Name	Teaching Scheme (Hrs./Week)				Examination Scheme				Total Marks
				L	T	P	C	Formative Assessment CIA		Summative Assessment ESE		
								Course	Lab	Course	Lab	
MAJOR (MANDATORY + ELECTIVES)												
1	Major	NYNT801	Nanoelectronics and Spintronics	4	-	-	4	50	--	100	--	100
2	Major	NYNT802	Smart Materials and Devices	4	-	-	4	50	--	100	--	100
3	Major	NYNT803	Nanotoxicology and Environmental Safety	4	-		4	50	--	100	--	100
4	Major	NYNT811	Nanoscience and Nanotechnology Laboratory II	-	-	4	2	--	50	--	50	100
Major Elective – IV												
4	Major	NYNTE--	Major Elective – IV	4	-	-	4	50	-	100	-	100
OJT												
6	OJT	NYNT812	On Job Training	--	--	8	4	--	50	--	50	100
TOTAL				16	-	12	22	200	100	400	100	600

CIA: Continuous Internal Assessment ESE: End Semester Theory Exam. L: Theory Lecture, T: Tutorial, P: Practical	OJT – On Job Training FP – Field Project CEP – Community Engagement Project CC – Curricular Course RP – Research Project * - Refer University Notification	CIA	Weightage	Description
		CIA 1	10%	Home Assignment
		CIA 2	20%	Mid-Term Exam (MTE)
		CIA 3	10%	Activity/Project and research based learning along with seminar presentation
		CIA 4	10%	Behavioural Attitude +General Discipline Theory +Practical attendance
		CIA TOTAL	50%	
Written Examination – End Semester Exam (ESE)		50%		
TOTAL		100%		

Course Code	Major Elective IV
NYNTE10	Quantum Field Theory for Nanoscience
NYNTE11	Plasmonics and Nano-Optics
NYNTE12	Industrial Nanotechnology and IPR

Exit option: Award of UG Honours with 176 credits.

School of Science
Department of Physics
NEP 2020 - Course Structure

Programme Name: B.Sc. Nanoscience and Nanotechnology
Level 6.0 (Semester – VII)

(UG Honours with Research)
For the Batch: AY 25-26 onwards

Sr. No.	Core	Course Code	Course Name	Teaching Scheme (Hrs./Week)				Examination Scheme				Total Marks
				L	T	P	C	Formative Assessment CIA		Summative Assessment ESE		
								Course	Lab	Course	Lab	
MAJOR (MANDATORY + ELECTIVES)												
1	Major	NYNT701	Advanced Nanomaterials (2D Materials, Carbon-based)	4	-	-	4	50	--	100	--	100
2	Major	NYNT702	Computational Nanoscience	4	-	-	4	50	--	100	--	100
3	Major	NYNT712	Nanoscience and Nanotechnology Laboratory III			4	2	--	50	--	50	100
Major Elective – III												
5	Major	NYNTE--	Major Elective – III	4	-	-	4	50	-	100	-	100
Minor												
6	Minor	17RDP101	Research Methodology	4	--		4	50	--	100	--	100
Research Project												
7	RP	NYPH713	Research Project – I	--	--	8	4	--	50	--	50	100
TOTAL				16	-	12	22	200	100	400	100	600

Course Code	Major Elective III
NYNTE07	Nanomedicine and Therapeutics
NYNTE08	Photonic Crystals and Metamaterials
NYNTE09	Environmental Nanotechnology

CIA: Continuous Internal Assessment ESE: End Semester Theory Exam. L: Theory Lecture, T: Tutorial, P: Practical	OJT – On Job Training FP – Field Project CEP – Community Engagement Project CC – Curricular Course RP – Research Project * - Refer University Notification	CIA	Weightage	Description
		CIA 1	10%	Home Assignment
		CIA 2	20%	Mid-Term Exam (MTE)
		CIA 3	10%	Activity/Project and research based learning along with seminar presentation
		CIA 4	10%	Behavioural Attitude +General Discipline
		CIA TOTAL	50%	Theory +Practical attendance
Written Examination – End Semester Exam (ESE)			50%	
		TOTAL	100%	

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NEP 2020 - Course Structure

Programme Name: B.Sc. Nanoscience and Nanotechnology
Semester – VIII

(UG Honours with Research)
For the Batch: AY 25-26 onwards

Sr. No.	Core	Course Code	Course Name	Teaching Scheme (Hrs./Week)				Examination Scheme				Total Marks
				L	T	P	C	Formative Assessment CIA		Summative Assessment ESE		
								Course	Lab	Course	Lab	
MAJOR (MANDATORY + ELECTIVES)												
1	Major	NYNT801	Nanoelectronics and Spintronics	4	-	-	4	50	--	100	--	100
2	Major	NYNT802	Smart Materials and Devices	4	-	-	4	50	--	100	--	100
3	Major	NYNT813	Nanoscience and Nanotechnology Laboratory IV	-	-	4	2	-	50	-	50	100
Major Elective – IV												
4	Major	NYNTE--	Major Elective – IV	4	-	-	4	50	-	100	-	100
Research Project												
5	RP	NYNT814	Research Project – II	-	-	16	8	-	50	--	50	100
TOTAL				12	-	20	22	150	100	300	100	500

Course Code	Major Elective IV
NYNTE10	Quantum Field Theory for Nanoscience
NYNTE11	Plasmonics and Nano-Optics
NYNTE12	Industrial Nanotechnology and IPR

Exit option: Award of UG Honours with Research by earning 176 credits.

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		CIA 1	10%	Home Assignment
		CIA 2	20%	Mid-Term Exam (MTE)
		CIA 3	10%	Activity/Project and research based learning along with seminar presentation
		CIA 4	10%	Behavioural Attitude +General Discipline Theory +Practical attendance
		CIA TOTAL	50%	

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