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MANIAMMAI**
INSTITUTE OF SCIENCE & TECHNOLOGY
(Deemed to be University)
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Criterion 1 – Curricular Aspects

Key Indicator	1.2	Academic Flexibility
Metric	1.2.2	Percentage of Programmes in which Choice Based Credit System (CBCS)/elective course system has been implemented (Data for the latest completed academic year)

**NANOTECHNOLOGY DIVISION/DEPARTMENT OF
ELECTRONICS AND COMMUNICATION ENGINEERING
STRUCTURE OF THE PROGRAM CLEARLY INDICATING
COURSES, CREDITS/ELECTIVES**

1. Curriculum of M.Tech (Nanotechnology) – 2 Year
2. Curriculum of M.Tech (Nanotechnology) – 3 Year

**1. M.Tech (Nanotechnology) - 2 Year
CURRICULUM - REGULATION 2018
SEMESTER I**

AICTE Abbr	Course Code	Course Title	Credits				Hours				
			L	T	P	Total	L	T	P	S.S	Total
PCC	YNT101	Fundamentals of Nanotechnology	3	0	0	3	3	0	0	0	3
PCC	YNT102	Nano Fabrication and Synthesis Techniques	3	0	0	3	3	0	0	0	3
PEC	YNT103*	Professional Elective Course I	3	0	0	3	3	0	0	1	4
PEC	YNT104*	Professional Elective Course II	3	0	0	3	3	0	0	1	4
PCC-L	YNT105	Simulation of Nanostructure & Nanomaterials Lab	0	0	2	2	0	0	4	0	4
PCC-L	YNT106	Nano Fabrication and Synthesis Techniques Lab	0	0	2	2	0	0	4	0	4
MC		Research Methodology and IPR	2	0	0	2	3	0	0	0	3
MC – Audit		English for Research Paper Writing	0	0	0	0	2	0	0	0	2
Total			14	0	4	18	17	0	8	2	27

Total Credits – 18

SEMESTER II

AICTE Abbr	Course Code	Course Title	Credits				Hours				
			L	T	P	Total	L	T	P	S.S	Total
PCC	YNT201	Nanomaterials Characterization Techniques	3	0	0	3	3	0	0	1	4
PCC	YNT202	Computational Nanotechnology	3	0	0	3	3	0	0	1	4
PEC	YNT203*	Professional Elective Course III	3	0	0	3	3	0	0	1	4
PEC	YNT204*	Professional Elective Course IV	3	0	0	3	3	0	0	0	3
PCC-L	YNT205	Nanomaterials Characterization Techniques Lab	0	0	2	2	0	0	4	0	4
PCC-L	YNT206	Computational Nanotechnology Lab	0	0	2	2	0	0	4	0	4
PR	YNT207	Mini Project	0	0	2	2	0	0	4	0	4
MC – Audit		Constitution of India	0	0	0	0	2	0	0	0	2
Total			12	0	6	18	14	0	12	3	29

Total Credits – 18

SEMESTER III

AICTE Abbr	Course Code	Course Title	Credits				Hours				
			L	T	P	Total	L	T	P	S.S	Total

PCC	YNT301*	Professional Elective Course V	3	0	0	3	3	0	0	0	3
OE		Open Elective	3	0	0	3	3	0	0	0	3
PR	YNT303	Dissertation Phase - I	0	0	10	10	0	0	20	0	20
		Total	6	0	10	16	6	0	20	0	26

Total

Credits – 16

SEMESTER IV

AICTE Abbr	Course code	Course Title	Credits				Hours				
			L	T	P	Total	L	T	P	S.S	Total
PR	YNT401	Dissertation Phase - II	0	0	0	16	0	0	32	0	32
		Total	0	0	0	16	0	0	32	0	32

Total Credits - 16

LIST OF PROFESSIONAL ELECTIVE COURSE

Course Code	Course Title	Credits				Hours				
		L	T	P	Total	L	T	P	S.S	Total
Professional Elective Course I-YNT103*										
YNT103A	Societal Implications of Nanotechnology	3	0	0	3	3	0	0	0	3
YNT103B	Nanochemistry	3	0	0	3	3	0	0	0	3
YNT103C	Nanomedicine	3	0	0	3	3	0	0	0	3
YNT103D	Nanotechnology in Energy Conversion and Storage	3	0	0	3	3	0	0	0	3
Professional Elective Course II-YNT104*										
YNT104A	Nanoscale Magnetic Materials and Devices	3	0	0	3	3	0	0	0	3
YNT104B	Metallopolymer Nanocomposites	3	0	0	3	3	0	0	0	3
YNT104C	Properties of Nanophase Materials	3	0	0	3	3	0	0	0	3
YNT104D	Nanotoxicology	3	0	0	3	3	0	0	0	3
Professional Elective Course III-YNT203*										
YNT203A	Green Manufacturing Technology	3	0	0	3	3	0	0	0	3
YNT203B	Advanced Crystal Growth Techniques	3	0	0	3	3	0	0	0	3
YNT203C	Carbon Nanotube Electronics and Devices	3	0	0	3	3	0	0	0	3
YNT203D	Nanoscale Integrated Computing	3	0	0	3	3	0	0	0	3
Professional Elective Course IV-YNT204*										
YNT204A	Micro/Nano Devices and Sensors	3	0	0	3	3	0	0	0	3
YNT204B	Spectroscopic Techniques for Nanomaterials	3	0	0	3	3	0	0	0	3
YNT204C	Thin Film Science and Technology	3	0	0	3	3	0	0	0	3
YNT204D	Micro and Nano Emulsions	3	0	0	3	3	0	0	0	3
Professional Elective Course V-YNT301*										
YNT301A	Nanotechnology Business Applications and Commercialization	3	0	0	3	3	0	0	0	3
YNT301B	Nano – CMOS Circuit and Physical Design	3	0	0	3	3	0	0	0	3
YNT301C	Nanomanipulation & Assembly	3	0	0	3	3	0	0	0	3

LIST OF OPEN ELECTIVE COURSE

Course Code	Course Title	Credits				Hours				
		L	T	P	Total	L	T	P	S.S	Total
	Business Analytics	3	0	0	3	3	0	0	0	3

	Industrial Safety	3	0	0	3	3	0	0	0	3
	Operations Research	3	0	0	3	3	0	0	0	3
	Cost Management of Engineering Projects	3	0	0	3	3	0	0	0	3

2. M.Tech(Nanotechnology)-Part Time (3 Year)

REGULATION 2018

SEMESTER I

AICTE Abbr	Course code	Course Title	Credits				Hours				
			L	T	P	Total	L	T	P	S.S	Total
PCC	QNT101	Fundamentals of Nanotechnology	3	0	0	3	3	0	0	0	3
PCC	QNT102	Nano Fabrication and Synthesis Techniques	3	0	0	3	3	0	0	1	4
PEC	QNT103*	Professional Elective Course I	3	0	0	3	3	0	0	0	3
PCC-L	QNT104	Nano Fabrication and Synthesis Techniques Lab	0	0	2	2	0	0	4	0	4
Total			9	0	2	11	9	0	4	1	14

Total Credits – 11

SEMESTER II

AICTE Abbr	Course Code	Course Title	Credits				Hours				
			L	T	P	Total	L	T	P	S.S	Total
PCC	QNT201	Nanomaterials Characterization Techniques	3	0	0	3	3	0	0	1	4
PEC	QNT202*	Professional Elective Course II	3	0	0	3	3	0	0	0	3
MC		Research Methodology and IPR	2	0	0	2	2	0	0	0	2
PCC-L	QNT204	Simulation of Nanostructure & Nanomaterial's Lab	0	0	2	2	0	0	4	0	4
Total			8	0	2	10	11	0	2	2	13

Total Credits – 10

SEMESTER III

AICTE Abbr	Course Code	Course Title	Credits				Hours				
			L	T	P	Total	L	T	P	S.S	Total
PEC	QNT301*	Professional Elective Course III	3	0	0	3	3	0	0	0	3

MC-Audit		English for Research Paper Writing	0	0	0	0	3	0	0	0	3
OEC		Open Elective	3	0	0	3	3	0	0	0	3
PCC-L	QNT304	Nanomaterials Characterization Techniques Lab	0	0	2	2	0	0	4	0	2
		Total	6	0	2	8	9	0	4	0	13

Total Credits – 8

SEMESTER IV

AICTE Abbr	Course Code	Course Title	Credits				Hours				
			L	T	P	Total	L	T	P	S.S	Total
PEC	QNT401*	Professional Elective Course IV	3	0	0	3	3	0	0	0	3
MC-Audit		Constitution of India	0	0	0	0	3	0	0	0	3
PCC	QNT403	Computational Nanotechnology	3	0	0	3	3	0	0	0	3
PCC-L	QNT404	Computational Nanotechnology Lab	0	0	2	2	0	0	2	0	2
PR	QNT405	Mini Project	0	0	2	2	0	0	4	0	4
		Total	6	0	4	10	9	0	6	0	15

Total Credits - 10

SEMESTER V

AICTE Abbr	Course Code	Course Title	Credits				Hours				
			L	T	P	Total	L	T	P	S.S	Total
PEC	QNT501*	Professional Elective Course V	3	0	0	3	3	0	0	0	3
PR	QNT502	Dissertation Phase - I	0	0	10	10	0	0	20	0	20
		Total	3	0	10	13	3	0	20	0	23

Total Credits - 13

SEMESTER VI

AICTE Abbr	Course Code	Course Title	Credits				Hours				
			L	T	P	Total	L	T	P	S.S	Total
PR	QNT601	Dissertation Phase - II	0	0	0	16	0	0	32	0	32
		Total	0	0	0	16	0	0	32	0	32

Total Credits – 16

LIST OF PROFESSIONAL ELECTIVE COURSE

Course Code	Course Title	Credits				Hours					
		L	T	P	Total	L	T	P	S.S	Total	
Professional Elective Course I -QNT103*											
QNT103A	Societal Implications of Nanotechnology	3	0	0	3	3	0	0	0	3	

QNT103B	Properties of Nanophase Materials	3	0	0	3	3	0	0	0	3
QNT103C	Nanomedicine	3	0	0	3	3	0	0	0	3
QNT103D	Nanotechnology in Energy Conversion and Storage	3	0	0	3	3	0	0	0	3
Professional Elective Course II -QNT203*										
QNT202A	Nanoscale Magnetic Materials and Devices	3	0	0	3	3	0	0	0	3
QNT202B	Metallopolymer Nanocomposites	3	0	0	3	3	0	0	0	3
QNT202C	Nanochemistry	3	0	0	3	3	0	0	0	3
QNT202D	Nanotoxicology	3	0	0	3	3	0	0	0	3
Professional Elective Course III -QNT301*										
QNT301A	Green Manufacturing Technology	3	0	0	3	3	0	0	0	3
QNT301B	Advanced Crystal Growth Techniques	3	0	0	3	3	0	0	0	3
QNT301C	Carbon Nanotube Electronics and Devices	3	0	0	3	3	0	0	0	3
QNT301D	Nanoscale Integrated Computing	3	0	0	3	3	0	0	0	3
Professional Elective Course IV -QNT401*										
QNT401A	Micro/Nano Devices and Sensors	3	0	0	3	3	0	0	0	3
QNT401B	Spectroscopic Techniques for Nanomaterials	3	0	0	3	3	0	0	0	3
QNT401C	Thin Film Science and Technology	3	0	0	3	3	0	0	0	3
QNT401D	Micro and Nano Emulsions	3	0	0	3	3	0	0	0	3
Professional Elective Course V -QNT501*										
QNT501A	Nanotechnology Business Applications and Commercialization	3	0	0	3	3	0	0	0	3
QNT501B	Nano – CMOS Circuit and Physical Design	3	0	0	3	3	0	0	0	3
QNT501C	Nanomanipulation & Assembly	3	0	0	3	3	0	0	0	3

**Nanotechnology Division / Department of
Electronics and Communication Engineering**

Periyar Nagar, Vallamthangalur - 611 405, Tamil Nadu, India
Phone: +91 - 4362 - 264600/Fax: +91- 4362 - 264660
Email: head@ecpe@pmu.edu Web: www.pmu.edu



**PERIYAR
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INSTITUTE OF SCIENCE & TECHNOLOGY
Established in 1973
Autonomous for U.P.G.E. Act 1987
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Work • Innovate • Inspire

Minutes of Board of Studies

M.Tech Nanotechnology (Full Time and Part Time)

Agenda:

1. Framing Curriculum for M.Tech (Nanotechnology) 2 Year Regular and M.Tech (Nanotechnology) 3 year Part Time Degree programme
2. Developing Syllabus from I - IV semesters for 2 Year M.Tech (Nanotechnology) Regular and I - VI Semester of 3 year M.Tech (Nanotechnology) Part Time Degree programme

The members of Board of studies of Nanotechnology Division / Department of Electronics and Communication Engineering met on 28.5.2018 and discussed and framed the curriculum and syllabus for M.Tech (Full time and Part Time) programme for Regulations 2018.

This will be submitted to the 27th Academic council meeting to be conducted on 09.06.2018 for approval.

1 FEEDBACK COLLECTED, ANALYZED AND ACTION TAKEN

Alumni students:	Yes
Parents:	Yes
Employers	Yes
Students:	Yes

Important observations made and addressed in BOS Members

1. Research Methodology & IPR and English for research paper were added in first semester as per the AICTE Guidelines.
2. The units of Nanocharacterization techniques classified and named based on the principle of various analytical techniques.
3. Dr.M.Sivakumar, External Academic Expert suggested
 - a. To change the course name Nano Fabrication Techniques as Nano Synthesis Techniques. And also suggested to add two units of nanofabrication techniques in addition to the three units of nanosynthesis techniques.
 - b. Nanomedicine -Professional Core Elective syllabus contents has to be reduced

- c. Pharmacology unit need to be added in Nanotoxicology Professional core elective course
4. Dr.R.Rangarajan ,External industrial expert suggested
 - a. To add a unit on Statistics in research methodology course
 - b. Bio informatics tools have to be added in Computational nanotechnology course.
5. Two Profession Core elective courses were added in first semester
6. One Profession Core elective course and One open Elective course were added in third semester.
7. The overall credits were reduced as 68 as per the AICTE norms from the 2015 total credit 70
8. The mandatory AICTE course Constitution of India were added in second Semester

II COMPARISON BETWEEN REGULATIONS 2015& 2018 (FT and PT)

Semester	REGULATION 2015	REGULATION 2018	Addition/ Deletion
	Course name	Course name	
I	Fundamentals of Nanotechnology	Fundamentals of Nanotechnology	
	Materials Science & Engineering	Nano Fabrication Techniques	Deletion
	Nanomaterials Characterization Techniques – I	Properties of Nanophase Materials	Deletion
	Nano Fabrication Techniques (Lab Included)	Materials	
	Properties of Nanophase Materials	Professional Elective Course I	Addition
		Professional Elective Course II	Addition
	Molecular Biology	Constitution of India & Nanomaterials	
		Nano Fabrication Techniques	
		Research Methodology and IPR	Addition
		English for Research Paper Writing	Addition
II	Nanomanipulation& Assembly	Nanomanipulation& Assembly	
	Nanomaterials Characterization Techniques – II	Nanomaterials Characterization Techniques	
	Applied Nanotechnology	Computational Nanotechnology	Applied Nanotechnology Deletion
	Computational Nanotechnology	Professional Elective Course	

	Elective I	III Professional Elective Course IV	
	Elective II	Nanomaterials Characterization Techniques	
		Computational Nanotechnology	
		Mini Project	Addition
		Constitution of India	Addition
III	Project Work - Phase I	Dissertation Phase - I	
		Professional Elective Course V	Addition
		Open Elective	Addition
IV	ProjectWork(PhaseII)	ProjectWork(PhaseII)	

LIST OF PROFESSIONAL CORE ELECTIVE

Sl.No	Regulations 2015	Regulation 2018	
1	Carbon Nanotube and its Functionalization	Societal Implications of Nanotechnology	Deletion
2	Nanoparticles and Microorganisms, Bionanocomposites	Nanomedicine	Deletion
3	Nanosensors and Nanodevices	Nanotechnology in Energy Conversion and Storage	
4	Nanofluid Dynamics	Nanoscale Magnetic Materials and Devices	Deletion
5	Molecular Nanoelectronics	Metallopolymer/Nanocomposites	Addition
6	Nanotechnology for Energy system	Nanotoxicology	
7	Optical Properties Of Nanomaterials, Nanophotonics And Plasmonics	Green Manufacturing Technology	Deletion
8	Nanotechnology for Chemical and Textile industry Applications	Advanced Crystal Growth Techniques	Deletion
9		Carbon Nanotube Electronics and Devices	Addition
10		Nanoscale Integrated Computing	Addition
11		Micro/Nano Devices and Sensors	Addition

12		Spectroscopic Techniques for	Addition
13		Nanochemistry	Addition
14		Thin Film Science and Technology	Addition
15		Micro and Nano Emulsions	Addition
16		Nanotechnology Business Applications and Commercialization	Addition
17		Nano – CMOS Circuit and Physical Design	Addition

III. LIST OF NEWLY INTRODUCED COURSES IN REGULATION

1. Three Professional core elective in second and third semester
2. One open Elective in third semester
3. Research Methodology & IPR
4. English for research paper writing
5. Constitution of India

IV. COURSES INTRODUCED FOR IMPROVING THE EMPLOYABILITY SKILLS OF THE STUDENTS.

1. Mini project
2. industrial need based Professional core elective in

V. VALUE ADDED COURSES PROVIDED

Nil

VI. OVERALL PERCENTAGE OF CHANGE COMPARED TO REGULATIONS 2017

> 20% Change in the syllabus/curriculum is done