Supporting Documents
Criteria 1.2.2
Sample BOS Minutes

Index

SL No.	Name of the Documents	Page No.
1	BOS MOM B. TECH R-18 CE Dept. dated 16-2-18 context to curricular aspect	1
2	BOS MOM B. TECH R-18 IT Dept. dated 27-2-18 context to curricular aspect	7
3	BOS MOM B. TECH R-18 EIE Dept. dated 15-2-18 context to curricular aspect	15
4	BOS MOM B. TECH R-18 CSE Dept. dated 14-2-18 context to curricular aspect	20
5	BOS MOM B. TECH R-18 ECE Dept. dated 16-2-18 context to curricular aspect	26
6	BOS MOM B. TECH R-18 EE Dept. dated 8-2-18 context to curricular aspect	35
7	BOS MOM B. TECH R-18 ME Dept. dated 15-2-18 context to curricular aspect	40
8	BOS MOM B. TECH R-16 CE Dept. dated 12-4-16 context to curricular aspect	47
9	BOS MOM B. TECH R-16 EE Dept. dated 26-11-15 context to curricular aspect	51
10	BOS MOM B. TECH R-16 ECE Dept. dated 25-2-16 context to curricular aspect	54
11	BOS MOM B. TECH R-16 IT Dept. dated 5-2-16 context to curricular aspect	62
12	BOS MOM B. TECH R-16 CSE Dept. dated 5-2-15 context to curricular aspect	69
13	BOS MOM B. TECH R-16 EIE Dept. dated 30-1-16 context to curricular aspect	74
14	BOS MOM B. TECH R-16 ME Dept. dated 11-1-16 context to curricular aspect	77
15	BOS MOM M. TECH R-19 CSE Dept. dated 22-1-19 context to curricular aspect	84
16	BOS MOM MCA R-16 CA Dept. dated 16-10-15 context to curricular aspect	89
17	BOS MOM M. TECH R-16 CSE Dept. dated 5-2-15 context to curricular aspect	95
18	BOS MOM M. TECH R-16 ECE Dept. dated 28-1-15 context to curricular aspect	98
19	BOS MOM M. TECH R-16 CE Dept. dated 23-3-16 context to curricular aspect	103
20	BOS MOM M. TECH R-16 EE Dept. dated 26-11-15 context to curricular aspect	106
21	BOS MOM M. TECH R-18 CE Dept. dated 07-2-18 context to curricular aspect	109

The following resolutions were adopted after detail deliberation.

Agenda Item No. 1: Action required based on Academic Audit score: (As Annexure-1)

Resolution:

HOD, Civil of NIT addressed to the chair giving thanks and personally briefed about the Academic audit score that Civil Department have received and many faculty members suggested many ways to improve the same. Some of the suggestions are:

- Introduction of an advanced software training program for students of 3rd, 5th and 7th semester.
- Revision of the syllabus and some addition of new subjects.
- Frequent feedback system.
- Application for NBA Self-Assessment Report (SAR)

After detail discussion, Proposition for improving academic and administrative performance of Civil Engineering Department have been Approved and accepted.

Agenda Item No. 2: Approval Of Paper Setter Name: (As Annexure-2)

Resolution:

HOD, Civil, NiT placed the list of Paper setters for the odd semester examination for semester subject before the BOS. It was also informed that all paper setter shall prepare two set of question papers, to enable moderators to choose questions. Paper setters shall also prepare question for both regular and backlog students. Format for the question paper will be distributed soon. BOS Approved the list which shall be forwarded to Controller of Examination.

Agenda Item No. 3: To consider and adopt the new R18 curriculum for B.TECH (CE) programme (As per Annexure-3).

Resolution:

HOD, CE Dept. highlighted that in formation of R18 curriculum (as Annexure 3), all the points, suggestions of BOS members given in the last meeting and guidelines of regulatory bodies have been taken into consideration. This curriculum is already discussed and approved in the Departmental Academic Committee (DAC). All the BOS members express their satisfaction and approve the same to forward it to the Academic Committee (AC) for further approval. HOD also pointed out that as per the suggestion of the BOS members in the last meeting, course outcomes (as per OBE requirement) for all the courses have been prepared and also mapping with POs and PSOs (approved by BOS earlier) are defined.

Agenda Item No. 4: Identification of new courses in R18 Curriculum.

Resolution:

As per the suggestion of the BOS member in the last meeting courses which have been introduced in R18 have been identified and listed in Annexure-4 for ready reference.

Agenda Item No. 5: Identification of Courses in R18 Curriculum Mapped with Employability/ Skill Development/Entrepreneurship.

Resolution:

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As per the suggestion of the BOS member in the last meeting courses for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship introduced in R18 have been identified and listed in Annexure-5 for ready reference.

Agenda Item No. 6: To consider running of value added courses (As per Annexure-4).

Resolution:
HOD placed a list of value added courses to be offered during the coming semester break for consideration of the Committee. After discussion the following courses have been selected. Committee further suggests to define a suitable content in the form for brochure before enrollment of the students.

List of value added courses:

a. MS Projects
b. STAAD pro &STAAD Fdn.
c. E-Tabs
d. MX Roads
e. Revit
f. Total Station
g. Pro -Steel

It has been decided that this list will be forwarded to Training and Placement Department for conducting/coordinating training on these topics.

Agenda Item No. 7: Departmental Budget: (As per Annexure-5).

Resolution:
Another important agenda was to get the departmental budget Approved by BOS committee before placing same to Management. Departmental head placed the Budget for next semester which includes, laboratory equipment / instruments, repair and maintenance, stationary, Computer and other IT requirements. Requirement have been discussed and getting the justifications, BOS approved the Departmental Budget for forwarding same to higher authority for further action.

Agenda Item No. 8: Any other matter with the permission of the chair

Resolution:
The committee wholeheartedly supported the process of properly displaying Proper manuals and laboratory experiments procedures including test and apparatus/instrument names in each lab.

Meeting ended with vote of thanks to the expert member of the committee.

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Abhipriya Halder

Mr. Abhipriya Halder
Departmental Coordinator
BOS, CE Department

Prof. (Dr.) Biman Mukherjee
HOD & Chairperson
BOS, CE Department

HOD Civil Engineering Dept.
Narula Institute of Technology

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Annexure-4

List of new courses offered in B.TECH Civil Engineering in Regulation 18 curriculum

Name of the Programme	Name of the Course	Course Code	Year of introduction
B.TECH (Civil Engineering)	Project-1A (CE)	PR191	2018
B.TECH (Civil Engineering)	Project-1B (CE)	PR192	2018
B.TECH (Civil Engineering)	Induction Program (CE)	MC181	2018
B.TECH (Civil Engineering)	Project-II (CE)	PR291	2018
B.TECH (Civil Engineering)	Innovative activities-I (CE)	PR292	2018
B.TECH (Civil Engineering)	Language Lab (CE)	HU291	2018
B.TECH (Civil Engineering)	NSS/ Physical Activities/Meditation & Yoga/Photography/ Nature Club (CE)	MC281	2018
B.TECH (Civil Engineering)	Project-III (CE)	PR 391	2018
B.TECH (Civil Engineering)	Innovative activities-II (CE)	PR 392	2018
B.TECH (Civil Engineering)	Behavioural & Interpersonal skills (CE)	MC381	2018
B.TECH (Civil Engineering)	Soil Mechanics Lab-I (CE)	CE493	2018
B.TECH (Civil Engineering)	Project-IV (CE)	PR 491	2018
B.TECH (Civil Engineering)	Innovative activities-III (CE)	PR 492	2018
B.TECH (Civil Engineering)	Infrastructure Planning & Design (CE)	CE504B	2018
B.TECH (Civil Engineering)	Public Transport System (CE)	CE504C	2018
B.TECH (Civil Engineering)	Infrastructure Planning & Design Lab (CE)	CE591B	2018
B.TECH (Civil Engineering)	Public Transport System Lab (CE)	CE591C	2018
B.TECH (Civil Engineering)	Advanced Programming for Problem solving (CE)	CE 594	2018
B.TECH (Civil Engineering)	Project-V (CE)	PR 591	2018
B.TECH (Civil Engineering)	Innovative activities-IV (CE)	PR 592	2018
B.TECH (Civil Engineering)	Constitution of India (CE)	MC 501	2018
B.TECH (Civil Engineering)	Project-VI (CE)	PR 691	2018
B.TECH (Civil Engineering)	Innovative activities-V (CE)	PR 692	2018
B.TECH (Civil Engineering)	Technical Lecture Presentation & Group Discussion-I (CE)	MC 681	2018
B.TECH (Civil Engineering)	Hydrology and Water Resource Engineering (CE)	CE 702A	2018
B.TECH (Civil Engineering)	Irrigation Engineering (CE)	CE 702B	2018

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B.TECH (Civil Engineering)	Material Testing Lab (CE)	CE 792A	2018
B.TECH (Civil Engineering)	Electrical and Electronic Measurement Laboratory (CE)	CE 792B	2018
B.TECH (Civil Engineering)	Material Handling Laboratory (CE)	CE 792C	2018
B.TECH (Civil Engineering)	Project-VII (CE)	PR 791	2018
B.TECH (Civil Engineering)	Innovative activities-VI (CE)	PR 792	2018
B.TECH (Civil Engineering)	Social Awareness (CE)	MC 781	2018
B.TECH (Civil Engineering)	Pavement Design (CE)	CE 802C	2018
B.TECH (Civil Engineering)	Metro System and Engineering (CE)	CE 803A	2018
B.TECH (Civil Engineering)	Principles of Management (CE)	HU804	2018
B.TECH (Civil Engineering)	Project-VIII (CE)	PR 891	2018
B.TECH (Civil Engineering)	Essence of Indian Knowledge Tradition (CE)	MC 801	2018

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Annexure-5_2018

List of Subjects of MTech in SE- 2018, which have been identified for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship other than the core subjects.

1. Bridge Engineering
2. Structural Optimization
3. Repair & Rehabilitation of Structure
4. Advanced Foundation Engineering
5. Structural Reliability
6. Composite Material & Structures
7. Environmental Impact Assessment
8. Advanced Concrete Technology
9. Construction Technology & Management
10. Theory of Elastic Stability and Behaviour of Metal Structure

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Meeting has been started with the welcome address by the Chairperson and all the leave of absence has been granted. Then the meeting is continued with agenda wise discussion.

Agenda Item No. 1: To confirm the minutes of the Board of Studies meeting held on 11.09.2017 (As Annexure-1)

Resolution: : HOD requests all the members to note the minutes of the last meeting (shared as Annexure-1) and read out the same for confirmation. All the members accept the same and confirm.

Agenda Item No. 2: To report action taken on the minutes of Board of Studies held on 11.09.2017 (As Annexure-2)

Resolution: HOD requests all the members to note the action taken report on the minutes of Board of Studies held on 11.09.2017 (shared as Annexure-2) and read out the same for confirmation. All the members accept the same and confirm.

Agenda Item No. 3: To consider and adopt the new curriculum for B.TECH (IT) programme (As per Annexure-3)

Resolution:

HoD, IT Dept. highlighted that in formation of R18 curriculum (as Annexure 3), all the points, suggestions of BOS members given in the last meeting and guidelines of regulatory bodies have been taken into consideration. This curriculum is already discussed and approved in the Departmental Academic Committee (DAC). All the BOS members express their satisfaction and approve the same to forward it to the Academic Committee (AC) for further approval. HOD also pointed out that as per the suggestion of the BOS members in the last meeting, course outcomes (as per OBE requirement) for all the courses have been prepared and also mapping with POs and PSOs (approved by BOS earlier) are defined.

Agenda Item No. 4: Identification of new courses in R18 Curriculum.

Resolution:

As per the suggestion of the BOS member in the last meeting courses which have been introduced in R18 have been identified.

Agenda Item No. 5: Identification of Courses in R18 Curriculum Mapped with Employability/ Skill Development/Entrepreneurship.

Resolution:

As per the suggestion of the BOS member in the last meeting courses for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship introduced in R16 have been identified and listed in Annexure-4 for ready reference.

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Agenda Item No. 6: To consider running of value added courses (As per Annexure-5).

Resolution:
HOD placed a list of value added courses to be offered during the coming semester break for consideration of the Committee. After discussion the following courses have been selected. Committee further suggests defining a suitable content in the form for brochure before enrollment of the students.

List of value added courses:

a. Blockchain Basics
b. Front-End Web Development with React JS

It has been decided that this list will be forwarded to Training and Placement Department for conducting/coordinating training on this topic.

Agenda Item No. 7: To consider and approve Board of Examiners for theory and practical examination for the 1st year to 4th year classes

Resolution: HOD of IT department proposes the names of the following Board of Examiners including external examiners for practical examination and moderators for semester question papers. It has been decided that external examiners and moderators can be appointed from these and in case of non availability of any examiner and moderator HOD can call any external expert from reputed organization. HOD also proposes the name of subject coordinators that has been sanctioned in DAC at the beginning of the semester for internal evaluator and paper setter. The board accepts the proposal with appreciations.

Agenda Item No. 8: To consider and approve external experts for project evaluation and grand viva

Resolution: HOD proposes the names of external experts for project evaluation and grand viva and was approved by the committee.

Agenda Item No. 9: Any other points with the permission of the chairman:

Resolution: A discussion was there about the goal and achievement of the department and the committee advised to plan a workshop for the students in any latest technology for making them industry ready.

Dr. B. K. Medya
HOD & Chairperson
BOS, Department of IT

Hod
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Annexure-3

List of new courses offered in B.TECH Information Technology in Regulation 18 curriculum

Name of the Programme	Name of the Course	Course Code	Year of introduction
B.TECH (Information Technology)	Project-1A (IT)	PR191	2018
B.TECH (Information Technology)	Project-1B (IT)	PR192	2018
B.TECH (Information Technology)	Induction Program (IT)	MC181	2018
B.TECH (Information Technology)	Project-II (IT)	PR291	2018
B.TECH (Information Technology)	Innovative activities-I (IT)	PR292	2018
B.TECH (Information Technology)	Language Lab (IT)	HU291	2018
B.TECH (Information Technology)	NSS/ Physical Activities/Meditation & Yoga/Photography/ Nature Club (IT)	MC281	2018
B.TECH (Information Technology)	Project-III (IT)	PR 391	2018
B.TECH (Information Technology)	Innovative activities-II (IT)	PR 392	2018
B.TECH (Information Technology)	Behavioural & Interpersonal skills (IT)	MC 381	2018
B.TECH (Information Technology)	Project-IV (IT)	PR 491	2018
B.TECH (Information Technology)	Innovative activities-III (IT)	PR 492	2018
B.TECH (Information Technology)	Environmental Science (IT)	MC 401	2018
B.TECH (Information Technology)	Programming Skill Development Lab (IT)	IT493	2018
B.TECH (Information Technology)	Project-V (IT)	PR 591	2018
B.TECH (Information Technology)	Innovative activities-IV (IT)	PR 592	2018
B.TECH (Information Technology)	Constitution of India (IT)	MC 501	2018
B.TECH (Information Technology)	Digital Image Processing (IT)	IT603B	2018
B.TECH (Information Technology)	Digital Image Processing Lab (IT)	IT693B	2018
B.TECH (Information Technology)	Soft Computing Lab (IT)	IT693C	2018
B.TECH (Information Technology)	E-Commerce and ERP (IT)	IT 604A	2018
B.TECH (Information Technology)	E-Commerce and ERP Lab (IT)	IT 694A	2018
B.TECH (Information Technology)	Technical Lecture Presentation & Group Discussion-I (IT)	MC681	2018
B.TECH (Information Technology)	Project-VI (IT)	PR 691	2018

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B.TECH (Information Technology)	Innovative activities-V (IT)	PR 692	2018
B.TECH (Information Technology)	Machine Learning (IT)	IT 701D	2018
B.TECH (Information Technology)	Sensor Network (IT)	IT 703A	2018
B.TECH (Information Technology)	Robotics (IT)	IT 703D	2018
B.TECH (Information Technology)	Cloud Computing Lab (IT)	IT791A	2018
B.TECH (Information Technology)	Machine Learning using R ProgrammingLab (IT)	IT791D	2018
B.TECH (Information Technology)	Project-VII (IT)	PR791	2018
B.TECH (Information Technology)	Innovative activities-VI (IT)	PR 792	2018
B.TECH (Information Technology)	Blockchain (IT)	IT801A	2018
B.TECH (Information Technology)	BigData Analytics (IT)	IT801B	2018
B.TECH (Information Technology)	Virtual Reality (IT)	IT801C	2018
B.TECH (Information Technology)	Embedded System (IT)	IT802C	2018
B.TECH (Information Technology)	Deep Learning (IT)	IT802D	2018
B.TECH (Information Technology)	Data Science (IT)	IT803A	2018
B.TECH (Information Technology)	Cluster and Grid Computing (IT)	IT 803C	2018
B.TECH (Information Technology)	Entrepreneurship Development (IT)	IT 803D	2018
B.TECH (Information Technology)	Essence of Indian Knowledge Tradition (IT)	MC 801	2018

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Annexure-4

List of Subjects which have been identified for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship

HU101	English
PR191	Project-IA
PR192	Project-IB
CS201	Programming for Problem Solving
CS291	Programming for Problem Solving Lab
HU291	Language Lab
PR291	Project-II
PR292	Innovative Activities-I
IT301	Data Structure and Algorithm
IT302	Analog and Digital Electronics
M(IT)302	Numerical Methods and Statistics
IT391	Data Structure Lab
IT392	Analog and Digital Electronics Lab
PR391	Project-III
MC381	Behavioural and Interpersonal Skills
IT401	Computer Organization & Architecture
IT402	Object Oriented Programming using Java
IT403	Formal Language and Automata Theory
IT404	Communication Engineering & Coding Theory
HU401	Values & Ethics in Profession
IT491	Computer Organization & Architecture Lab
IT492	Object Oriented Programming Lab
IT493	Programming Skill Development Lab
PR491	Project-IV
PR492	Innovative Activities-III
IT501	Design & Analysis of Algorithm
IT502	Software Engineering
IT503	Operating System
HU503	Industrial & Financial Management
IT504 A	Programming Practice with C++
IT504 B	Artificial Intelligence and Expert System
IT504 C	Microprocessor and Microcontroller
IT591	Algorithm Lab
IT592	Software Engineering Lab
IT593	Operating System Lab
IT594 A	Programming Practice with C++ Lab
IT594 B	Artificial Intelligence and Expert System Lab

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IT594 C	Microprocessor and Microcontroller Lab
PR591	Project-V
PR592	Innovative Activities-IV
MC501	Constitution of India
IT601	Database Management System
IT602	Web Technology
IT603	Computer Networking
IT604 A	E-Commerce and ERP
IT604 B	Digital Image Processing
IT604 C	Soft Computing
IT691	Database System Lab
IT692	Web Technology Lab
IT693	Computer Networking Lab
IT694 A	E-Commerce and ERP Lab
IT694 B	Digital Image Processing Lab
IT694 C	Soft Computing Lab
PR691	Project-VI
PR692	Innovative Activities-V
MC681	Technical Lecture Presentation & Group Discussion-I
IT701A	Cloud Computing
IT701B	Computer Graphics and Multimedia
IT701C	Distributed System
IT701D	Machine Learning
IT702A	Cryptography and Network Security
IT702B	Data Warehousing and Data Mining
IT702C	Advanced Computer Architecture
IT702D	Compiler Design
IT703A	Sensor Network
IT703B	Pattern Recognition
IT703C	Internet Technology
IT703D	Robotics
IT704A	Modeling and Simulation
IT704B	Microelectronics and VLSI Design
IT704C	Mobile Communication
IT704D	Operations Research
IT791A	Cloud Computing Lab
IT791B	Computer Graphics and Multimedia Lab
IT791C	Distributed System Lab
IT791D	Machine Learning using R Programming Lab
PR791	Project-VII
PR792	Innovative Activities-VI
MC781	Seminar/GD/ Presentation Skill/ Foreign Language

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HU804	Principles of Management
IT801A	Block Chain
IT801B	Big Data Analytics
IT801C	Virtual Reality
IT801D	Natural Language Processing
IT802A	Bio-Informatics
IT802B	Embedded System
IT802C	Internet of Things (IoT)
IT802D	Deep Learning
IT803A	Data Sciences
IT803B	Cyber Law and IPR
IT803C	Cluster and Grid Computing
IT803D	Entrepreneurship Development
PR891	Project-VIII

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Annexure-5

Name of the Course
Introduction to Arduino
Communication Engineering
Computational Geometry
Robotics
Distributed Database
Block Chain Basics
E-commerce and ERP
Digital Image Processing
Android
Web Development with React JS
Data Analytics
Sensor Network and IOT
Distributed Algorithms
Bio-informatics
Natural Language Processing
Big Data
IoT
Principles of Management
Human computer Interaction
VLSI Design
Machine Learning with Python
Real Time Operating System and Embedded System

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Discussions took place in the BOS meeting held on 15.02.18 at 2.30pm in the conference hall of NIT on the following agenda and the following resolutions were taken by the members present in the meeting:

Agenda – 1

Confirmation of the Minutes of last Board of Studies meeting

The minutes of the last meeting was duly confirmed and approved.

Agenda – 2

Approval of Action taken report of the resolutions taken in the last meeting

The action taken report of the last meeting's resolution was noted.

Agenda – 3

Finalization of R-18 Curriculum and syllabus of B Tech Program for EIE Department

The Curriculum and syllabus under R-18 regulation has been placed and finalized.(As per Annexure-1). All the BOS members approved the same to forward it to the Academic Committee (AC) for further approval. HOD also pointed out that as per the suggestion of the BOS members in the last meeting ,Pre requisite, Course objective, Course outcome and CO- PO mapping of each subjects must be included.

Agenda – 4

Identification of new courses in R18 Curriculum.

As per the decision of the BOS member taken in the last meeting, courses which have been introduced in R18 have been identified and listed in Annexure-2 for ready reference.

Agenda – 5

Identification of Courses in R18 Curriculum Mapped with Employability/ Skill Development/Entrepreneurship.

As per the suggestion of the BOS member in the last meeting courses for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship introduced in R18 have been identified and listed in Annexure-3 for ready reference.

Agenda – 6

To consider running of value added courses .

A list of value added courses to be offered during the coming semester break for consideration of the Committee. After discussion the following courses have been selected. Committee further suggests defining a suitable content in the form for brochure before enrolment of the students.

List of value added courses:

- AR- Advancing Technology
- FPGA:ARCHITECTURE,PROGRAMMING & TESTING

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It has been also decided that this list will be forwarded to Training and Placement Department for conducting/coordinating training on this topic.

Agenda – 7

Placement in Core Industry

I. Experts present in the meeting suggested to conduct industry mentor meet frequently.
II. They also asked to invite CEOs of different industries as chairperson of different seminar, workshop.
III. To make the students industry ready experts also suggested increasing the number of industry visit.

Agenda – 8

Approval of the panel of examiner for coming academic year

The panel of examiner and paper setter for academic year July, 2018-June, 2019 was approved in meeting.

Agenda – 9

Feedback analysis of the syllabus (R-16 regulation)

Feedback analysis of the syllabus (R-16 regulation) by the IQAC Cell has been placed before the committee.

The meeting was ended with the vote of thanks.

(Mrs. Bansari Deb Majumder)
Assistant Professor and In-charge
Dept. of Electronics and Instrumentation Engineering

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Annexure-3

List of Subjects which have been identified for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship other than the core subjects.

Name of the Courses	Employability/Higher studies	Skill Development	Entrepreneurship
Mathematics-I	YES		
Communicative English	YES	YES	YES
Basic Electrical Engineering	YES		
Mathematics -II	YES		
Physics - I	YES		
Basic Electronics Engineering	YES		
Computer Fundamentals & Principle of Computer Programming	YES	YES	
Computer Fundamentals & Principle of Computer Programming Lab	YES	YES	
Basic Electronics Engineering	YES		
Soft Skill Development	YES	YES	
Mathematics - III	YES		
Analog Electronic Circuits	YES		
Digital Electronic Circuits	YES		
Circuit Theory and Networks	YES		
Electrical & Electronic Measurement &	YES		

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Annexure-4

List of new courses offered in B.TECH Electronics and Instrumentation Engineering in Regulation 18 curriculum

Name of the Programme	Name of the Course	Course Code	Year of introduction
B.TECH (Electronics and Instrumentation Engineering)	Project-1A (EIE)	PR191	2018
B.TECH (Electronics and Instrumentation Engineering)	Project-1B (EIE)	PR192	2018
B.TECH (Electronics and Instrumentation Engineering)	Induction Program (EIE)	MC181	2018
B.TECH (Electronics and Instrumentation Engineering)	Project-II (EIE)	PR291	2018
B.TECH (Electronics and Instrumentation Engineering)	Innovative activities-I (EIE)	PR292	2018
B.TECH (Electronics and Instrumentation Engineering)	Language Lab (EIE)	HU291	2018
B.TECH (Electronics and Instrumentation Engineering)	NSS/ Physical Activities/Meditation & Yoga/Photography/ Nature Club (EIE)	MC281	2018
B.TECH (Electronics and Instrumentation Engineering)	Electrical & Electronic Measurement & Instrumentation Lab (EIE)	EI394	2018
B.TECH (Electronics and Instrumentation Engineering)	Project-III (EIE)	PR391	2018
B.TECH (Electronics and Instrumentation Engineering)	Innovative activities-II (EIE)	PR392	2018
B.TECH (Electronics and Instrumentation Engineering)	Behavioral & Interpersonal skills (EIE)	MC381	2018
B.TECH (Electronics and Instrumentation Engineering)	Electromagnetic Theory and Transmission Line (EIE)	EI404	2018
B.TECH (Electronics and Instrumentation Engineering)	Project-IV (EIE)	PR491	2018
B.TECH (Electronics and Instrumentation Engineering)	Innovative activities-III (EIE)	PR492	2018
B.TECH (Electronics and Instrumentation Engineering)	Analog & Digital Communication Theory (EIE)	EI502	2018
B.TECH (Electronics and Instrumentation Engineering)	Economics for Engineers (EIE)	HU502	2018
B.TECH (Electronics and Instrumentation Engineering)	IoT based Instrumentation System (EIE)	EI504C	2018

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B.TECH (Electronics and Instrumentation Engineering)	Project-V (EIE)	PR591	2018
B.TECH (Electronics and Instrumentation Engineering)	Innovative activities-IV (EIE)	PR592	2018
B.TECH (Electronics and Instrumentation Engineering)	Constitution of India (EIE)	MC501	2018
B.TECH (Electronics and Instrumentation Engineering)	Non Destructive Testing & Ultrasonic Instrumentation (EIE)	EI 602 C	2018
B.TECH (Electronics and Instrumentation Engineering)	Robotics Engineering Lab (EIE)	EI692C	2018
B.TECH (Electronics and Instrumentation Engineering)	Project-VI (EIE)	PR691	2018
B.TECH (Electronics and Instrumentation Engineering)	Innovative activities-V (EIE)	PR692	2018
B.TECH (Electronics and Instrumentation Engineering)	Technical Presentation & Group Discussion-I (EIE)	MC681	2018
B.TECH (Electronics and Instrumentation Engineering)	Artificial Intelligence (EIE)	EI603C	2018
B.TECH (Electronics and Instrumentation Engineering)	Robotics Engineering (EIE)	EI604C	2018
B.TECH (Electronics and Instrumentation Engineering)	Power Plant Instrumentation (EIE)	EI702B	2018
B.TECH (Electronics and Instrumentation Engineering)	Innovative activities-VI (EIE)	PR792	2018
B.TECH (Electronics and Instrumentation Engineering)	Technical Presentation & Group Discussion-II (EIE)	MC781	2018
B.TECH (Electronics and Instrumentation Engineering)	Principles of Management (EIE)	HU 804	2018
B.TECH (Electronics and Instrumentation Engineering)	Quantum Computing (EIE)	EI802C	2018
B.TECH (Electronics and Instrumentation Engineering)	Virtual Instrumentation Lab (EIE)	EI891A	2018
B.TECH (Electronics and Instrumentation Engineering)	Embedded System Design Lab (EIE)	EI891B	2018
B.TECH (Electronics and Instrumentation Engineering)	Mechatronics Lab (EIE)	EI891C	2018
B.TECH (Electronics and Instrumentation Engineering)	Essence of Indian Knowledge Tradition (EIE)	MC801	2018

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Meeting has been started with the welcome address by the Chairperson and all the leave of absence has been granted. Then the meeting is continued with agenda wise discussion.

Agenda Item No. 1: To confirm the minutes of the Board of Studies meeting held on 11.07.2017(As Annexure-1) :

Resolution: HOD requests all the members to note the minutes of the last meeting (shared as Annexure-1) and read out the same for confirmation. All the members accept the same and confirm.

Agenda Item No. 2: To report action taken on the minutes of Board of Studies held on 11.07.2017 (As Annexure-2):

Resolution: HOD requests all the members to note the action taken report on the minutes of Board of Studies held on 11.07.2017 (shared as Annexure-2) and read out the same for confirmation. All the members accept the same and confirm.

Agenda Item No. 3: To consider and adopt the new R18 curriculum for B.TECH (CSE) programme (As per Annexure-3).

Resolution:

HoD, CSE Dept. highlighted that in formation of R18 curriculum (as Annexure 3), all the points, suggestions of BOS members given in the last meeting and guidelines of regulatory bodies have been taken into consideration. This curriculum is already discussed and approved in the Departmental Academic Committee (DAC). All the BOS members express their satisfaction and approve the same to forward it to the Academic Committee (AC) for further approval. HOD also pointed out that as per the suggestion of the BOS members in the last meeting, course outcomes (as per OBE requirement) for all the courses have been prepared and also mapping with POs and PSOs (approved by BOS earlier) are defined.

Agenda Item No. 4: Identification of new courses in R18 Curriculum.

Resolution:

As per the suggestion of the BOS member in the last meeting courses which have been introduced in R18 have been identified and listed in Annexure-4 for ready reference.

Agenda Item No. 5: Identification of Courses in R18 Curriculum Mapped with Employability/ Skill Development/Entrepreneurship.

Resolution:

As per the suggestion of the BOS member in the last meeting courses for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship introduced in R18 have been identified and listed in Annexure-5 for ready reference.

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Agenda Item No. 6: To consider running of value added courses.

Resolution:
HOD placed a list of value added courses to be offered during the coming semester break for consideration of the Committee. After discussion the following courses have been selected. Committee further suggests to define a suitable content in the form for brochure before enrollment of the students.

List of value added courses:

a) Interfacing with the Arduino.
b) Ultimate Guide to Raspberry Pi
c) Blockchain Basics.
d) Front-End Web Development with React JS.

Agenda Item No. 7: To examine feedback analysis for the year 2017-18 (As per Annexure-6).

Resolution: HOD places the feedback analysis report of 2017 pass out batch received from IQAC for discussion and necessary actions on that. Feedback summary of all the five stack holders on the question framed and suctioned by BOS has been placed and analyzed and following are the suggestions given by the expert-
a) As 15.3% students and 20% alumni are asking for addition of the subject Python and IoT so it is recommended to offer the IoT course which is there in the curriculum as optional paper and Python it is suggested to organize in-house training/beyond curriculum training till the next revision of the curriculum. It is accepted in the board.

b) In addition to that, course feedback for indirect attainment calculation for some sample courses has been shown to the external members. They expressed their satisfaction on that and suggested to continue the practice on regular basis. Questions used for taking the feedback were also shown.
c) It is also decided that project based learning should be encouraged in all courses.
d) Linux based paper should be included and in practical classes Linux environment is encouraged. HOD conveys that in CSE department all the labs after 1st Year are encouraged to undergo in Linux environment or in Codeblocks.

e) It is decided that Core subjects should be included and completed by 3rd year as far as possible for the benefit of the students for appearing in the GATE examination.

Agenda Item No. 8: To consider and approve Board of Examiners for theory and practical examination for the 1st year to 4th year classes

Resolution: HOD of CSE department, proposes the names of the following Board of Examiners including external examiners for practical examination and moderators for semester question papers: Dr. Bikramjit Sarkar, Dr. Bikramjit Pal, Prof. Amitava Sen, Prof. Mallika De, Dr. Chandan Giri, Prof. Paramartha Dutta, Prof. Pinakpani Pal, Prof. J. K Mandal, Dr. Kaushik Roy, Dr. Kousik Dasgupta, Prof. Suman Bhowmik, Prof. Utpal Biswas, Prof. Devadatta Sinha,

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Dr. SK MD Obaidullah, Prof. Zeenat Rehena. It has been decided that external examiners and moderators can be appointed from these and in case of non availability of any examiner and moderator HOD can call any external expert from reputed organization discussing in the DAC. HOD also proposes the name of subject coordinators that has been sanctioned in DAC at the beginning of the semester for internal evaluator and paper setter. The board accepts the proposal and appreciates the concept to subject coordinator for maintaining uniformity in different sections.

Agenda Item No. 9: To consider and approve review of R16 curricula for the following courses.

Resolution:

i) To use OpenGL and remove "graphics.h" from the syllabus of Computer Graphics Lab (CS591)

ii) It has been proposed to do the following for the elective course CS504A: Object Oriented Programming using JAVA.

   a) To change the module name "Object Oriented Analysis & Design" to "Introduction"
   b) To include "Properties of OOP" in module-1
   c) To merge the modules Inheritance and Java Packages into a single module

iii) It has been proposed to do the following for the elective course CS504B: Multimedia Technology.

   a) To merge the modules Introduction and Text & Audio into a single module
   b) To merge the module Image and Video can be a single module

iv) It has been proposed to do the following for the course **CS603: Software Engineering.**

   a) To rewrite Course objectives
   b) To include No. of lectures in each module

v) It has been proposed to do the following for the elective course **CS(IT)606C: E-commerce & ERP**:

   a) To modify Module 1 and Module 2 as per Industry need
   b) To include B2B and B2C topics in Module 1

Agenda Item No. 10: Training needs analysis of Faculty, TAs and students (As per Annexure-7)

Resolution: HOD placed the Training Need Analysis (TNA) report as finalized in the DAC and the committee expresses their satisfaction. Further committee suggests that MOOCS courses should be considered for training of faculties, TAs, students. Faculties are encouraged to do training on Soft Computing, Network Security, Cloud Computing, Big Data etc. Students should be encouraged to do training on aptitude, soft skills, and technical skills for campus interviews.

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Annexure-4

List of new courses offered in B.TECH (CSE) in Regulation 18 curriculum

Name of the Programme	Name of the Course	Course Code	Year of introduction
B.TECH (Computer Science and Engineering)	Project-1A (CSE)	PR191	2018
B.TECH (Computer Science and Engineering)	Project-1B (CSE)	PR192	2018
B.TECH (Computer Science and Engineering)	Induction Program (CSE)	MC181	2018
B.TECH (Computer Science and Engineering)	Project-II (CSE)	PR291	2018
B.TECH (Computer Science and Engineering)	Innovative activities-I (CSE)	PR292	2018
B.TECH (Computer Science and Engineering)	Language Lab (CSE)	HU291	2018
B.TECH (Computer Science and Engineering)	NSS/ Physical Activities/Meditation & Yoga/Photography/ Nature Club (CSE)	MC281	2018
B.TECH (Computer Science and Engineering)	Project-III (CSE)	PR391	2018
B.TECH (Computer Science and Engineering)	Innovative activities-II (CSE)	PR392	2018
B.TECH (Computer Science and Engineering)	Behavioural and Interpersonal Skills (CSE)	MC381	2018
B.TECH (Computer Science and Engineering)	Project-IV (CSE)	PR491	2018
B.TECH (Computer Science and Engineering)	Innovative activities-III (CSE)	PR492	2018
B.TECH (Computer Science and Engineering)	Constitution of India (CSE)	MC401	2018
B.TECH (Computer Science and Engineering)	Distributed Algorithms (CSE)	CS505C	2018
B.TECH (Computer Science and Engineering)	Project-V (CSE)	PR591	2018
B.TECH (Computer Science and Engineering)	Innovative activities-IV (CSE)	PR592	2018
B.TECH (Computer Science and Engineering)	Environmental Science (CSE)	MC501	2018
B.TECH (Computer Science and Engineering)	Project-VI (CSE)	PR691	2018

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B.TECH (Computer Science and Engineering)	Innovative activities-V (CSE)	PR692	2018
B.TECH (Computer Science and Engineering)	Technical Lecture Presentation & Group Discussion-I (CSE)	MC681	2018
B.TECH (Computer Science and Engineering)	Internet of Things (CSE)	CS703B	2018
B.TECH (Computer Science and Engineering)	Data Analytics Lab (CSE)	CS791C	2018
B.TECH (Computer Science and Engineering)	Project-VII (CSE)	PR791	2018
B.TECH (Computer Science and Engineering)	Innovative activities-VI (CSE)	PR792	2018
B.TECH (Computer Science and Engineering)	Social Awareness (CSE)	MC781	2018
B.TECH (Computer Science and Engineering)	Real Time Embedded System (CSE)	CS802C	2018
B.TECH (Computer Science and Engineering)	Essence of Indian Knowledge Tradition (CSE)	MC801	2018

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Annexure-5

List of Subjects which have been identified for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship other than the core subjects.

Multimedia Technology Lab	CS594B
Communication Engineering Lab	CS594C
Computer Network	CS601
Microprocessor and Microcontroller	CS602
Software Engineering	CS603
Compiler Design	CS604A
Computer Vision	CS604B
Simulation and modeling	CS604C
Pattern Recognition	CS605A
Distributed Operating System	CS605B
Distributed Database	CS605C
Data Warehousing and Data Mining	CS606A
Digital Image Processing	CS606B
E-commerce and ERP	CS606C
Computer Network Lab	CS691
Microprocessor and Microcontroller Lab	CS692
Software Engineering Lab	CS693

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Meeting has been started with the welcome address by the Chairperson and all the leave of absence has been granted. Then the meeting is continued with agenda wise discussion.

The following resolutions were adopted after detail deliberation.

Agenda 1: To confirm the minutes of the Board of Studies meeting held on 11.07.2017(As per Annexure 1)

Resolution 1: HOD requests all the members to note the minutes of the last meeting (shared as Annexure 1) and read out the same for confirmation. All the members accept the same and confirm.

Agenda 2: To report action taken on the minutes of Board of Studies held on 11.07.2017 (As per Annexure 2).

Resolution 2: HOD requests all the members to note the action taken report on the minutes of Board of Studies held on 11.07.2017 (shared as Annexure 2) and read out the same for confirmation. All the members accept the same and confirm.

Agenda 3: To consider and adopt the new Regulation 18 (R18) curriculum for B.TECH (ECE) programme (As per Annexure-3).

Resolution 3:
HOD, ECE Dept. highlighted that in formation of R18 curriculum (as Annexure-3), all the points, suggestions of BOS members given in the last meeting and guidelines of regulatory bodies have been taken into consideration. This curriculum is already discussed and approved in the Departmental Academic Committee (DAC). All the BOS members express their satisfaction and approve the same to forward it to the Academic Committee (AC) for further approval. HOD also pointed out that as per the suggestion of the BOS members in the last meeting, course outcomes (as per OBE requirement) for all the courses have been prepared and also mapping with POs and PSOs (approved by BOS earlier) are defined.

Agenda 4: Identification of new courses in R18 Curriculum.

Resolution 4: As per the suggestion of the BOS member in the last meeting courses which have been introduced in R18 have been identified and listed in Annexure-4 for ready reference.

Agenda 5: Identification of Courses in R18 Curriculum Mapped with Employability/ Skill Development/Entrepreneurship.

Resolution 5: As per the suggestion of the BOS member in the last meeting courses for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship introduced in R16 have been identified and listed in Annexure-5 for ready reference.

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Agenda 6: To consider running of value added courses (As per Annexure-6).

Resolution 6: HOD placed a list of value added courses to be offered during the coming semester break for consideration of the Committee. After discussion the following courses have been selected. Committee further suggests to define a suitable content in the form for brochure before enrollment of the students.

List of value added courses:

a. PCB Design using PROTEUS
b. AR- Advancing Technology
c. FPGA: ARCHITECTURE, PROGRAMMING & TESTING

It has been decided that this list will be forwarded to Training and Placement Department for conducting/coordinating training on this topic.

Agenda 7: To examine feedback analysis for the 2017 passout batch (As per Annexure-7).

Resolution 7: HOD places the feedback analysis report of 2017 pass out batch received from IQAC for discussion and necessary actions on that. Feedback summary of all the five stake holders on the question framed and sanctioned by BOS has been placed and analyzed and following are the suggestions given by the expert-

a) As 11% students recommended Machine Learning and 89% students recommended Python, also 20% Alumni recommended Machine Learning and 40% alumni recommended Python and 40% alumni recommended both Machine Learning and Python into the curriculum, so it is recommended to offer these courses which are there in the curriculum as elective paper in B.TECH (ECE). It is accepted in the board.
b) In addition to that, course feedback for indirect attainment calculation for some sample courses has been shown to the external members. They expressed their satisfaction on that and suggested to continue the practice on regular basis. Questions used for taking the feedback were also shown.
c) It is decided that Core subjects should be included and completed by 3rd year as far as possible for the benefit of the students for appearing in the GATE examination.

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Agenda 8: To consider and approve Board of Examiners for theory and practical examination for the 1st year to 4th year classes

Resolution 8: HOD of ECE suggests the names of the Board of Examiners including external examiners for practical examination and moderators for semester question papers. Members propose the names of the external examiners as Prof.(Dr.) M. Mitra, Prof.(Dr.) S. Bhowmick, Prof.(Dr.) D. R. Poddar and Prof. (Dr.) A. Sarkar. It has been decided that external examiners and moderators can be appointed from these and in case of non availability of any examiner and moderator HOD can call any external expert from reputed organization discussing in the DAC. HOD also proposes the name

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81, Nilguni Road, Agarpara, Kol-109

of subject coordinators that has been sanctioned in DAC at the beginning of the semester for internal evaluator and paper setter. The board accepts the proposal and appreciates the concept to subject coordinator for maintaining uniformity in different sections.

Agenda 9: Training needs analysis of Faculty, TAs and students (As per Annexure-8)

Resolution 9: HOD placed the Training Need Analysis (TNA) report as finalized in the DAC and the committee expresses their satisfaction. Further committee suggests that MOOCS courses should be considered for training of faculties, TAs, students. Students should be encouraged to do training on aptitude, soft skills, and technical skills [Beyond Curriculum Training (BCT)] for campus interviews. Faculties are encouraged in doing training on emerging topics.

Agenda 10: Discussion about attainment of courses and gap analysis and setting up of attainment level for the current year:

Resolution 10: HOD places Attainment achieved by all subjects for review of external members. It is concluded that attainment are achieved in all subjects and marginal increase in attainment level can be considered for next batch.

Agenda 11: Discussion about achievement of the department

Resolution 11:

HOD, ECE places the result analysis of the previous semester where students' success rate is higher compared to earlier semester. Students' placement records are also placed and appreciated by all with following concerns-

a) Average package offered by companies need to be increased.
b) Students need to be encouraged in doing higher studies.
c) Students should prepare themselves ready for the R&D jobs of different companies.
d) MNCs, bulk recruitment companies should be encouraged in doing campus recruitment.

Agenda 12: Any other points with the permission of the chairman:

Resolution 12: There is no other significant discussion and the meeting ends with thanks from and to the chair.

Arpita Barman Santra
Secretary,
BOS, ECE Department

Dr. Saradindu Panda
HOD & Chairperson
BOS, ECE Department

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Annexure-4

List of new courses offered in B.TECH (ECE) in Regulation 18 curriculum

Name of the Programme	Name of the Course	Course Code	Year of introduction
B.TECH (Electronics and Communication Engineering)	Project-1A (ECE)	PR191	2018
B.TECH (Electronics and Communication Engineering)	Project-1B (ECE)	PR192	2018
B.TECH (Electronics and Communication Engineering)	Induction Program (ECE)	MC181	2018
B.TECH (Electronics and Communication Engineering)	Project-II (ECE)	PR291	2018
B.TECH (Electronics and Communication Engineering)	Innovative activities-I (ECE)	PR292	2018
B.TECH (Electronics and Communication Engineering)	Language Lab (ECE)	HU291	2018
B.TECH (Electronics and Communication Engineering)	NSS/ Physical Activities/Meditation & Yoga/Photography/ Nature Club (ECE)	MC281	2018
B.TECH (Electronics and Communication Engineering)	Values & Ethics in Profession (ECE)	HU301	2018
B.TECH (Electronics and Communication Engineering)	Project-III (ECE)	PR 391	2018
B.TECH (Electronics and Communication Engineering)	Innovative activities-II (ECE)	PR 392	2018
B.TECH (Electronics and Communication Engineering)	Behavioural & Interpersonal skills (ECE)	MC 381	2018
B.TECH (Electronics and Communication Engineering)	Project-IV (ECE)	PR 491	2018
B.TECH (Electronics and Communication Engineering)	Innovative activities-III (ECE)	PR 492	2018
B.TECH (Electronics and Communication Engineering)	Environmental Science (ECE)	HU 501	2018
B.TECH (Electronics and Communication Engineering)	Analog & Digital Communication Systems (ECE)	EC501	2018
B.TECH (Electronics and Communication Engineering)	Information Theory & Coding (ECE)	EC 504 A	2018
B.TECH (Electronics and Communication Engineering)	Renewable Energy Sources & Applications (ECE)	EC 504 B	2018

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81, Nilguni Road, Agarpara, Kol-109

B.TECH (Electronics and Communication Engineering)	Nano Electronics (ECE)	EC 504 C	2018
B.TECH (Electronics and Communication Engineering)	Project-V (ECE)	PR 591	2018
B.TECH (Electronics and Communication Engineering)	Innovative activities-IV (ECE)	PR 592	2018
B.TECH (Electronics and Communication Engineering)	Constitution of India (ECE)	MC 501	2018
B.TECH (Electronics and Communication Engineering)	Introduction to Python (ECE)	EC 604 C	2018
B.TECH (Electronics and Communication Engineering)	Object Oriented Programming using JAVA (ECE)	EC 605 A	2018
B.TECH (Electronics and Communication Engineering)	Computer Communication & Network Security (ECE)	EC 605 B	2018
B.TECH (Electronics and Communication Engineering)	Mobile Communication & Network Lab (ECE)	EC 694A	2018
B.TECH (Electronics and Communication Engineering)	Python Programming Lab (ECE)	EC 694 C	2018
B.TECH (Electronics and Communication Engineering)	Computer Communication & Network Security Lab (ECE)	EC 695 B	2018
B.TECH (Electronics and Communication Engineering)	Artificial Intelligence & Robotics Lab (ECE)	EC 695C	2018
B.TECH (Electronics and Communication Engineering)	Project-VI (ECE)	PR 691	2018
B.TECH (Electronics and Communication Engineering)	Innovative activities-V (ECE)	PR 692	2018
B.TECH (Electronics and Communication Engineering)	Satellite & Optical Communication (ECE)	EC 701 A	2018
B.TECH (Electronics and Communication Engineering)	Remote Sensing & GIS (ECE)	EC 701 C	2018
B.TECH (Electronics and Communication Engineering)	Machine Learning (ECE)	EC 702B	2018
B.TECH (Electronics and Communication Engineering)	Internet of Things (ECE)	EC 702 C	2018
B.TECH (Electronics and Communication Engineering)	Satellite & Optical Communication Lab (ECE)	EC 791 A	2018
B.TECH (Electronics and Communication Engineering)	Remote Sensing & GIS Lab (ECE)	EC 791 C	2018
B.TECH (Electronics and Communication Engineering)	Machine Learning Lab (ECE)	EC 792B	2018
B.TECH (Electronics and Communication Engineering)	Internet of Things (IOT) Lab (ECE)	EC 792 C	2018

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Kolkata - 700 109

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B.TECH (Electronics and Communication Engineering)	Project-VII (ECE)	PR791	2018
B.TECH (Electronics and Communication Engineering)	Innovative activities-VI (ECE)	PR 792	2018
B.TECH (Electronics and Communication Engineering)	Technical Lecture Presentation & Group Discussion-II (ECE)	MC781	2018
B.TECH (Electronics and Communication Engineering)	Adaptive Signal Processing (ECE)	EC 801 A	2018
B.TECH (Electronics and Communication Engineering)	Wireless Sensor Network (ECE)	EC 801 B	2018
B.TECH (Electronics and Communication Engineering)	Cloud Computing (ECE)	EC 802 A	2018
B.TECH (Electronics and Communication Engineering)	Data Science (ECE)	EC 802 B	2018
B.TECH (Electronics and Communication Engineering)	Block Chain (ECE)	EC 802 C	2018
B.TECH (Electronics and Communication Engineering)	Automotive Electronics (ECE)	EC 803 B	2018
B.TECH (Electronics and Communication Engineering)	Wireless Sensor Network Lab (ECE)	EC891B	2018
B.TECH (Electronics and Communication Engineering)	Embedded System Lab (ECE)	EC891C	2018
B.TECH (Electronics and Communication Engineering)	Adaptive Signal Processing Lab (ECE)	EC 891 A	2018
B.TECH (Electronics and Communication Engineering)	Essence of Indian Knowledge Tradition (ECE)	MC 801	2018

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Annexure-5

List of Subjects which have been identified for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship other than the core subjects.

Name of the Course	Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship
Project-1A	Skill Development, Employability, Entrepreneurship
Project-1B	Skill Development, Employability, Entrepreneurship
Induction Program	Skill Development, Employability, Entrepreneurship
Project-II	Skill Development, Employability, Entrepreneurship
Innovative activities-I	Skill Development, Employability, Entrepreneurship
Language Lab	Skill development & Employability
NSS/ Physical Activities/Meditation & Yoga/Photography/ Nature Club	Skill development
Values & Ethics in Profession	Skill development
Project-III	Skill Development, Employability, Entrepreneurship
Innovative activities-II	Skill Development, Employability, Entrepreneurship
Behavioural & Interpersonal skills	Skill Development, Employability, Entrepreneurship
Project-IV	Skill Development, Employability, Entrepreneurship
Innovative activities-III	Skill Development, Employability, Entrepreneurship
Environmental Science	Skill development & Employability
Analog & Digital Communication Systems	Skill development & Employability

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Kolkata - 700 109

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Information Theory & Coding	Skill development & Employability
Renewable Energy Sources & Applications	Skill Development, Employability, Entrepreneurship
Nano Electronics	Skill development & Employability
Project-V	Skill Development, Employability, Entrepreneurship
Innovative activities-IV	Skill Development, Employability, Entrepreneurship
Constitution of India	Skill development
Introduction to Python	Skill Development, Employability, Entrepreneurship
Object Oriented Programming using JAVA	Skill Development, Employability, Entrepreneurship
Computer Communication & Network Security	Skill Development, Employability, Entrepreneurship
Mobile Communication & Network Lab	Skill Development, Employability, Entrepreneurship
Python Programming Lab	Skill Development, Employability, Entrepreneurship
Computer Communication & Network Security Lab	Skill Development, Employability, Entrepreneurship
Artificial Intelligence & Robotics Lab	Skill Development, Employability, Entrepreneurship
Project-VI	Skill Development, Employability, Entrepreneurship
Innovative activities-V	Skill Development, Employability, Entrepreneurship
Satellite & Optical Communication	Skill Development, Employability
Remote Sensing & GIS	Skill Development, Employability, Entrepreneurship
Machine Learning	Skill Development, Employability, Entrepreneurship
Internet of Things	Skill Development, Employability, Entrepreneurship
Satellite & Optical Communication Lab	Skill Development, Employability, Entrepreneurship
Remote Sensing & GIS Lab	Skill Development, Employability, Entrepreneurship

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Machine Learning Lab	Skill Development, Employability, Entrepreneurship
Internet of Things (IOT) Lab	Skill Development, Employability, Entrepreneurship
Project-VII	Skill Development, Employability, Entrepreneurship
Innovative activities-VI	Skill Development, Employability, Entrepreneurship
Technical Lecture Presentation & Group Discussion-II	Skill Development, Employability, Entrepreneurship
Adaptive Signal Processing	Skill Development, Employability
Wireless Sensor Network	Skill Development, Employability, Entrepreneurship
Cloud Computing	Skill Development, Employability, Entrepreneurship
Data Science	Skill Development, Employability, Entrepreneurship
Block Chain	Skill Development, Employability, Entrepreneurship
Automotive Electronics	Skill Development, Employability, Entrepreneurship
Wireless Sensor Network Lab	Skill Development, Employability, Entrepreneurship
Embedded System Lab	Skill Development, Employability, Entrepreneurship
Adaptive Signal Processing Lab	Skill Development, Employability, Entrepreneurship
Essence of Indian Knowledge Tradition	Skill Development

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Meeting started with the welcome address by the HOD, Department of Electrical Engineering. The discussions took place on the following agendas and resolutions.

Agenda 1: Action taken report of the last meeting.

Resolution:

The actions taken against the resolution of last meeting was reported and approved by all the present BOS members.

Agenda 2: AICTE Notification of New Structure of Curriculum.

Resolution:

HOD expressed the urgency in view of the recent notification by AICTE recommending certain constraints over the credit point pertaining to the curriculum structure. The members appreciated the significance of the BOS meeting called by HOD in order to initiate revision of the whole curriculum as per AICTE new guidelines vol.1 for electrical engineering. The members recommended that the revised curriculum will be followed as the new Autonomy Regulation, 2018.

Agenda 3: Approval of Total B.Tech Curriculum and First year Syllabus of all the courses under New Autonomy Regulation, 2018.

Resolution:

HOD was pleased to place a complete draft of curriculum in limited time period under new regulation before the BOS members for the necessary approvals. The curriculum structure has already been approved in the Departmental Academic Committee meeting. In addition the HOD ensured the incorporation of following points which was recommended in the previous BOS meeting:

a) Guideline in preparing new curriculum will be followed according to Washington Accord.
b) Increase of total allotted class hours in the proposed curriculum including incorporation of proposed Physics – II (Engineering Physics).
c) Regarding the Chemistry, a subject on the Basic Chemistry with a special emphasis on the Physical Chemistry part to be included in the curriculum. Electrical engineering Materials will be treated as Industrial chemistry or Chemistry - II.
d) The shift of the subject Computer Language in the 2nd Semester. The Data Structure will incorporate as Elective in the later semester (to be decided). Also Control System will be divided into two parts Control System – I and Control System – II respectively for 5th and 6th semester.
e) Incorporation of Modification of "Power Plant & Prime Movers" by renaming as

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"Power Plant Engineering". Consideration of different types of 'mechanical loops', in designing proposed curriculum and syllabus to be developed in consultation with Mechanical Engineering dept. Also different types of turbine are to be incorporated in Fluid Mechanics and Thermodynamics.

f) Provision of at least two professional electives and one free elective from the curriculum of 3rd year onwards to be maintained as per the Washington Accord. Some foreign language may be opted as free elective.
g) Incorporation of Seminar to be both the 3rd year and 4th year curriculum.
h) Incorporation of PR 191 PROJECT-IA and PR 192 PROJECT-IB in 1st semester syllabus as the courses of 0.5 credit for enhancing project based learning from the very beginning.
i) Incorporation of PR 291 PROJECT-II in 2nd semester syllabus as the courses of 0.5 credit for continuing project based learning.
j) Incorporation of PR 292 Innovative activities-I in the 2nd semester syllabus to uphold the innovative ideas and nourish creative activity.

The Departmental Academic Committee (DAC) approved curriculum has been prepared in following recent guidelines of regulatory bodies. All the BOS members express their satisfaction and approve the same to forward it to the Academic Committee (AC) for further approval.
The new curriculum has been provided in Annexure-I.

Agenda 4: Re-Confirmation of Board of Examiners.

Resolution:

HOD finalizes the names of the Board of Examiners including external examiners for practical examination and moderators for semester question papers. Members suggest the names of the external examiners as Dr. Suddhasatwa Chakraborty, Dr. Arabinda Das, Dr. Sawan Sen Dr. Partha Bera, Dr. Debasish Chatterjee, Dr. Shibshankar Saha, Dr. Pritam Gayen, Dr. Susanta Ray, Prof. Basudeb Dey, Prof. Suparna Pal-Deb, Prof. Shyamal Kumar Roy, Prof. Rikta Majumder, Prof. Abhishek Dhar, Prof. Indranil Kushary, Prof. Pratyaya Majumdar and Dr. Ranjit Roy. It has been decided that external examiners and moderators can be appointed from the above mentioned name of external examiners. In case of non-availability of any examiner and moderator HOD may call an external expert from reputed Institution through the DAC proceedings. HOD also proposed the name of all course coordinators, internal evaluator and paper setter as discussed in DAC at the commencement of the semester. The board approved the same.

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Agenda 5: Discussions regarding feedback of all stakeholders.

Resolution:

HOD placed the feedback analysis report obtained from IQAC for discussion and necessary actions on that. Feedback summery of all the five stack holders on the question framed and suctioned by BOS has been placed and analyze and following was the suggestion given by the expert-

a) As per the student's feedback 52.4% of 2016-17 academic year and 85.7% of alumni were found to ask for addition of the subject High voltage Engineering, Embedded Systems, Embedded Systems Lab, Micro Processor & Micro controller, Micro Processor & Micro controller Lab. These courses are also justified by the members for inclusion in curriculum of autonomous regulation 2018 ahead. It is also suggested to organize in-house training/beyond curriculum training till the next revision of the curriculum. It was accepted in the board.

In addition to that, course feedback for indirect attainment calculation for some sample courses has been shown to the external members. They expressed their satisfaction on that and suggested to continue the practice on regular basis. Questions used for taking the feedback were also shown

Agenda 6: Departmental Achievement.

Resolution:

HOD reported higher success rate students' in comparison to previous semester

HOD also presented numbers regarding publications by faculty members and students in National and International conferences of repute, book chapter and journals.

Agenda 7: Training needs analysis of Faculty, TAs and students.

Resolution:

Committee suggests that MOOCS courses are considered for training of faculties, TAs, students. Students should be encouraged to do training on aptitude, soft skills, and technical skills for campus interviews. Faculties are encouraged in doing training on emerging topic from NPTEL etc.

Agenda 8: Discussion about attainment of courses.

Resolution:

HOD presented the Attainment calculation for all the courses, by the students passed in the academic year 2016-17, before the committee for the adjustment (if required) of attainment level for the upcoming semesters and finalized.

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Annexure-4

List of new courses offered in B.TECH (EE) in Regulation 18 curriculum

Name of the Programme	Name of the Course	Course Code	Year of introduction
B.TECH (Electrical Engineering)	Project-1A (EE)	PR191	2018
B.TECH (Electrical Engineering)	Project-1B (EE)	PR192	2018
B.TECH (Electrical Engineering)	Induction Program (EE)	MC181	2018
B.TECH (Electrical Engineering)	Project-II (EE)	PR291	2018
B.TECH (Electrical Engineering)	Innovative activities-I (EE)	PR292	2018
B.TECH (Electrical Engineering)	Language Lab (EE)	HU291	2018
B.TECH (Electrical Engineering)	NSS/ Physical Activities/Meditation & Yoga/Photography/ Nature Club (EE)	MC281	2018
B.TECH (Electrical Engineering)	Electrical Circuit Analysis Laboratory (EE)	EE 391	2018
B.TECH (Electrical Engineering)	Project – III (EE)	PR 391	2018
B.TECH (Electrical Engineering)	Innovative Activities – II (EE)	PR 392	2018
B.TECH (Electrical Engineering)	Environmental Science (EE)	MC 301	2018
B.TECH (Electrical Engineering)	Electromagnetic Fields (EE)	EE 404	2018
B.TECH (Electrical Engineering)	Project – IV (EE)	PR 491	2018
B.TECH (Electrical Engineering)	Innovative Activities – III (EE)	PR 492	2018
B.TECH (Electrical Engineering)	Behavioural & Interpersonal Skills (EE)	MC 481	2018
B.TECH (Electrical Engineering)	Internet of Things (EE)	EE 504C	2018
B.TECH (Electrical Engineering)	Electrical Energy Conservation and Auditing (EE)	EE 505A	2018
B.TECH (Electrical Engineering)	Electromagnetic Waves (EE)	EE 505B	2018
B.TECH (Electrical Engineering)	Internet of Things Laboratory (EE)	EE 594C	2018
B.TECH (Electrical Engineering)	Project – V (EE)	PR 591	2018
B.TECH (Electrical Engineering)	Innovative Activities – IV (EE)	PR 592	2018
B.TECH (Electrical Engineering)	Constitution of India (EE)	MC 501	2018
B.TECH (Electrical Engineering)	Embedded Systems (EE)	EE 604B	2018
B.TECH (Electrical Engineering)	Embedded Systems Laboratory (EE)	EE 693B	2018
B.TECH (Electrical Engineering)	Project – VI (EE)	PR 691	2018
B.TECH (Electrical Engineering)	Innovative Activities – V (EE)	PR 692	2018
B.TECH (Electrical Engineering)	Technical Lecture Presentation & Group Discussion – I (EE)	MC 681	2018
B.TECH (Electrical Engineering)	Big Data Analysis (EE)	EE 702B	2018
B.TECH (Electrical Engineering)	Restructured Electrical Power System (EE)	EE 703B	2018
B.TECH (Electrical Engineering)	Computer Applications in Power System (EE)	EE 703C	2018
B.TECH (Electrical Engineering)	Power System Dynamics and Control (EE)	EE 704A	2018

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B.TECH (Electrical Engineering)	Power Quality and FACTS (EE)	EE 704B	2018
B.TECH (Electrical Engineering)	Object Oriented Programming Laboratory (EE)	EE 792A	2018
B.TECH (Electrical Engineering)	Project – VII (EE)	PR 791	2018
B.TECH (Electrical Engineering)	Innovative Activities – VI (EE)	PR 792	2018
B.TECH (Electrical Engineering)	Technical Lecture Presentation & Group Discussion – II (EE)	MC 781	2018
B.TECH (Electrical Engineering)	Wind and Solar Energy Systems (EE)	EE 801	2018
B.TECH (Electrical Engineering)	Advanced Electric Drives (EE)	EE 802A	2018
B.TECH (Electrical Engineering)	Control Systems Design (EE)	EE 802B	2018
B.TECH (Electrical Engineering)	Industrial Electrical System (EE)	EE 802C	2018
B.TECH (Electrical Engineering)	Principles of Management (EE)	HU 801	2018
B.TECH (Electrical Engineering)	Project – VIII (EE)	PR 891	2018
B.TECH (Electrical Engineering)	Essence of Indian Knowledge Tradition (EE)	MC 804	2018

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Dr. Sumit Chabri, Head of the department of the department of Mechanical Engineering presides over the meeting as a chair person and officially welcomed the present members.

As per the request of Head of the dept., Dr. Bikash Panja, Secretary of Board of studies presented the programme elaborately through power point presentation.

The following resolutions were adopted after detail deliberation.

Agenda – 1
Confirmation of the Minutes of last Academic Council meeting.
Resolution:

The minutes of the last meeting held on 12/7/2017 was duly confirmed and approved.

Agenda – 2
Approval of Action taken report of the resolutions taken in the last meeting
Resolution:

The action taken report of the last meeting's resolution held on 12/7/2017 was approved and circulated (**Annexure I**).

Agenda –3
Approval of the new curriculum for B.TECH (ME)

Resolution:

Head of the department notified it to the BOS committee that the proposed curriculum (**Annexxure II**) is by now discussed and approved in the Departmental Academic Committee (DAC). All the BOS members express their satisfaction and approve the same to forward it to the Academic Committee (AC) for further approval. HOD also pointed out that as per the suggestion of the BOS members in the last meeting, course outcomes (based on outcome based education (OBE)) for all the courses have been prepared and also mapping with POs and PSOs (approved by BOS earlier) are defined.

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Agenda –4 Identification of Courses in R18 Curriculum, which are having focus on Employability, Industrial need, Higher studies, Entrepreneurship

Resolution:

As per the suggestion of the BOS member in the last meeting courses for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship introduced in R18 have been identified and listed in **Annexure-III** for ready reference

Agenda -5: Identification of new courses in R18 Curriculum.

Resolution:

As per the suggestion of the BOS member in the last meeting courses which have been introduced in R18 have been identified and listed in **Annexure-IV** for ready reference

Agenda –6

Discussion on feedback analysis for the year 2017-18

Resolution:

Feedback of the students are analysed and action has been taken accordingly. Composites, IoT courses are incorporated

Agenda –7

Consideration of Board of Examiners for theory and practical examination for the 1st year to 4th year classes:

Resolution:

Approved by BOS committee, No further action is required.

Agenda –8

Discussion on training needs analysis of Faculty, TAs and students

Resolution:

Action has been taken accordingly. Faculties, TAs and students should be encouraged to enroll in MOOCs courses. Students should be encouraged to do training on aptitude, soft skills, and technical skills for campus interviews.

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Agenda –9

Discussion about attainment of courses and gap analysis

Resolution:

Approved by BOS. No further action is required

Agenda –10

Discussion about achievement of the department

Resolution:

BOS is satisfied with the achievement.

Signature of the Secretary

BOS, ME Department

Signature of the Chairperson,

BOS, ME Department

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Annexure III

List of subjects, having focus on employability, entrepreneurship, industry needs

Design Of Machine Elements-II	ME 602
IC Engine & Gas Turbine	ME 603
Robotics: Mechanics and Control	ME 604A
Composite Materials	ME 604B
Fluid Power Control	ME 604C
Computational Fluid Dynamics	ME 605B
Gas Dynamics and Jet Propulsion	ME 605C
Machining & Machine Tools Lab	ME 691
Design Practice Lab	ME 692
IC Engine Lab	ME 693
Robotics Lab	ME 694 A
Composite Materials Lab	ME 694 B
Fluid Power Control Lab	ME 694 C
Power Plant Engineering	ME 701
Advanced Manufacturing Technology	ME 702
Advanced Welding Technology	ME 703 A
Biomechanics & Biomaterials	ME 703 B
Finite Element Method	ME 703 C
Tribology	ME 704 A
Operations Research	ME 704 B
Materials Handling	ME 704 C
Quality & Reliability Engineering	ME 705 B
Hydro, Wind and Wave Power	ME 705 C
Advanced Manufacturing Lab	ME 791
Advanced Welding Lab	ME 793 A
Biomechanics & Biomaterials Lab	ME 793 B
Finite Element Method Lab	ME 793 C
Automobile Engineering	ME 802A
CAD/CAM	ME 802B
Automation & Control	ME 802C
Turbo Machinery	ME 803A
Maintenance Engineering	ME 803B
Numerical Heat Transfer	ME 803C

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Annexure-4

List of new courses offered in B.TECH Mechanical Engineering in Regulation 18 curriculum

Name of the Programme	Name of the Course	Course Code	Year of introduction
B.TECH (Mechanical Engineering)	Project-1A (ME)	PR191	2018
B.TECH (Mechanical Engineering)	Project-1B (ME)	PR192	2018
B.TECH (Mechanical Engineering)	Induction Program (ME)	MC181	2018
B.TECH (Mechanical Engineering)	Project-II (ME)	PR291	2018
B.TECH (Mechanical Engineering)	Innovative activities-I (ME)	PR292	2018
B.TECH (Mechanical Engineering)	Language Lab (ME)	HU291	2018
B.TECH (Mechanical Engineering)	NSS/ Physical Activities/Meditation & Yoga/Photography/ Nature Club (ME)	MC281	2018
B.TECH (Mechanical Engineering)	Materials Engineering (ME)	ME304	2018
B.TECH (Mechanical Engineering)	Innovative activities-II (ME)	PR 392	2018
B.TECH (Mechanical Engineering)	Project-III (ME)	PR 391	2018
B.TECH (Mechanical Engineering)	Environmental Science (ME)	MC301	2018
B.TECH (Mechanical Engineering)	Manufacturing Process (ME)	ME402	2018
B.TECH (Mechanical Engineering)	Data Structure and algorithm (ME)	ME405	2018
B.TECH (Mechanical Engineering)	Manufacturing Process lab (ME)	ME492	2018
B.TECH (Mechanical Engineering)	Project-IV (ME)	PR 491	2018
B.TECH (Mechanical Engineering)	Innovative activities-III (ME)	PR 492	2018
B.TECH (Mechanical Engineering)	Constitution of India (ME)	MC401	2018
B.TECH (Mechanical Engineering)	Manufacturing Technology (ME)	ME502	2018
B.TECH (Mechanical Engineering)	Solid Mechanics (ME)	ME 505B	2018
B.TECH (Mechanical Engineering)	Computer Aided Design (ME)	ME 505 C	2018
B.TECH (Mechanical Engineering)	Manufacturing Technology Lab (ME)	ME592	2018
B.TECH (Mechanical Engineering)	Project-V (ME)	PR 591	2018
B.TECH (Mechanical Engineering)	Innovative activities-IV (ME)	PR 592	2018
B.TECH (Mechanical Engineering)	Technical Seminar Presentation (ME)	MC581	2018
B.TECH (Mechanical Engineering)	Internal Combustion Engine and Gas Turbine (ME)	MC601	2018
B.TECH (Mechanical Engineering)	Total Quality Management (ME)	ME 602 C	2018
B.TECH (Mechanical Engineering)	Database Management System (ME)	ME 603 B	2018
B.TECH (Mechanical Engineering)	Internet of Things (ME)	ME 603 C	2018

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Dept. of Mechanical Engineering
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunge Road, Agarpara, Kol-109

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B.TECH (Mechanical Engineering)	Fluid Power control (ME)	ME 604 C	2018
B.TECH (Mechanical Engineering)	Values & Ethics in Profession (ME)	HU601	2018
B.TECH (Mechanical Engineering)	Computational Fluid Dynamics Lab (ME)	ME 692B	2018
B.TECH (Mechanical Engineering)	Project-V (ME)	PR691	2018
B.TECH (Mechanical Engineering)	Innovative activities-V (ME)	PR 692	2018
B.TECH (Mechanical Engineering)	Design Of Transmission System (ME)	ME 702B	2018
B.TECH (Mechanical Engineering)	Nuclear Power Generation & Supply (ME)	ME702C	2018
B.TECH (Mechanical Engineering)	Reliability & Maintenance (ME)	ME 703C	2018
B.TECH (Mechanical Engineering)	Project-VIIB (ME)	PR792	2018
B.TECH (Mechanical Engineering)	Innovative activities-VI (ME)	PR793	2018
B.TECH (Mechanical Engineering)	Behavioural and Interpersonal Skill (ME)	MC781	2018
B.TECH (Mechanical Engineering)	Industrial & Financial Management (ME)	HU803	2018
B.TECH (Mechanical Engineering)	Gas Dynamics & Jet Propulsion (ME)	ME 801C	2018
B.TECH (Mechanical Engineering)	3D Printing and Design (ME)	ME 802A	2018
B.TECH (Mechanical Engineering)	Nanotechnology (ME)	ME 802B	2018
B.TECH (Mechanical Engineering)	Industrial Instrumentation (ME)	ME 802C	2018
B.TECH (Mechanical Engineering)	Artificial Intelligence (ME)	ME 803A	2018
B.TECH (Mechanical Engineering)	Microprocessor in Automation (ME)	ME 803C	2018
B.TECH (Mechanical Engineering)	Essence of Indian Knowledge Tradition (ME)	MC801	2018

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Dept. of Mechanical Engineering
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81, Nilgunge Road, Agarpara, Kol-109

Principal
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81, Nilgunj Road, Agarpara, Kol-109

Meeting was presided over by Prof. (Dr.) Sibapriya Mukherjee, Professor, Civil Engineering Department, Jadavpur University.
The following resolutions were adopted after detail deliberation.

Agenda Item No. 1: Action required based on Academic Audit score: (As Annexure-1)

Resolution:
HOD, Civil of NIT addressed to the chair giving thanks and personally briefed about the Academic audit score that Civil Department have received and many faculty members suggested many ways to improve the same. Some of the suggestions are:

- Introduction few new training/seminar program
- Revision of the syllabus as per guidelines.
- Frequent feedback system
- More interaction with students

After detail discussion, Proposition for improving academic and administrative performance of Civil Engineering Department have been Approved and accepted.

Agenda Item No. 2: Approval Of Paper Setter Name: (As Annexure-2)

Resolution:

HOD, Civil, NiT placed the list of Paper setters for the odd semester examination for semester subject before the BOS. It was also informed that all paper setter shall prepare two set of question papers, to enable moderators to choose questions. Paper setters shall also prepare question for both regular and backlog students. Format for the question paper will be distributed soon. BOS Approved the list which shall be forwarded to Controller of Examination.

Agenda Item No. 3: To consider and adopt the new R16 curriculum for B.TECH (CE) programme (As per Annexure-3).

Resolution:
HOD, CE Dept. highlighted that in formation of R16 curriculum (as Annexure 3), all the points, suggestions of BOS members given in the last meeting and guidelines of regulatory bodies have been taken into consideration. This curriculum is already discussed and approved in the Departmental Academic Committee (DAC). All the BOS members express their satisfaction and approve the same to forward it to the Academic Committee (AC) for further approval. HOD also pointed out that as per the suggestion of the BOS members in the last meeting, course outcomes (as per OBE requirement) for all the courses have been prepared and also mapping with POs and PSOs (approved by BOS earlier) are defined.

Agenda Item No. 4: Identification of new courses in R16 Curriculum.

Resolution:

As per the suggestion of the BOS member in the last meeting courses which have been introduced in R16 have been identified and listed in Annexure-4 for ready reference.

Agenda Item No. 5: Identification of Courses in R16 Curriculum Mapped with Employability/ Skill Development/Entrepreneurship.

HOD Civil Engineering Dept.
Narula Institute of Technology

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Resolution:
As per the suggestion of the BOS member in the last meeting courses for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship introduced in R16 have been identified and listed in Annexure-5 for ready reference.

Agenda Item No. 6: To consider running of value added courses (As per Annexure-4).

Resolution:
HOD placed a list of value added courses to be offered during the coming semester break for consideration of the Committee. After discussion the following courses have been selected. Committee further suggests to define a suitable content in the form for brochure before enrollment of the students.

List of value added courses:

a. MS Projects
b. STAAD pro &STAAD Fdn.
c. E-Tabs
d. MX Roads
e. Revit
f. Total Station
g. Pro -Steel

It has been decided that this list will be forwarded to Training and Placement Department for conducting/coordinating training on these topics.

Agenda Item No. 7: Departmental Budget: (As per Annexure-5).

Resolution:
Another important agenda was to get the departmental budget Approved by BOS committee before placing same to Management. Departmental head placed the Budget for next semester which includes, laboratory equipment / instruments, repair and maintenance, stationary, Computer and other IT requirements. Requirement have been discussed and getting the justifications, BOS approved the Departmental Budget for forwarding same to higher authority for further action.

Agenda Item No. 8: Any other matter with the permission of the chair

Resolution:
The committee wholeheartedly supported the process of properly displaying Proper manuals and laboratory experiments procedures including test and apparatus/instrument names in each lab.

Meeting ended with vote of thanks to the expert member of the committee.

HOD Civil Engineering Dept.
Narula Institute of Technology

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Mr. Abhipriya Halder
Departmental Coordinator
BOS, CE Department

Prof. (Dr.) Biman Mukherjee
HOD & Chairperson
BOS, CE Department

HOD Civil Engineering Dept.
Narula Institute of Technology

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81, Nilgunj Road, Agarpara, Kol-109

Annexure-4

List of new courses offered in B.TECH Civil Engineering in Regulation 16 curriculum

B.TECH (Civil Engineering)	Basic Electronics Engineering (CE)	EC101	2016
B.TECH (Civil Engineering)	Basic Electronics Engineering Lab (CE)	EC191	2016
B.TECH (Civil Engineering)	Lang. Lab. and Seminar Presentation (CE)	HU191	2016
B.TECH (Civil Engineering)	Soft Skill Development (CE)	MC282	2016
B.TECH (Civil Engineering)	Numerical Methods (CE)	M(CS) 301	2016
B.TECH (Civil Engineering)	Engineering Geology (CE)	CE 304	2016
B.TECH (Civil Engineering)	Numerical Methods Lab (CE)	M(CS) 391	2016
B.TECH (Civil Engineering)	Technical Skill Development (CE)	MC381	2016
B.TECH (Civil Engineering)	Environmental Science (CE)	HU401	2016
B.TECH (Civil Engineering)	Surveying - II (CE)	CE 401	2016
B.TECH (Civil Engineering)	Values and Ethics in Profession (CE)	HU502	2016
B.TECH (Civil Engineering)	Structural Design – I (CE)	CE501	2016
B.TECH (Civil Engineering)	Quantity Surveying, Specification And Valuation (CE)	CE502	2016
B.TECH (Civil Engineering)	Structural Analysis - II (CE)	CE 503	2016
B.TECH (Civil Engineering)	Hydraulics (CE)	CE 505A	2016
B.TECH (Civil Engineering)	Water Supply and Plumbing (CE)	CE 505B	2016
B.TECH (Civil Engineering)	Waste Water and Treatment (CE)	CE 505C	2016
B.TECH (Civil Engineering)	Surveying Practice - II (CE)	CE 591	2016
B.TECH (Civil Engineering)	Civil Engineering Lab (CE)	CE 593	2016
B.TECH (Civil Engineering)	Presentation Skill (CE)	MC 581	2016
B.TECH (Civil Engineering)	Studies on Six Sigma (CE)	CE605C	2016
B.TECH (Civil Engineering)	Computer Aided Analysis & Design (CE)	CE 681	2016
B.TECH (Civil Engineering)	Traffic Engineering & Planning (CE)	CE 704B	2016
B.TECH (Civil Engineering)	Urban Planning (CE)	CE 704C	2016
B.TECH (Civil Engineering)	Civil Engineering Practice Sessional (CE)	CE782	2016
B.TECH (Civil Engineering)	Ground Improvement & Technique (CE)	CE802B	2016
B.TECH (Civil Engineering)	Advanced Transportation Engineering (CE)	CE 802C	2016
B.TECH (Civil Engineering)	Technical Report Writing & Group Discussion (CE)	HU891	2016
B.TECH (Civil Engineering)	Air & Noise Pollution And Control (CE)	CE 803C	2016

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The HOD, Department of Electrical Engineering chaired the meeting and started with the welcome address. The discussions took place on the following agendas and resolutions.

Agenda 1: Confirmation of minutes of the Board of studies meeting held on 22.07.2015.

Resolution:

HOD and other members present, noted the action taken against the resolutions of last BOS minutes and confirmed.

Agenda 2: Autonomy for the institute.

Resolution:

The members appreciated for award of Autonomy status conferred by UGC against letter Ref. No. F. 22-1/2015(AC), dated 29.07.2015 (Annexure – I).

Agenda 3: Commencement of Syllabus under Autonomy.

Resolution:

As discussed with the members, the approved curriculum and syllabus will be commenced from the academic year 2016-2017 as Regulation 2016 (R16). It is also suggested that Beyond Curriculum Training / Vocational Training / Industry Visit may be conducted as per requirement to satisfy the pre-requisites of higher semester courses and enriching the practical knowledge.

Agenda 4: Formation and list of Board of Examiners.

Resolution:

HOD of EE Dept. proposes the names of the Board of Examiners including external examiners for practical examination and moderators for semester question papers. Members suggested the names of the external examiners as Prof. Rikta Majumder, Prof. Abhishek Dhar, Prof. Indranil Kushary and Prof. Pratyaya Majumdar. It has been decided that external examiners and moderators can be appointed from the above-mentioned name of external examiners. In case of non-availability of any examiner and moderator HOD may call an external expert from reputed Institution through the DAC proceedings. HOD also proposed the name of all course coordinators, internal evaluator and paper setter as discussed in DAC at the commencement of the semester. The board accepted the proposal.

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Agenda 5: Value added courses offered.

Resolution:

The members suggested that some courses relevant to recent trends in Electrical Engineering and associated areas that are not included in the curriculum may be offered to the students as value added course. Members recommended few value added courses from which student can opt any one in a semester are attached as Annexure – II.

Agenda 6: Discussion on the Report of Academic Audit.

Resolution:

The detailed report of the Academic Audit 2014-2015 has been discussed with the members present. Following points have been noted

a) some innovative experiments in the laboratories may be conducted.
b) to establish a departmental instrument bank for the experimental purpose.

Agenda 7: Amendment of Mission Statement:

Resolution:

As suggested, the mission statement of Department of Electrical Engineering under autonomy regulation has been amended as per Annexure – III.

Agenda 8: Submission of detailed Result Analysis of academic year 2014-15 and feedback of all stakeholders.

Resolution:

HOD informed submission of detailed result analysis for the academic year 2014-15 and feedback of all stakeholders. The result analysis and feedback has been submitted to IQAC for the necessary actions pertaining to the attainment level of even semester courses.

Meeting is ended with thanks to and from the chair.

Prof. Amlan Chakrabarti
HOD, Department of Electrical Engineering

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Annexure-4

List of new courses offered in B.TECH (EE) in Regulation 16 curriculum

Name of the Programme	Name of the Course	Course Code	Year of introduction
B.TECH (Electrical Engineering)	Basic Electrical Engineering (EE)	EE101	2016
B.TECH (Electrical Engineering)	Basic Electrical Engineering Lab (EE)	EE191	2016
B.TECH (Electrical Engineering)	Lang. Lab. and Seminar Presentation (EE)	HU191	2016
B.TECH (Electrical Engineering)	Soft Skill Development (EE)	MC282	2016
B.TECH (Electrical Engineering)	Technical Skill Development (EE)	MC 481	2016
B.TECH (Electrical Engineering)	Environmental Science (EE)	HU 501	2016
B.TECH (Electrical Engineering)	Electrical System Design – I (EE)	EE581	2016
B.TECH (Electrical Engineering)	Non-conventional Energy Sources and Applications (EE)	EE 605A	2016
B.TECH (Electrical Engineering)	Computational Intelligence (EE)	EE 605B	2016
B.TECH (Electrical Engineering)	Introduction to Robotics (EE)	EE 605C	2016
B.TECH (Electrical Engineering)	Mechatronics (EE)	EE 605D	2016
B.TECH (Electrical Engineering)	Object Oriented Programming using C++ (EE)	CS(EE) 606B	2016
B.TECH (Electrical Engineering)	Computer Architecture and Operating Systems (EE)	CS(EE) 606C	2016
B.TECH (Electrical Engineering)	Object Oriented Programming using C++ Laboratory (EE)	CS(EE) 696B	2016
B.TECH (Electrical Engineering)	Computer Architecture and Operating Systems Laboratory (EE)	CS(EE) 696C	2016
B.TECH (Electrical Engineering)	Industrial Training (EE)	EE 671	2016
B.TECH (Electrical Engineering)	Advanced Power Electronics (EE)	EE 702B	2016
B.TECH (Electrical Engineering)	Advanced Power Systems (EE)	EE 703A	2016
B.TECH (Electrical Engineering)	Advanced Electrical Measurement and Instrumentation (EE)	EE 703D	2016
B.TECH (Electrical Engineering)	Data Base Management System (EE)	CS(EE) 705D	2016
B.TECH (Electrical Engineering)	Artificial intelligence and soft computing LAB (EE)	CS(EE)795A	2016
B.TECH (Electrical Engineering)	Data Base Management System LAB (EE)	CS(EE)795D	2016

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B.TECH (Electrical Engineering)	Seminar on Industrial Training and Report (EE)	EE 771	2016
B.TECH (Electrical Engineering)	Entrepreneurship Development (EE)	MC 781	2016
B.TECH (Electrical Engineering)	Industrial and Financial Management (EE)	HU 805	2016
B.TECH (Electrical Engineering)	Electronic Instrumentation and Control (EE)	EE 802C	2016

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Meeting has been started with the welcome address by the Chairperson and all the leave of absence has been granted. Then the meeting is continued with agenda wise discussion.

The following resolutions were adopted after detail deliberation.

Agenda 1: To confirm the minutes of the Board of Studies meeting held on 06.10.2015(As per Annexure 1)

Resolution 1: HOD requests all the members to note the minutes of the last meeting (shared as Annexure 1) and read out the same for confirmation. All the members accept the same and confirm.

Agenda 2: To report action taken on the minutes of Board of Studies held on 06.10.2015 (As per Annexure 2).

Resolution 2: HOD requests all the members to note the action taken report on the minutes of Board of Studies held on 06.10.2015 (shared as Annexure 2) and read out the same for confirmation. All the members accept the same and confirm.

Agenda 3: To consider and adopt the new Regulation 16 (R16) curriculum for B.TECH (ECE) programme (As per Annexure-3).

Resolution 3:
HOD, ECE Dept. highlighted that in formation of R16 curriculum (as Annexure-3), all the points, suggestions of BOS members given in the last meeting and guidelines of regulatory bodies have been taken into consideration. This curriculum is already discussed and approved in the Departmental Academic Committee (DAC). All the BOS members express their satisfaction and approve the same to forward it to the Academic Committee (AC) for further approval. HOD also pointed out that as per the suggestion of the BOS members in the last meeting, course outcomes (as per OBE requirement) for all the courses have been prepared and also mapping with POs and PSOs (approved by BOS earlier) are defined.

Agenda 4: Identification of new courses in R16 Curriculum.

Resolution 4: As per the suggestion of the BOS member in the last meeting courses which have been introduced in R16 have been identified and listed in Annexure-4 for ready reference.

Agenda 5: Identification of Courses in R16 Curriculum Mapped with Employability/ Skill Development/Entrepreneurship.

Resolution 5: As per the suggestion of the BOS member in the last meeting courses for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship introduced in R16 have been identified and listed in Annexure-5 for ready reference.

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Agenda 6: To consider running of value added courses (As per Annexure-6).

Resolution 6: HOD placed a list of value added courses to be offered during the coming semester break for consideration of the Committee. After discussion the following courses have been selected. Committee further suggests to define a suitable content in the form for brochure before enrollment of the students.

List of value added courses:

a. PCB Design using PROTEUS
b. Big Data
c. Recent Advances in Communication

It has been decided that this list will be forwarded to Training and Placement Department for conducting/coordinating training on this topic.

Agenda 7: To examine feedback analysis for the 2015 passout batch (As per Annexure-7).

Resolution 7: HOD places the feedback analysis report of 2015 pass out batch received from IQAC for discussion and necessary actions on that. Feedback summary of all the five stake holders on the question framed and sanctioned by BOS has been placed and analyzed and following are the suggestions given by the expert-

a) As 31.25% students recommended Machine Learning and 56.25% students recommended Python, also 16% Alumni recommended Machine Learning and 67% alumni recommended Python and 17% alumni recommended both Machine Learning and Python into the curriculum, so it is recommended to offer these courses which are there in the curriculum as elective paper in B.TECH (ECE). It is accepted in the board.

b) In addition to that, course feedback for indirect attainment calculation for some sample courses has been shown to the external members. They expressed their satisfaction on that and suggested to continue the practice on regular basis. Questions used for taking the feedback were also shown.

c) It is decided that Core subjects should be included and completed by 3rd year as far as possible for the benefit of the students for appearing in the GATE examination.

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Agenda 8: To consider and approve Board of Examiners for theory and practical examination for the 1st year to 4th year classes

Resolution 8: HOD of ECE suggests the names of the Board of Examiners including external examiners for practical examination and moderators for semester question papers. Members propose the names of the external examiners as Prof. (Dr.) M. Mitra, Prof. (Dr.) S. Bhowmick, Prof.(Dr.) D. R. Poddar. It has been decided that external examiners and moderators can be appointed from these and in case of non availability of any examiner and moderator HOD can call any external expert from reputed organization discussing in the Departmental Academic Committee (DAC). HOD also proposes the name of subject coordinators that has been sanctioned in DAC at the beginning of the semester for internal evaluator and paper setter. The

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board accepts the proposal and appreciates the concept to subject coordinator for maintaining uniformity in different sections.

Agenda 9: Training needs analysis of Faculty, TAs and students (As per Annexure-8)

Resolution 9: HOD placed the Training Need Analysis (TNA) report as finalized in the DAC and the committee expresses their satisfaction. Further committee suggests that MOOCS courses should be considered for training of faculties, TAs, students. Students should be encouraged to do training on aptitude, soft skills, and technical skills [Beyond Curriculum Training (BCT)] for campus interviews. Faculties are encouraged in doing training on emerging topics.

Agenda 10: Discussion about attainment of courses and gap analysis and setting up of attainment level for the current year:

Resolution 10: HOD places Attainment achieved by all subjects for review of external members. It is concluded that attainment are achieved in all subjects and marginal increase in attainment level can be considered for next batch.

Agenda 11: Discussion about achievement of the department

Resolution 11:

HOD, ECE places the result analysis of the previous semester where students' success rate is higher compared to earlier semester. Students' placement records are also placed and appreciated by all with following concerns-

a) Average package offered by companies need to be increased.
b) Students need to be encouraged in doing higher studies.
c) Students should prepare themselves ready for the R&D jobs of different companies.
d) MNCs, bulk recruitment companies should be encouraged in doing campus recruitment.

Agenda 12: Any other points with the permission of the chairman:

Resolution 12: There is no other significant discussion and the meeting ends with thanks from and to the chair.

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Arpita Barman Santra
Secretary,
BOS, ECE Department

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Dr. Saradindu Panda
HOD & Chairperson
BOS, ECE Department

Head, ECE
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Annexure-4

List of new courses offered in B.TECH (ECE) in Regulation 16 curriculum

Name of the Programme	Name of the Course	Course Code	Year of introduction
B.TECH (Electronics and Communication Engineering)	Basic Electrical Engineering (ECE)	EE101	2016
B.TECH (Electronics and Communication Engineering)	Basic Electrical Engineering Lab (ECE)	EE191	2016
B.TECH (Electronics and Communication Engineering)	Lang. Lab. and Seminar Presentation (ECE)	HU191	2016
B.TECH (Electronics and Communication Engineering)	Soft Skill Development (ECE)	MC282	2016
B.TECH (Electronics and Communication Engineering)	Data Structure (ECE)	CS(ECE) 301	2016
B.TECH (Electronics and Communication Engineering)	Data Structure Lab (ECE)	CS(ECE) 391	2016
B.TECH (Electronics and Communication Engineering)	Technical Skill Development (ECE)	MC381	2016
B.TECH (Electronics and Communication Engineering)	Technical Report Writing & Language Practice (ECE)	HU481	2016
B.TECH (Electronics and Communication Engineering)	Microprocessor & Micro Controller (ECE)	EC 502	2016
B.TECH (Electronics and Communication Engineering)	Electrical & Electronics Measurement (ECE)	EC504B	2016
B.TECH (Electronics and Communication Engineering)	Telecommunication Systems (ECE)	EC504C	2016
B.TECH (Electronics and Communication Engineering)	Microprocessor & Micro Controller Lab (ECE)	EC592	2016
B.TECH (Electronics and Communication Engineering)	Mini Project -I (ECE)	EC 581	2016
B.TECH (Electronics and Communication Engineering)	Digital Signal Processing Lab (ECE)	EC 593	2016
B.TECH (Electronics and Communication Engineering)	Group Discussion Practice (ECE)	MC 581	2016
B.TECH (Electronics and Communication Engineering)	EM Wave Propagation & Antenna (ECE)	EC 601	2016
B.TECH (Electronics and Communication Engineering)	Control System (ECE)	EC603	2016
B.TECH (Electronics and Communication Engineering)	Advanced Microcontroller & Embedded System (ECE)	EC 604B	2016

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B.TECH (Electronics and Communication Engineering)	Engineering System Design & Analysis (ECE)	EC 605A	2016
B.TECH (Electronics and Communication Engineering)	EM Wave Propagation & Antenna Lab (ECE)	EC 691	2016
B.TECH (Electronics and Communication Engineering)	Control System Engineering Lab (ECE)	EC 693	2016
B.TECH (Electronics and Communication Engineering)	Advanced Microcontroller & Embedded System lab (ECE)	EC 694B	2016
B.TECH (Electronics and Communication Engineering)	Mini Project -II (ECE)	EC 681	2016
B.TECH (Electronics and Communication Engineering)	VLSI & Microelectronics Lab (ECE)	EC 792	2016
B.TECH (Electronics and Communication Engineering)	Biomedical Electronics & Imaging (ECE)	EC 704 B	2016
B.TECH (Electronics and Communication Engineering)	Economics for Engineers (ECE)	HU 801	2016
B.TECH (Electronics and Communication Engineering)	Advanced Communication Systems (ECE)	EC 801	2016
B.TECH (Electronics and Communication Engineering)	Advanced Semiconductor Devices (ECE)	EC 802 A	2016
B.TECH (Electronics and Communication Engineering)	EMI & EMC (ECE)	EC 802 B	2016
B.TECH (Electronics and Communication Engineering)	Mobile Communication and Network (ECE)	EC 802 C	2016
B.TECH (Electronics and Communication Engineering)	Software Engineering (ECE)	EC 803 A	2016
B.TECH (Electronics and Communication Engineering)	Physical Design, Verification & Testing (ECE)	EC 803 B	2016
B.TECH (Electronics and Communication Engineering)	Soft Computing (ECE)	EC 803 C	2016
B.TECH (Electronics and Communication Engineering)	Advanced Communication Lab (ECE)	EC 891	2016

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Annexure-5

List of Subjects which have been identified for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship other than the core subjects.

Name of the Course	Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship
Basic Electrical Engineering (Gr. A) / Basic Electronics Engineering (Gr. B)	Skill Development
Basic Electrical Engineering Lab (Gr. A) /Basic Electronics Engineering Lab(Gr. B)	Skill Development
Lang. Lab. and Seminar Presentation	Skill Development
Soft Skill Development	Skill Development, Employability
Data Structure	Skill Development, Employability
Data Structure Lab	Skill Development, Employability
Technical Skill Development	Skill Development, Employability
Technical Report Writing & Language Practice	Skill development
Microprocessor & Micro Controller	Skill Development, Employability
Electrical & Electronics Measurement	Skill Development, Employability
Telecommunication Systems	Skill Development, Employability
Microprocessor & Micro Controller Lab	Skill Development, Employability
Mini Project -I	Skill Development, Employability, Entrepreneurship
Digital Signal Processing Lab	Skill Development, Employability

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Group Discussion Practice	Skill Development, Employability
EM Wave Propagation & Antenna	Skill Development, Employability
Control System	Skill Development, Employability
Advanced Microcontroller & Embedded System	Skill Development, Employability, Entrepreneurship
Engineering System Design & Analysis	Skill Development, Employability, Entrepreneurship
EM Wave Propagation & Antenna Lab	Skill Development, Employability
Control System Engineering Lab	Skill Development, Employability
Advanced Microcontroller & Embedded System lab	Skill Development, Employability, Entrepreneurship
Mini Project -II	Skill Development, Employability, Entrepreneurship
VLSI & Microelectronics Lab	Skill Development, Employability, Entrepreneurship
Biomedical Electronics & Imaging	Skill Development, Employability, Entrepreneurship
Economics for Engineers	Skill Development
Advanced Communication Systems	Skill Development, Employability, Entrepreneurship
Advanced Semiconductor Devices	Skill Development, Employability, Entrepreneurship
EMI & EMC	Skill Development, Employability, Entrepreneurship
Mobile Communication and Network	Skill Development, Employability, Entrepreneurship
Software Engineering	Skill Development
Physical Design, Verification & Testing	Skill Development
Soft Computing	Skill Development, Employability
Advanced Communication Lab	Skill Development, Employability, Entrepreneurship

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Meeting has been started with the welcome address by the Chairperson and all the leave of absence has been granted. Then the meeting is continued with agenda wise discussion.

Agenda Item No. 1: To confirm the minutes of the Board of Studies meeting held on 21.09.2015 (As Annexure-1)

Resolution: : HOD requests all the members to note the minutes of the last meeting (shared as Annexure-1) and read out the same for confirmation. All the members accept the same and confirm.

Agenda Item No. 2: To report action taken on the minutes of Board of Studies held on 21.09.2015 (As Annexure-2)

Resolution: HOD requests all the members to note the action taken report on the minutes of Board of Studies held on 23.09.2015 (shared as Annexure-2) and read out the same for confirmation. All the members accept the same and confirm.

Agenda Item No. 3: To consider and adopt the new curriculum for B.TECH (IT) programme (As per Annexure-3)

Resolution:

HoD, IT Dept. highlighted that in formation of R16 curriculum (as Annexure 3), all the points, suggestions of BOS members given in the last meeting and guidelines of regulatory bodies have been taken into consideration. This curriculum is already discussed and approved in the Departmental Academic Committee (DAC). All the BOS members express their satisfaction and approve the same to forward it to the Academic Committee (AC) for further approval. HOD also pointed out that as per the suggestion of the BOS members in the last meeting, course outcomes (as per OBE requirement) for all the courses have been prepared and also mapping with POs and PSOs (approved by BOS earlier) are defined.

Agenda Item No. 4: Identification of new courses in R16 Curriculum.

Resolution:

As per the suggestion of the BOS member in the last meeting courses which have been introduced in R16 have been identified.

Agenda Item No. 5: Identification of Courses in R16 Curriculum Mapped with Employability/ Skill Development/Entrepreneurship.

Resolution:

As per the suggestion of the BOS member in the last meeting courses for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship introduced in R16 have been identified and listed in Annexure-4 for ready reference.

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Agenda Item No. 6: To consider running of value added courses (As per Annexure-5).

Resolution:
HOD placed a list of value added courses to be offered during the coming semester break for consideration of the Committee. After discussion the following courses have been selected. Committee further suggests defining a suitable content in the form for brochure before enrollment of the students.

List of value added courses:

a. App Development in Android
b. Server-side Development with NodeJS, Express and MongoDB

It has been decided that this list will be forwarded to Training and Placement Department for conducting/coordinating training on this topic.

Agenda Item No. 7: To consider and approve Board of Examiners for theory and practical examination for the 1st year to 4th year classes

Resolution: HOD of IT department proposes the names of the following Board of Examiners including external examiners for practical examination and moderators for semester question papers. It has been decided that external examiners and moderators can be appointed from these and in case of non availability of any examiner and moderator HOD can call any external expert from reputed organization. HOD also proposes the name of subject coordinators that has been sanctioned in DAC at the beginning of the semester for internal evaluator and paper setter. The board accepts the proposal and appreciates the concept to subject coordinator for maintaining uniformity in different sections.

Agenda Item No. 8: To consider and approve external experts for project evaluation and grand viva

Resolution: HOD proposes the names of external experts for project evaluation and grand viva and was approved by the committee without any hesitation as the last year process was satisfactory with the same external experts.

Agenda Item No. 9: Any other points with the permission of the chairman:
Resolution: A discussion was there about the goal and achievement of the department and the committee has advised all the faculties to write project proposal to UGC and other external bodies for grants.

Dr. B. K. Medya
HOD & Chairperson
BOS, Department of IT

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Annexure-3

List of new courses offered in B.TECH Information Technology in Regulation 16 curriculum

Name of the Programme	Name of the Course	Course Code	Year of introduction
B.TECH (Information Technology)	Basic Electronics Engineering (IT)	EC101	2016
B.TECH (Information Technology)	Basic Electronics Engineering Lab (IT)	EC191	2016
B.TECH (Information Technology)	Lang. Lab. and Seminar Presentation (IT)	HU191	2016
B.TECH (Information Technology)	Soft Skill Development (IT)	MC282	2016
B.TECH (Information Technology)	Technical Skill Development (IT)	MC481	2016
B.TECH (Information Technology)	Industrial and Financial Management (IT)	HU505	2016
B.TECH (Information Technology)	Mini Project-I (IT)	IT581	2016
B.TECH (Information Technology)	Web Technology (IT)	IT602	2016
B.TECH (Information Technology)	Digital Image Processing (IT)	IT604D	2016
B.TECH (Information Technology)	Green Computing (IT)	IT605C	2016
B.TECH (Information Technology)	Project Management (IT)	IT605E	2016
B.TECH (Information Technology)	Web Technology Lab (IT)	IT692	2016
B.TECH (Information Technology)	Mini Project - II (IT)	IT682	2016
B.TECH (Information Technology)	Distributed Systems (IT)	IT703B	2016
B.TECH (Information Technology)	Pattern Recognition Lab (IT)	IT792B	2016
B.TECH (Information Technology)	Internet of Things (IT)	IT802D	2016
B.TECH (Information Technology).	Values & Ethics in Professions (IT)	HU802	2016

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Annexure-4

List of Subjects which have been identified for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship

HU101	Communicative English
HU191	Language Lab & Seminar Presentation
CS201	Computer Fundamentals and Principle of Computer Programming
CS291	Computer Fundamentals and Principle Of Computer Programming Lab
M(IT)302	Numerical Methods and Statistics
EC(IT)303	Analog and Digital Electronics
IT301	Data Structure & Algorithm
M(IT)392	Numerical Methods and Statistics Lab
EC(IT)393	Analog & Digital Electronics Lab
IT391	Data Structure Lab
HU381	Technical Report Writing and Language Practice
IT401	Computer Organization & Architecture
IT402	Communication Engineering & Coding Theory
IT403	Formal Language and Automata Theory
IT404	Object Oriented Programming using Java
IT491	Computer Organization & Architecture Lab
IT492	Communication Engineering & Coding Theory Lab
IT494	Object Oriented Programming Lab
MC481	Technical Skill Development
IT501	Design Analysis of Algorithm
IT502	Software Engineering
IT503	Operating System
IT504A	Programming Practice with C++
IT504B	Artificial Intelligence
IT504C	Operations Research
HU505	Industrial and Financial Management
IT591	Design Analysis of Algorithm Lab
IT592	Software Engineering Lab
IT 593	Operating System Lab
IT 594A	Programming Practice with C++ Lab
IT 594B	Artificial Intelligence Lab

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IT 594C	Operations Research Lab
IT581	Mini Project - I
IT 601	Database Management System
IT 602	Web Technology
IT 603	Computer Networking
IT 604 A	ERP
IT 604 B	Information & Coding Theory
IT 604 C	Microprocessor & Microcontroller
IT 604 D	Digital Image Processing
ECE(IT)605A	Digital Signal Processing
IT 605 B	Compiler Design
IT 605 C	Green Computing
IT 605 D	Soft Computing
IT 605 E	Project Management
IT 605 F	Human Resource Management
IT691	Database Management System Lab
IT692	Web Technology Lab
IT693	Computer Networking Lab
IT694	System Engineering Lab
IT682	Mini Project - II
MC681	Seminar/GD/ Presentation Skill/ Foreign Language
IT701	E - Commerce
IT702A	Computer Graphics and Multimedia
IT702B	Pattern Recognition
IT702C	Internet Technology
IT703 A	Cloud Computing
IT703 B	Distributed Systems
IT703 C	Data Warehousing and Data Mining
IT704A	Modelling and Simulation
EE(IT)704B	Control System
ECE(IT)704C	Microelectronics and VLSI Design
IT704D	Mobile Communication
IT791	E – Commerce Lab
IT792A	Computer Graphics & Multimedia Lab
IT792B	Pattern Recognition Lab
IT792C	Internet Technology Lab
IT781	Industrial Training
IT782	Project-I
IT801A	Advanced Computer Architecture
IT801B	Cryptography and Network Security
IT801C	Natural Language Processing
IT801D	Bio-Informatics

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IT802A	Business Analytics
IT802B	Cyber Law and Security Policy
IT802C	Advanced DBMS
IT802D	Internet of Things
HU802	Values & Ethics in Professions
IT 881	Design Lab/ Industrial Problem Related Practical Training
IT 882	Project II

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Annexure-5

Name of the Course
Computer Organization and Architecture
Communication Engineering
Computational Geometry
Robotics
Distributed Database
Computer Vision
E-commerce and ERP
Digital Image Processing
Android
Web technology
Data Analytics
Sensor Network and IOT
Distributed Algorithms
Bio-informatics
Natural Language Processing
Big Data
IoT
Principles of Management
Human computer Interaction
VLSI Design
Machine Learning
Real Time Operating System and Embedded System

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Meeting has been started with the welcome address by the Chairperson and all the leave of absence has been granted. Then the meeting is continued with agenda wise discussion.

Agenda Item No. 1: To confirm the minutes of the Board of Studies meeting held on 08.07.2014 (As Annexure-1)

Resolution: HOD requests all the members to note the minutes of the last meeting (shared as Annexure-1) and read out the same for confirmation. All the members accept the same and confirm.

Agenda Item No. 2: To report action taken on the minutes of Board of Studies held on 08.07.2014 (As Annexure-2)

Resolution: HOD requests all the members to note the action taken report on the minutes of Board of Studies held on 08.07.2014 (shared as Annexure-2) and read out the same for confirmation. All the members accept the same and confirm.

Agenda Item No. 3: To consider and adopt the new R16 curriculum for B.TECH (CSE) programme (As per Annexure-3).

Resolution:
HoD, CSE Dept. highlighted that in formation of R16 curriculum (as Annexure 3), all the points, suggestions of BOS members given in the last meeting and guidelines of regulatory bodies have been taken into consideration. This curriculum is already discussed and approved in the Departmental Academic Committee (DAC). All the BOS members express their satisfaction and approve the same to forward it to the Academic Committee (AC) for further approval. HOD also pointed out that as per the suggestion of the BOS members in the last meeting, course outcomes (as per OBE requirement) for all the courses have been prepared and also mapping with POs and PSOs (approved by BOS earlier) are defined.

Agenda Item No. 4: Identification of new courses in R16 Curriculum.

Resolution:

As per the suggestion of the BOS member in the last meeting courses which have been introduced in R16 have been identified and listed in Annexure-4 for ready reference.

Agenda Item No. 5: Identification of Courses in R16 Curriculum Mapped with Employability/ Skill Development/Entrepreneurship.

Resolution:

As per the suggestion of the BOS member in the last meeting courses for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship introduced in R16 have been identified and listed in Annexure-5 for ready reference.

Agenda Item No. 6: To consider running of value added courses (As per Annexure-6).

Resolution:
HOD placed a list of value added courses to be offered during the coming semester break for

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consideration of the Committee. After discussion the following courses have been selected. Committee further suggests todefine a suitable content in the form for brochure before enrollment of the students.

List of value added courses:

a. Web Development using Ajax
b. Introduction to Programming using Python.

It has been decided that this list will be forwarded to Training and Placement Department for conducting/coordinating training on this topic.

Agenda Item No. 7: To examine feedback analysis for the 2014 passout batch (As per ure-7).

Resolution: HOD places the feedback analysis report of 2014 pass out batch received from IQAC for discussion and necessary actions on that. Feedback summary of all the five stack holders on the question framed and suctioned by BOS has been placed and analyzed and following are the suggestions given by the expert-

a) As 33% students and 20% alumni are asking for addition of the subject Robotics, Distributed Algorithm and Distributed Database, so it is recommended to offer these courses which are there in the curriculum as elective paper in B.TECH (CSE). It is accepted in the board.
b) In addition to that, course feedback for indirect attainment calculation for some sample courses has been shown to the external members. They expressed their satisfaction on that and suggested to continue the practice on regular basis. Questions used for taking the feedback were also shown.
c) Linux based paper should be included and in practical classes Linux environment is encouraged. HOD conveys that in CSE department all the labs after 1st Year are encouraged to undergo in Linux environment or in Codeblocks. He conducted one workshop for this purpose in the department.
d) It is decided that Core subjects should be included and completed by 3rd year as far as possible for the benefit of the students for appearing in the GATE examination.

Agenda Item No. 8: To consider and approve Board of Examiners for theory and practical examination for the 1st year to 4th year classes

Resolution: HOD of CSE department. proposes the names of the following Board of Examiners including external examiners for practical examination and moderators for semester question papers: Dr. Bikramjit Sarkar, Dr. Bikramjit Pal, Prof. Amitava Sen, Prof. Mallika De, Dr. Chandan Giri, Prof. Paramartha Dutta, Prof. Pinakpani Pal, Prof. J. K Mandal, Dr. Kaushik Roy, Dr. Kousik Dasgupta, Prof. Suman Bhowmik, Prof. Utpal Biswas, Prof. Devadatta Sinha. It has been decided that external examiners and moderators can be appointed from these and in case of non availability of any examiner and moderator HOD can call any external expert from reputed organization discussing in the DAC. HOD also proposes the name of subject coordinators that has been sanctioned in DAC at the beginning of the semester for internal evaluator and paper setter. The board accepts the proposal and appreciates the concept to

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Annexure-4

List of new courses offered in B.TECH (CSE) in Regulation 16 curriculum

Name of the Programme	Name of the Course	Course Code	Year of introduction
B.TECH (Computer Science and Engineering)	Basic Electronics Engineering (CSE)	EC101	2016
B.TECH (Computer Science and Engineering)	Basic Electronics Engineering Lab (CSE)	EC191	2016
B.TECH (Computer Science and Engineering)	Lang. Lab. and Seminar Presentation (CSE)	HU191	2016
B.TECH (Computer Science and Engineering)	Soft Skill Development (CSE)	MC282	2016
B.TECH (Computer Science and Engineering)	Digital Electronics and Computer Organization (CSE)	CS302	2016
B.TECH (Computer Science and Engineering)	Digital Electronics and Computer Organization Lab (CSE)	CS392	2016
B.TECH (Computer Science and Engineering)	Environmental science (CSE)	HU401	2016
B.TECH (Computer Science and Engineering)	Technical Communication & Soft Skills (CSE)	MC481	2016
B.TECH (Computer Science and Engineering)	Communication Engineering (CSE)	CS(ECE)504 C	2016
B.TECH (Computer Science and Engineering)	Computational Geometry (CSE)	CS505A	2016
B.TECH (Computer Science and Engineering)	Computer Graphics Lab (CSE)	CS591	2016
B.TECH (Computer Science and Engineering)	Multimedia Technology Lab (CSE)	CS(IT)594B	2016
B.TECH (Computer Science and Engineering)	Communication Engineering Lab (CSE)	CS(ECE)594 C	2016
B.TECH (Computer Science and Engineering)	General Aptitude /Foreign Language (CSE)	MC581	2016
B.TECH (Computer Science and Engineering)	Robotics (CSE)	CS604B	2016
B.TECH (Computer Science and Engineering)	Distributed Database (CSE)	IT(CSE)605 C	2016
B.TECH (Computer Science and Engineering)	Computer Vision (CSE)	IT(CSE)605 D	2016
B.TECH (Computer Science and Engineering)	E-commerce and ERP (CSE)	IT(CSE)606 C	2016
B.TECH (Computer Science and Engineering)	Digital Image Processing (CSE)	IT(CSE)606 B	2016

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B.TECH (Computer Science and Engineering)	Mini Project (CSE)	CS682	2016
B.TECH (Computer Science and Engineering)	Group Discussion and Seminar (CSE)	CS681	2016
B.TECH (Computer Science and Engineering)	Web technology (CSE)	CS702C	2016
B.TECH (Computer Science and Engineering)	Data Analytics (CSE)	CS703B	2016
B.TECH (Computer Science and Engineering)	Sensor Network and IOT (CSE)	CS703C	2016
B.TECH (Computer Science and Engineering)	Distributed Algorithms (CSE)	CS704A	2016
B.TECH (Computer Science and Engineering)	Bio-informatics (CSE)	CS704B	2016
B.TECH (Computer Science and Engineering)	Natural Language Processing Lab (CSE)	CS792B	2016
B.TECH (Computer Science and Engineering)	Web Technology Lab (CSE)	CS792C	2016
B.TECH (Computer Science and Engineering)	Technical Skill Development (CSE)	MC781	2016
B.TECH (Computer Science and Engineering)	Principles of Management (CSE)	HU804	2016
B.TECH (Computer Science and Engineering)	Human computer Interaction (CSE)	CS801B	2016
B.TECH (Computer Science and Engineering)	VLSI Design (CSE)	CS801D	2016
B.TECH (Computer Science and Engineering)	Machine Learning (CSE)	CS802B	2016
B.TECH (Computer Science and Engineering)	Real Time Operating System and Embedded System (CSE)	CS802C	2016
B.TECH (Computer Science and Engineering)	Seminar Presentation (CSE)	CS893	2016

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Annexure-5

List of Subjects which have been identified for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship other than the core subjects.

Microprocessor and Microcontroller Lab	CS692
Software Engineering Lab	CS693
Artificial Intelligence	CS701
Soft Computing	CS702A
Web technology	CS702C
Cloud Computing	CS703A
Data Analytics	CS703B
Sensor Network and IOT	CS703C
Distributed Algorithms	CS704A
Bio-informatics	CS704B
Cryptography and Network Security	CS704C
Artificial Intelligence Lab	CS791
Soft Computing Lab	CS792A
Natural Language Processing Lab	CS792B
Web Technology Lab	CS792C
Mobile Computing	CS801A
Human computer Interaction	CS801B
Cyber Law and Security Policy	CS801C
VLSI Design	CS801D
Parallel Computing	CS802A
Machine Learning	CS802B
Real Time Operating System and Embedded System	CS802C
Advanced Computer Architecture	CS802D

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Discussions took place in the BOS meeting held on 30.01.2016 at 1.30pm in the conference hall of NIT on the following agenda and the following resolutions were taken by the members present in the meeting:

Agenda – 1

Confirmation of the Minutes of last Board of Studies meeting

The minutes of the last meeting was duly confirmed and approved.

Agenda – 2

Approval of Action taken report of the resolutions taken in the last meeting

The action taken report of the last meeting's resolution was noted.

Agenda – 3

Finalization of R-16 Curriculum and syllabus of B Tech Program for EIE Department

The Curriculum and syllabus under R-16 regulation has been placed and finalized. (As per Annexure-1).HOD also pointed out that as per the suggestion of the BOS members in the last meeting Pre requisite, Course objective, Course outcome and CO- PO mapping of each subjects must be included.

Agenda – 4

Identification of new courses in R16 Curriculum.

As per the decision of the BOS member taken in the last meeting, courses which have been introduced in R16 have been identified and listed in Annexure-2 for ready reference.

Agenda – 5

Identification of Courses in R16 Curriculum Mapped with Employability/ Skill Development/Entrepreneurship.

As per the suggestion of the BOS member in the last meeting courses for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship introduced in R16 have been identified and listed in Annexure-3 for ready reference.

Agenda – 6

To consider running of value added courses.

A list of value added courses to be offered during the coming semester break for consideration of the Committee. After discussion the following courses have been selected. Committee further suggests defining a suitable content in the form for brochure before enrollment of the students.

List of value added courses:

- PCB design using PROTEUS
- Big Data

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Annexure-1

List of new courses offered in B.TECH Electronics and Instrumentation Engineering in Regulation 16 curriculum

Name of the Programme	Name of the Course	Course Code	Year of introduction
B.TECH (Electronics and Instrumentation Engineering)	Basic Electrical Engineering (EIE)	EE101	2016
B.TECH (Electronics and Instrumentation Engineering)	Basic Electrical Engineering Lab (Gr. A) /Basic Electronics Engineering Lab(Gr. B) (EIE)	EE191	2016
B.TECH (Electronics and Instrumentation Engineering)	Lang. Lab. and Seminar Presentation (EIE)	HU191	2016
B.TECH (Electronics and Instrumentation Engineering)	Soft Skill Development (EIE)	MC282	2016
B.TECH (Electronics and Instrumentation Engineering)	Technical Skill Development (EIE)	MC381	2016
B.TECH (Electronics and Instrumentation Engineering)	Electromagnetic Theory and Transmission Line (EIE)	EI403	2016
B.TECH (Electronics and Instrumentation Engineering)	Signals & systems (EIE)	EI404	2016
B.TECH (Electronics and Instrumentation Engineering)	Environmental Science (EIE)	HU501	2016
B.TECH (Electronics and Instrumentation Engineering)	Analog & Digital Communication Theory (EIE)	EI502	2016
B.TECH (Electronics and Instrumentation Engineering)	Analog & Digital Communication Lab (EIE)	EI592	2016
B.TECH (Electronics and Instrumentation Engineering)	Digital Signal Processing Lab (EIE)	EI 594A	2016
B.TECH (Electronics and Instrumentation Engineering)	Technical Skill development-II (EIE)	MC581	2016
B.TECH (Electronics and Instrumentation Engineering)	Advanced Sensors (EIE)	EI 603C	2016
B.TECH (Electronics and Instrumentation Engineering)	Optoelectronics & Fibre Optic Sensors (EIE)	EI604A	2016

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Annexure-3

List of Subjects which have been identified for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship other than the core subjects.

Name of the Courses	Employability	Skill Development	Entrepreneurship
Mathematics -I	YES	YES	
Basic Electrical Engineering (Gr. A) / Basic Electronics Engineering (Gr. B)	YES		
English	YES	YES	YES
Project-IA	YES	YES	YES
Project-IB	YES	YES	YES
Mathematics -II	YES	YES	
Physics - I	YES		
Basic Electronics Engineering	YES		
Programming for Problem Solving	YES	YES	
Project-II	YES	YES	YES
Innovative activities-I	YES	YES	YES
Analog Electronic Circuits	YES		
Digital Electronic Circuits	YES		
Circuit Theory and Networks	YES		
Electrical & Electronic Measurement & Instrumentation	YES		
Project-III	YES	YES	YES

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MINUTES OF THE MEETING OF THE BOARD OF STUDIES HELD ON 11/01/2016 AT 11.30 AM

Members present

1	Prof(Dr.) Asish Bandyopadhyay	Professor, Department of ME, JU
2	Prof (Dr.) Samir Kumar Saha	Ex Professor, Department of ME,JU
3	Prof (Dr.) Dipankar Sanyal	Professor, Department of ME,JU
4	Prof. Dr. Buddhadeb Oraon	Professor, Department of ME,JU
5	Mr. K G Pilsima	General Manager, Electro steel Casting Limited
6	Dr. Sumit Chabri	Associate Professor, Department of ME,NIT
7	Prof. S. C. Bera	Professor, Department of ME,NIT
8	Dr. Amit Datta	Assistant Professor, Department of ME, NIT
9	Dr. Bikash Panja	Assistant Professor, Department of ME, NIT
10	Mr. Ankesh Samanta	Assistant Professor, Department of ME, NIT
11	Mr. Akhtarujjaman Sarkar	Assistant Professor, Department of ME, NIT
12	Mr. Subhasis Mondal	Assistant Professor, Department of ME, NIT
13	Ms. Sreyoshi Chatterjee	Assistant Professor, Department of ME, NIT

Members absent

1	Mr. Suman Chatterjee	Assistant Professor, Department of ME, NIT

Prof. S.C Bera, Head of the department of the department of Mechanical Engineering co directs the meeting as the chair person.

As per the request of Head of the dept., Dr. Bikash Panja, Secretary of Board of studies discuss the agenda as follows.

The following resolutions were adopted after detail deliberation.

Agenda – 1

Confirmation of the Minutes of last Academic Council meeting.

Resolution:

The minutes of the last meeting held on 24/11/2015 was duly confirmed and approved.

Agenda – 2 .

Approval of Action taken report of the resolutions taken in the last meeting

Resolution:

The action taken report of the last meeting's resolution held on 24/11/2015 was approved and circulated (**Annexure I**).

Agenda –3

Approval of the new curriculum for B.TECH (ME)

Resolution:

Head of the department informed it to the BOS committee that the proposed curriculum (**Annexxure II**) is already discussed and approved in the Departmental Academic Committee (DAC). All the BOS members express their satisfaction and approve the same to forward it to the Academic Committee (AC) for further approval. HOD also pointed out that as per the suggestion of the BOS. members in the last meeting, course outcomes (based on outcome based education(OBE)) for all the courses have been prepared and also mapping with POs and PSOs (approved by BOS earlier) are defined.

Agenda –4 Identification of Courses in R16 Curriculum, which are having focus on Employability, Industrial need, Higher studies, Entrepreneurship

Resolution:

As per the suggestion of the BOS member in the last meeting courses for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship introduced in R16 have been identified and listed in **Annexure-III** for ready reference

Agenda -5: Identification of new courses in R16 Curriculum.

Resolution:

As per the suggestion of the BOS member in the last meeting courses which have been introduced in R16 have been identified and listed in **Annexure-IV** for ready reference

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Agenda –6

Consideration of Board of Examiners for theory and practical examination for the 1st year to 2nd year classes:

Approved by BOS committee, No further action is required.

Agenda –7

Discussion about attainment of courses and gap analysis

Approved by BOS, No further action is required

Agenda –8

Discussion about achievement of the department

BOS is satisfied with the achievement.

Signature of the Secretary

BOS, ME Department

Signature of the chairperson

BOS, ME Department

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Annexure III

Design Of Machine Elements-II	ME 602
IC Engine & Gas Turbine	ME 603
Robotics: Mechanics and Control	ME 604A
Composite Materials	ME 604B
Fluid Power Control	ME 604C
Computational Fluid Dynamics	ME 605B
Gas Dynamics and Jet Propulsion	ME 605C
Machining & Machine Tools Lab	ME 691
Design Practice Lab	ME 692
IC Engine Lab	ME 693
Robotics Lab	ME 694 A
Composite Materials Lab	ME 694 B
Fluid Power Control Lab	ME 694 C
Power Plant Engineering	ME 701
Advanced Manufacturing Technology	ME 702
Advanced Welding Technology	ME 703 A
Biomechanics & Biomaterials	ME 703 B
Finite Element Method	ME 703 C
Tribology	ME 704 A
Operations Research	ME 704 B
Materials Handling	ME 704 C
Quality & Reliability Engineering	ME 705 B
Hydro, Wind and Wave Power	ME 705 C
Advanced Manufacturing Lab	ME 791
Advanced Welding Lab	ME 793 A
Biomechanics & Biomaterials Lab	ME 793 B
Finite Element Method Lab	ME 793 C
Automobile Engineering	ME 802A
CAD/CAM	ME 802B
Automation & Control	ME 802C
Turbo Machinery	ME 803A
Maintenance Engineering	ME 803B
Numerical Heat Transfer	ME 803C

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Annexure-4

List of new courses offered in B.TECH Mechanical Engineering in Regulation 16 curriculum

Name of the Programme	Name of the Course	Course Code	Year of introduction
B.TECH (Mechanical Engineering)	Basic Electronics Engineering (ME)	EC101	2016
B.TECH (Mechanical Engineering)	Basic Electronics Engineering Lab (ME)	EC191	2016
B.TECH (Mechanical Engineering)	Lang. Lab. and Seminar Presentation (ME)	HU191	2016
B.TECH (Mechanical Engineering)	Soft Skill Development (ME)	MC282	2016
B.TECH (Mechanical Engineering)	Physics-II (ME)	PH (ME) 301	2016
B.TECH (Mechanical Engineering)	Physics-II Lab (ME)	PH (ME) 391	2016
B.TECH (Mechanical Engineering)	Technical Skill Development (ME)	MC 381	2016
B.TECH (Mechanical Engineering)	Environmental Science (ME)	HU 401	2016
B.TECH (Mechanical Engineering)	Mechanisms (ME)	ME404	2016
B.TECH (Mechanical Engineering)	Numerical Methods (ME)	M(ME) 401	2016
B.TECH (Mechanical Engineering)	Numerical Methods Lab (ME)	M(ME) 491	2016
B.TECH (Mechanical Engineering)	Material Testing Lab (ME)	ME492	2016
B.TECH (Mechanical Engineering)	Metrology and Measurement (ME)	ME504	2016
B.TECH (Mechanical Engineering)	Metrology and Measurement Lab (ME)	ME593	2016
B.TECH (Mechanical Engineering)	Mechatronics (ME)	ME 505B	2016
B.TECH (Mechanical Engineering)	Applied Fluid Mechanics (ME)	ME 505C	2016
B.TECH (Mechanical Engineering)	Refrigeration & Air Conditioning Lab (ME)	ME 594 A	2016
B.TECH (Mechanical Engineering)	Mechatronics Lab (ME)	ME 594 B	2016
B.TECH (Mechanical Engineering)	Applied Fluid Mechanics Lab (ME)	ME 594 C	2016
B.TECH (Mechanical Engineering)	Mini Project-I (ME)	ME 581	2016
B.TECH (Mechanical Engineering)	Seminar (ME)	MC 582	2016
B.TECH (Mechanical Engineering)	Machining Principles & Machine Tools (ME)	ME601	2016

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B.TECH (Mechanical Engineering)	Robotics: Mechanics and Control (ME)	ME 604A	2016
B.TECH (Mechanical Engineering)	Composite Materials (ME)	ME 604B	2016
B.TECH (Mechanical Engineering)	Fluid Power Control (ME)	ME 604C	2016
B.TECH (Mechanical Engineering)	Renewable Energy Systems (ME)	ME605A	2016
B.TECH (Mechanical Engineering)	Computional Fluid Dynamics (ME)	ME 605B	2016
B.TECH (Mechanical Engineering)	Gas Dynamics and Jet Propulsion (ME)	ME 605C	2016
B.TECH (Mechanical Engineering)	Machining & Machine Tools lab (ME)	ME691	2016
B.TECH (Mechanical Engineering)	I C ENGINE LAB (ME)	ME693	2016
B.TECH (Mechanical Engineering)	Robotics Lab (ME)	ME 694 A	2016
B.TECH (Mechanical Engineering)	Composite Materials Lab (ME)	ME 694 B	2016
B.TECH (Mechanical Engineering)	Fluid Power Control Lab (ME)	ME 694 C	2016
B.TECH (Mechanical Engineering)	Mini Project-II (ME)	ME 681	2016
B.TECH (Mechanical Engineering)	Group Discussion (ME)	MC 682	2016
B.TECH (Mechanical Engineering)	Power Plant Engineering (ME)	ME 701	2016
B.TECH (Mechanical Engineering)	Advanced Welding Technology (ME)	ME 703 A	2016
B.TECH (Mechanical Engineering)	Biomechanics & Biomaterials (ME)	ME 703 B	2016
B.TECH (Mechanical Engineering)	Tribology (ME)	ME 704 A	2016
B.TECH (Mechanical Engineering)	Materials Handling (ME)	ME 704 C	2016
B.TECH (Mechanical Engineering)	Quality & Reliability Engineering (ME)	ME 705 B	2016
B.TECH (Mechanical Engineering)	Hydro, Wind and Wave Power (ME)	ME 705 C	2016
B.TECH (Mechanical Engineering)	Advanced Manufacturing Lab (ME)	ME 791	2016
B.TECH (Mechanical Engineering)	Advanced Welding Lab (ME)	ME 793 A	2016
B.TECH (Mechanical Engineering)	Biomechanics & Biomaterials Lab (ME)	ME 793 B	2016
B.TECH (Mechanical Engineering)	Finite Element Method Lab (ME)	ME 793 C	2016
B.TECH (Mechanical Engineering)	Design of Mechanical System (ME)	ME 782	2016
B.TECH (Mechanical Engineering)	Nuclear Power Generation and Supply (ME)	ME 804B	2016

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B.TECH (Mechanical Engineering)	Safety & Occupational Health (ME)	ME 804A	2016
B.TECH (Mechanical Engineering)	Turbo Machinery (ME)	ME 803A	2016
B.TECH (Mechanical Engineering)	Numerical Heat Transfer (ME)	ME 803C	2016
B.TECH (Mechanical Engineering)	Maintenance Engineering (ME)	ME 803B	2016

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Meeting has been started with the welcome address by the Chairperson and all the leave of absence has been granted. Then the meeting is continued with agenda wise discussion.

Agenda Item No. 1: To confirm the minutes of the Board of Studies meeting held on 12.07.2018 (As Annexure-1) :

Resolution: HOD requests all the members to note the minutes of the last meeting (shared as Annexure-1) and read out the same for confirmation. All the members accept the same and confirm.

Agenda Item No. 2: To report action taken on the minutes of Board of Studies held on 12.07.2018 (As Annexure-2):

Resolution: HOD requests all the members to note the action taken report on the minutes of Board of Studies held on 11.07.2017 (shared as Annexure-2) and read out the same for confirmation. All the members accept the same and confirm.

Agenda Item No. 3: To consider and adopt the new R19 curriculum for M.TECH (CSE) programme (As per Annexure-3).

Resolution: It is decided that the guideline of AICTE should be followed for preparation of different category of subjects and inclusion of Mandatory Courses in the Regulation 19 Curriculum. Draft curriculum is placed before the committee. External members suggest few changes and a guideline to frame syllabus of M.Tech as per guideline of AICTE and by considering feedbacks from all stake holders. It is also suggested that for each course pre-requisite, Course Outcome (CO), mapping with PO, PSO should be mentioned for detailed syllabus for ready reference of students. COs should be written using Action verbs of Bloom's Taxonomy possibly from all the levels. HoD is requested to place the draft curriculum in next meeting.
It has been decided that for detail syllabus of the non departmental papers, requisition should be send to the respective department and subsequently placed in the BOS for approval.

Agenda Item No. 4: Identification of new courses in R19 Curriculum.

Resolution:

As per the suggestion of the BOS member in the last meeting courses which have been introduced in R19 have been identified and listed in Annexure-4 for ready reference.

Agenda Item No. 5: Identification of Courses in R19 Curriculum Mapped with Employability/ Skill Development/Entrepreneurship.

Resolution:

As per the suggestion of the BOS member in the last meeting courses for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship introduced in R19 have been identified and listed in Annexure-5 for ready reference.

Agenda Item No. 6: To examine feedback analysis for the 2018 pass out batch (As per Annexure-6).

Resolution: HOD places the feedback analysis report of 2018 pass out batch received from IQAC for discussion and necessary actions on that. Feedback summary of all the five stack holders on the question framed and suctioned by BOS has been placed and analyzed and following are the suggestions given by the expert-

a) As 15.3% students and 20% alumni are asking for addition of the subject Data Science so it is recommended to offer this course as Electives. It is accepted in the board.
b) In addition to that, course feedback for indirect attainment calculation for some sample courses has been shown to the external members. They expressed their satisfaction on that and suggested to continue the practice on regular basis. Questions used for taking the feedback are also shown.
c) It is also decided that research based project work should be encouraged as final year projects.

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Agenda Item No. 7: To consider and approve Board of Examiners for theory and practical examination for the 1st year to 2nd year batches.

Resolution: HOD of CSE department. proposes the names of the following Board of Examiners including external examiners for practical examination and moderators for semester question papers: Dr. Bikramjit Sarkar, Dr. Bikramjit Pal, Prof. Amitava Sen, Prof. Mallika De, Dr. Chandan Giri, Prof. Paramartha Dutta, Prof. Pinakpani Pal, Prof. J. K Mandal, Dr. Kaushik Roy, Dr. Kousik Dasgupta, Prof. Suman Bhowmik, Prof. Utpal Biswas, Prof. Devadatta Sinha, Dr. SK MD Obaidullah, Prof. Zeenat Rehena. It has been decided that external examiners and moderators can be appointed from these and in case of non availability of any examiner and moderator HOD can call any external expert from reputed organization discussing in the DAC. HOD also proposes the name of subject coordinators that has been sanctioned in DAC at the beginning of the semester for internal evaluator and paper setter. The board accepts the proposal and appreciates the concept to subject coordinator for maintaining uniformity in different sections.

Agenda Item No. 8: Training needs analysis of Faculty, TAs and students as Annexure-7
Resolution: HOD placed the Training Need Analysis (TNA) report as finalized in the DAC and the committee express their satisfaction. Further committee suggests that MOOCS courses should be considered for training of faculties, TAs, students. Students should be encouraged to do training on aptitude, soft skills, and technical skills for campus interviews.

Agenda Item No. 9: Discussion about attainment of courses and gap analysis and setting up of attainment level for the current year:
Resolution:
HoD places Attainment achieved by all subjects for review of external members. It is concluded that attainment are achieved in all subjects and marginal increase in attainment level can be considered for next batch.

Agenda Item No. 10: Discussion about achievement of the department
Resolution:
HOD, CSE places the result analysis of the previous semester where students' success rate is higher compared to earlier semester. It is appreciated by all with following concerns-

a) Students need to be encouraged in doing research based projects and publish atleast one paper in conference/journal.
b) Students need to be encouraged in doing higher studies.
c) Students need to prepare for R&D jobs of MNCs.

Agenda Item No. 11: Any other points with the permission of the chairman:
Resolution: There is no other significant discussion and the meeting ends with thanks from and to the chair.

C. Chakrabarti

Chandrima Chakrabarti
Secretary
BOS, CSE Department

Mr. Jayanta Pal
HOD & Chairperson
BOS, CSE Department

Head
Dept. of Computer Science & Engg.
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Annexure-4

List of new courses offered in M.TECH (CSE) in Regulation 19 curriculum

Name of the Programme	Name of the Course	Course Code	Year of introduction
M.TECH (Computer Science and Engineering)	Mathematical foundations of Computer (CSE)	CSM101	2019
M.TECH (Computer Science and Engineering)	Advanced Data Structures (CSE)	CSM102	2019
M.TECH (Computer Science and Engineering)	Wireless Sensor Networks (CSE)	CSM103B	2019
M.TECH (Computer Science and Engineering)	Introduction to Intelligent Systems (CSE)	CSM103C	2019
M.TECH (Computer Science and Engineering)	Human and Computer Interaction (CSE)	CSM103D	2019
M.TECH (Computer Science and Engineering)	Image Processing (CSE)	CSM103E	2019
M.TECH (Computer Science and Engineering)	Information Theory & Coding (CSE)	CSM104A	2019
M.TECH (Computer Science and Engineering)	Data Preparation and Analysis (CSE)	CSM104B	2019
M.TECH (Computer Science and Engineering)	GPU Computing (CSE)	CSM104D	2019
M.TECH (Computer Science and Engineering)	Operations Research (CSE)	CSM106	2019
M.TECH (Computer Science and Engineering)	Advanced Data Structures Lab (CSE)	CSM192	2019
M.TECH (Computer Science and Engineering)	Machine Learning LAB (CSE)	CSM193A	2019
M.TECH (Computer Science and Engineering)	Wireless Sensor Networks lab (CSE)	CSM193B	2019
M.TECH (Computer Science and Engineering)	Introduction to Intelligent Systems lab (CSE)	CSM193C	2019
M.TECH (Computer Science and Engineering)	Human and Computer Interaction lab (CSE)	CSM193D	2019
M.TECH (Computer Science and Engineering)	Image Processing Lab (CSE)	CSM193E	2019
M.TECH (Computer Science and Engineering)	Data Science (CSE)	CSM203B	2019
M.TECH (Computer Science and Engineering)	Advanced Wireless and Mobile Networks (CSE)	CSM203C	2019

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M.TECH (Computer Science and Engineering)	Digital Forensics (CSE)	CSM203D	2019
M.TECH (Computer Science and Engineering)	Security in Computing (CSE)	CSM204A	2019
M.TECH (Computer Science and Engineering)	Data Warehouse and Data Mining (CSE)	CSM204B	2019
M.TECH (Computer Science and Engineering)	Quantum Computing (CSE)	CSM204C	2019
M.TECH (Computer Science and Engineering)	Computer Vision (CSE)	CSM204D	2019
M.TECH (Computer Science and Engineering)	Business Analytics (CSE)	CSM205A	2019
M.TECH (Computer Science and Engineering)	Industrial Safety (CSE)	CSM205B	2019
M.TECH (Computer Science and Engineering)	Optimization Techniques (CSE)	CSM205C	2019
M.TECH (Computer Science and Engineering)	Cost Management of Engineering (CSE)	CSM205D	2019
M.TECH (Computer Science and Engineering)	Audit Course I (CSE)	CSM206	2019
M.TECH (Computer Science and Engineering)	Soft Computing Lab (CSE)	CSM292	2019
M.TECH (Computer Science and Engineering)	Audit Course II (CSE)	CSM301	2019

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Annexure-5

List of Subjects which have been identified for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship other than the core subjects.

Advance operating system Lab	CSEM293
Cluster,Grid and Cloud computing	CSEM293
Mobile Computing	CSEM 206E
Multimedia and Graphics	CSEM 206B
Machine learning	CSEM 206D
Bioinformatics	CSEM205F
Pattern Recognition	CSEM205A
Artificial Intelligence	CSEM205D
Advanced Compiler design	CSEM205A
Distributed system	CSEM204
Advance computer network and security	CSEM204
Crypto graphy and network security	CSEM 205B
Advance operating system	CSEM203
Advanced computer architecture	CSEM 202
Data base Lab	CSEM 194
Probability and statistics for engineer	CSEM 201
Algorithm Lab	CSEM193
Computational Geometry	CSEM106E
Soft Computing	CSEM106G
Modeling and simulation	CSEM106B
Theory of computation	CSEM106E
Web Technology	CSEM106A
Software engineering and case tools	CSEM 105
Database and Data Mining	CSEM104
Design and anlysis of algorithm	CSEM103

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Meeting has been started with the welcome address by the Chairperson. Then the meeting is continued with agenda wise discussion.

Agenda Item No. 1: To confirm the minutes of the Board of Studies meeting held on 03.07.2015 (As Annexure-1)

Resolution: HOD requests all the members to note the minutes of the last meeting (shared as Annexure-1) and read out the same for confirmation. All the members accept the same and confirm.

Agenda Item No. 2: To report action taken on the minutes of Board of Studies held on 03.07.2015 (As Annexure-2)

Resolution: HOD requests all the members to note the action taken report on the minutes of Board of Studies held on 03.07.2015 (shared as Annexure-2) and read out the same for confirmation. All the members accept the same and confirm.

Agenda Item No. 3: To consider and adopt the new R15 curriculum for MCA programme (As per Annexure-3).

Resolution:

HoD, CA Dept. highlighted that in formation of R16 curriculum (as Annexure 3), all the points, suggestions of BOS members given in the last meeting and guidelines of regulatory bodies have been taken into consideration. This curriculum is already discussed and approved in the Departmental Academic Committee (DAC). All the BOS members express their satisfaction and approve the same to forward it to the Academic Committee (AC) for further approval. HOD also pointed out that as per the suggestion of the BOS members in the last meeting, course outcomes (as per OBE requirement) for all the courses have been prepared and also mapping with POs and PSOs (approved by BOS earlier) are defined.

Agenda Item No. 4: Identification of new courses in R16 Curriculum.

Resolution:

As per the suggestion of the BOS member in the last meeting courses which have been introduced in R16 have been identified and listed in Annexure-4 for ready reference.

Agenda Item No. 5: Identification of Courses in R16 Curriculum Mapped with Employability/ Skill Development/Entrepreneurship.

Resolution:

As per the suggestion of the BOS member in the last meeting courses for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship introduced in R16 have been identified and listed in Annexure-5 for ready reference.

Agenda Item No. 6: To consider running of value added courses.

Resolution:

HOD placed a list of value added courses to be offered during the coming semester break for consideration of the Committee. After discussion the following courses have been selected. Committee further suggests to define a suitable content in the form for brochure before

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enrollment of the students.

List of value added courses:

a. Web Development using Ajax
b. Introduction to Programming using Python.

It has been decided that this list will be forwarded to Training and Placement Department for conducting/coordinating training on this topic.

Agenda Item No. 7: To examine feedback analysis for the 2014 passout batch (As per Annexure-5).

Resolution: HOD places the feedback analysis report of 2014 pass out batch received from IQAC for discussion and necessary actions on that. Feedback summary of all the five stack holders on the question framed and suctioned by BOS has been placed and analyzed and following are the suggestions given by the expert-

a) As 33% students and 20% alumni are asking for addition of the subject Robotics, Distributed Algorithm and Distributed Database, so it is recommended to offer these courses which are there in the curriculum as elective paper in CA. It is accepted in the board.
b) In addition to that, course feedback for indirect attainment calculation for some sample courses has been shown to the external members. They expressed their satisfaction on that and suggested to continue the practice on regular basis. Questions used for taking the feedback were also shown.
c) Linux based paper should be included and in practical classes Linux environment is encouraged. HOD conveys that in CA department all the labs after 1st Year are encouraged to undergo in Linux environment or in Codeblocks.
d) It is decided that Core subjects should be included and completed by 3rd year as far as possible for the benefit of the students for appearing in the GATE examination.

Agenda Item No. 8: To consider and approve Board of Examiners for theory and practical examination for the 1st year to 3rd year classes

Resolution: HoD of MCA department proposes the names of the following Board of Examiners including external examiners for practical examination and moderators for semester question papers: Ms. Sharmistha Dey, Mrs. Sharmistha Banerjee, Shantanu Phadikar, Mr. Anjan Goswami, Ms, Barnali Goswami, Chiranjib Dutta, Mr. Niloy Kumar Nag. It has been decided that external examiners and moderators can be appointed from these and in case of non availability of any examiner and moderator HOD can call any external expert from reputed organization discussing in the DAC. HoD also proposes the name of subject coordinators that has been sanctioned in DAC at the beginning of the semester for internal evaluator and paper setter. The board accepts the proposal and appreciates the concept to subject coordinator for maintaining uniformity in different sections.

Agenda Item No. 9: Training needs analysis of Faculty, TAs and students (As per Annexure-6)

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Resolution: HOD placed the Training Need Analysis (TNA) report as finalized in the DAC and the committee expresses their satisfaction. Further committee suggests that MOOCS courses should be considered for training of faculties, TAs, students. Students should be encouraged to do training on aptitude, soft skills, and technical skills (C, Java, etc, for BCT training) for campus interviews. Faculties are encouraged in doing training on emerging topic like "Linux System Administration".

Agenda Item No. 10: Discussion about attainment of courses and gap analysis and setting up of attainment level for the current year:

Resolution:

HoD places Attainment achieved by all subjects for review of external members. It is concluded that attainment are achieved in all subjects and marginal increase in attainment level can be considered for next batch.

Agenda Item No. 11: Discussion about achievement of the department

Resolution:

HOD, CA places the result analysis of the previous semester where students' success rate is higher compared to earlier semester. Students' placement records are also placed and appreciated by all with following concerns-

a) Average package offered by companies need to be increased.
b) Students need to be encouraged in doing higher studies.
c) Students should prepare themselves ready for the R&D jobs of different companies.
d) MNCs, bulk recruitment companies should be encouraged in doing campus recruitment.

Agenda Item No. 12: Any other points with the permission of the chairman:

Resolution: There is no other significant discussion and the meeting ends with thanks from and to the chair.

Ms. Rupa Saha
Secretary,
BOS, CA Department

Dr. Pranam Paul
HOD & Chairperson
BOS, CA Department

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Annexure-4

List of new courses offered in Master of Computer Application in Regulation 16 curriculum

Name of the Programme	Name of the Course	Course Code	Year of introduction
Master of Computer Application	Advanced Java Technologies	MCAE 502A	2016
Master of Computer Application	Python Programming	MCA E502B	2016
Master of Computer Application	Linux System Administration	MCA E502C	2016
Master of Computer Application	Computational Intelligence	MCA E503A	2016
Master of Computer Application	Mobile Computing	MCA E503B	2016
Master of Computer Application	E-Commerce & Cyber Law	MCAE 504A	2016
Master of Computer Application	Big Data	MCA E504B	2016
Master of Computer Application	Network Security & Cryptography	MCAE505A	2016
Master of Computer Application	Cloud Computing	MCAE 505B	2016
Master of Computer Application	Internet of Things	MCA E505C	2016
Master of Computer Application	Advanced Java Technologies Lab	MCAE 592A	2016
Master of Computer Application	Python Programming Lab	MCA E592B	2016
Master of Computer Application	Linux System Administration Lab	MCA E592C	2016

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Annexure-5

List of Subjects which have been identified for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship other than the core subjects.

Formal Language and Automata Theory
Python Programming
Python Programming Lab
Computational Intelligence
Mobile Computing
Big Data
Network Security & Cryptography
Image Processing
Cloud Computing
Internet of Things
Technical Seminar
Advanced Java Technologies
Technical Communication
Java Lab
Visual Basic Lab
Artificial Intelligence
Values & Ethics
Group Discussion
Grand Viva

P. Pal

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Annexure-5

List of Subjects which have been identified for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship other than the core subjects.

Name of the Courses	Employability	Skill Development	Entrepreneurship
Object Oriented Programming using C++	YES	YES	
Python Programming Lab	YES	YES	
Computer Network	YES	YES	
Software Engineering & TQM	YES	YES	
Compiler Design		YES	
Image Processing		YES	
Linux System Administration Lab	YES	YES	YES
Operating System Lab	YES	YES	
Advanced Java Technologies Lab	YES	YES	
C Language Lab	YES	YES	YES
Artificial Intelligence	YES	YES	
Values & Ethics	YES	YES	YES
Cloud Computing	YES	YES	
Database Management System Lab	YES	YES	
Network Security & Cryptography	YES	YES	
Big Data	YES	YES	
Major Project	YES	YES	YES
UNIX & Shell Programming Lab	YES	YES	YES
Mobile Computing	YES	YES	
Ecommerce and Cyber Law	YES	YES	YES
Computational Intelligence	YES	YES	
Computer Organization & Architecture		YES	

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Meeting has been started with the welcome address by the Chairperson and all the leave of absence has been granted. Then the meeting is continued with agenda wise discussion.

Agenda Item No. 1: To confirm the minutes of the Board of Studies meeting held on 08.07.2014 (As Annexure-1)

Resolution: HOD requests all the members to note the minutes of the last meeting (shared as Annexure-1) and read out the same for confirmation. All the members accept the same and confirm.

Agenda Item No. 2: To report action taken on the minutes of Board of Studies held on 08.07.2014 (As Annexure-2):

Resolution: HOD requests all the members to note the action taken report on the minutes of Board of Studies held on 08.07.2014 (shared as Annexure-2) and read out the same for confirmation. All the members accept the same and confirm.

Agenda Item No. 3: To consider and adopt the new R16 curriculum for M.TECH (CSE) programme (As per Annexure-3).

Resolution:

HoD, CSE Dept. highlighted that in formation of R16 curriculum (as Annexure 3). all the points, suggestions of BOS members given in the last meeting and guidelines of regulatory bodies have been taken into consideration. This curriculum is already discussed and approved in the Departmental Academic Committee (DAC). All the BOS members express their satisfaction and approve the same to forward it to the Academic Committee (AC) for further approval. HOD also pointed out that as per the suggestion of the BOS members in the last meeting, course outcomes (as per OBE requirement) for all the courses have been prepared and also mapping with POs and PSOs (approved by BOS earlier) are defined.

Agenda Item No. 4: Identification of new courses in R16 Curriculum.

Resolution:

As per the suggestion of the BOS member in the last meeting courses which have been introduced in R16 have been identified and listed in Annexure-4 for ready reference.

Agenda Item No. 5: Identification of Courses in R16 Curriculum Mapped with Employability/ Skill Development/Entrepreneurship.

Resolution:

As per the suggestion of the BOS member in the last meeting courses for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship introduced in R16 have been identified and listed in Annexure-5 for ready reference.

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Agenda Item No. 6: To examine feedback analysis for the 2014 passout batch (As per Annexure-6).

Resolution: HOD places the feedback analysis report of 2014 pass out batch received from IQAC for discussion and necessary actions on that. Feedback summary of all the five stack holders on the question framed and suctioned by BOS has been placed and analyzed and following are the suggestions given by the expert-

a) As 31% students and 20% alumni are asking for addition of the subject Bioinformatics, Machine Learning, Natural Language Processing, so it is recommended to offer these courses which are there in the curriculum as Elective paper in M.TECH (CSE). It is accepted in the board.

b) In addition to that, course feedback for indirect attainment calculation for some sample courses has been shown to the external members. They expressed their satisfaction on that and suggested to continue the practice on regular basis. Questions used for taking the feedback were also shown.

c) It has been decided that final year project should be research based. Students need to be encouraged to publish papers.

Agenda Item No. 7: To consider and approve Board of Examiners for theory and practical examination for the 1st year to 2nd year classes:

Resolution: HOD of CSE department. proposes the names of the following Board of Examiners including external examiners for practical examination and moderators for semester question papers: Dr. Bikramjit Sarkar, Dr. Bikramjit Pal, Prof. Amitava Sen, Prof. Mallika De, Dr. Chandan Giri, Prof. Paramartha Dutta, Prof. Pinakpani Pal, Prof. J. K Mandal, Dr. Kaushik Roy, Dr. Kousik Dasgupta, Prof. Suman Bhowmik, Prof. Utpal Biswas, Prof. Devadatta Sinha, Dr. SK MD Obaidullah, Prof. Zeenat Rehena. It has been decided that external examiners and moderators can be appointed from these and in case of non availability of any examiner and moderator HOD can call any external expert from reputed organization discussing in the DAC. HOD also proposes the name of subject coordinators that has been sanctioned in DAC at the beginning of the semester for internal evaluator and paper setter. The board accepts the proposal and appreciates the concept to subject coordinator for maintaining uniformity in different sections.

Agenda Item No. 8: Training needs analysis of Faculty, TAs and students (As per Annexure-7)

Resolution: HOD placed the Training Need Analysis (TNA) report as finalized in the DAC and the committee express their satisfaction. Further committee suggests that MOOCS courses should be considered for training of faculties, TAs, students. Students should be encouraged to do training on aptitude, soft skills, and technical skills (C, Java, etc. for BCT training) for campus interviews. Faculties are encouraged in doing training on emerging topic like "Linux System Administration".

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Annexure-4

List of new courses offered in M.TECH (CSE) in Regulation 16 curriculum

Name of the Programme	Name of the Course	Course Code	Year of introduction
M.TECH (Computer Science and Engineering	Teaching & Research Methodologies (CSE)	CSEM101	2016
M.TECH (Computer Science and Engineering	Discrete Structure (CSE)	CSEM102	2016
M.TECH (Computer Science and Engineering	Database and Data Mining (CSE)	CSEM104	2016
M.TECH (Computer Science and Engineering	Web Technology (CSE)	CSEM106A	2016
M.TECH (Computer Science and Engineering	Parallel Computing (CSE)	CSEM106C	2016
M.TECH (Computer Science and Engineering	Embedded Systems (CSE)	CSEM106D	2016
M.TECH (Computer Science and Engineering	Modeling and simulation (CSE)	CSEM106E	2016
M.TECH (Computer Science and Engineering	Computational Geometry (CSE)	CSEM106G	2016
M.TECH (Computer Science and Engineering	Algorithm Lab (CSE)	CSEM193	2016
M.TECH (Computer Science and Engineering	Probability and Statistic for Engineer (CSE)	CSEM201	2016
M.TECH (Computer Science and Engineering	Advanced Compiler Design (CSE)	CSEM205C	2016
M.TECH (Computer Science and Engineering	Artificial Intelligence (CSE)	CSEM205D	2016
M.TECH (Computer Science and Engineering	VLSI Design (CSE)	CSEM205E	2016
M.TECH (Computer Science and Engineering	Bioinformatics (CSE)	CSEM206A	2016
M.TECH (Computer Science and Engineering	Machine Learning (CSE)	CSEM206B	2016
M.TECH (Computer Science and Engineering	Natural Language Processing (CSE)	CSEM206C	2016
M.TECH (Computer Science and Engineering	Extra Curricular Activity (NSS/NCC/NSO) (CSE)	CSEM381	2016

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Annexure-5

List of Subjects which have been identified for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship other than the core subjects.

Advanced Data Structures	CSM102
Machine Learning	CSM 103A
Wireless Sensor Networks	CSM103B
Introduction to Intelligent Systems	CSM103C
Human and Computer Interaction	CSM103D
Image Processing	CSM103E
Information Theory & Coding	CSM104A
Data Preparation and Analysis	CSM104B
Cloud Computing	CSM104C
GPU Computing	CSM104D
Pattern Recognition	CSM104E
Operations Research	CSM106
Advanced Data Structures Lab	CSM192
Machine Learning LAB	CSM193A
Wireless Sensor Networks lab	CSM193B
Introduction to Intelligent Systems lab	CSM193C
Image Processing Lab	CSM193E
Advanced Algorithms	CSM201
Soft computing	CSM 202
Data Science	CSM203B
Digital forensics	CSM203C
Distributed system	CSM203A
Security in Computing	CSM204A
Data Warehouse and Data Mining	CSM204B
Quantum Computing	CSM204C
Computer Vision	CSM204D
Business Analytics	CSM205A
Industrial Safety	CSM205B
Optimization Techniques	CSM205C
Cost Management of Engineering	CSM205D
Advanced Algorithms Lab	CSM291
Soft computing LAB	CSM292

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MINUTES OF THE MEETING OF THE BOARD OF STUDIES OF ELECTRONICS AND COMMUNICATION ENGINEERING DEPARTMENT HELD ON 28/01/2015 AT 3.00PM

Members present

1	Dr. Saradindu Panda	HOD-ECE & Chairman
2	Prof.(Dr.) M. Mitra	Academic expert (External)
3	Dr. Debashis Majumder	Academic expert (External)
4	Prof.(Dr.) J.K.Das	Professor,ECE
5	Prof. (Dr.) A. K. Mallick	Professor,ECE
6	Prof. (Dr.) P. K. Banerjee	Professor,ECE
7	Mr. Soumya Roy	Professor,ECE
8	Dr. Anilesh Dey,	Faculty, ECE
9	Mr. Surajit Bari	Faculty, ECE
10	Mr. Kaushik Sarkar	Faculty, ECE
11	Ms. Sandhya Pattanayak	Faculty, ECE
12	Ms. Sangita Roy	Faculty, ECE
13	Mr. Pranab Hazra	Faculty, ECE
14	Ms. Arpita Barman Santra	Faculty, ECE, Secretary
15	Mr. Soumen Pal	Faculty, ECE
16	Mr. Abhijit Ghosh	Faculty, ECE
17	Ms. Arnima Das	Faculty, ECE
18	Ms. Piyu Sarcar	Faculty, ECE
19	Mr. Puspak Pain	Faculty, ECE
20	Ms. Moupali Roy	Faculty, ECE
21	Ms. Rimpi Datta	Faculty, ECE
22	Ms. Sonali Bhowmik	Faculty, ECE
23	Ms. Swati Barui	Faculty, ECE
24	Ms. Payel Biswas	Faculty, ECE
25	Mr. Sohan Ghorai	Faculty, ECE
26	Ms. Tamanna Islam	Faculty, ECE
27	Ms. Nandini Saha	Faculty, ECE
28	Ms. Gour Gopal Jana	Faculty, ECE
29	Ms. Amit Kumar Das	Faculty, ECE

Members absent

1	Ms. Damayanti Ghosh	Faculty, ECE

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Head, ECE
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Nilgunj Road, Agarpara
Kolkata - 700 109

Meeting has been started with the welcome address by the Chairperson and all the leave of absence has been granted. Then the meeting is continued with agenda wise discussion.

The following resolutions were adopted after detail deliberation.

Agenda 1: To confirm the minutes of the Board of Studies meeting held on 17.11.2014(As per Annexure 1)

Resolution 1: HOD requests all the members to note the minutes of the last meeting (shared as Annexure 1) and read out the same for confirmation. All the members accept the same and confirm.

Agenda 2: To report action taken on the minutes of Board of Studies held on 17.11.2014 (As per Annexure 2).

Resolution 2: HOD requests all the members to note the action taken report on the minutes of Board of Studies held on 17.11.2014 (shared as Annexure 2) and read out the same for confirmation. All the members accept the same and confirm.

Agenda 3: To consider and adopt the new Regulation 16 (R16) curriculum for M.TECH (ECE) programme (As per Annexure-3).

Resolution 3:

HOD, ECE Dept. highlighted that in formation of R16 curriculum (as Annexure-3), all the points, suggestions of BOS members given in the last meeting and guidelines of regulatory bodies have been taken into consideration. This curriculum is already discussed and approved in the Departmental Academic Committee (DAC). All the BOS members express their satisfaction and approve the same to forward it to the Academic Committee (AC) for further approval. HOD also pointed out that as per the suggestion of the BOS members in the last meeting, course outcomes (as per OBE requirement) for all the courses have been prepared and also mapping with POs and PSOs (approved by BOS earlier) are defined.

Agenda 4: Identification of new courses in R16 Curriculum.

Resolution 4: As per the suggestion of the BOS member in the last meeting courses which have been introduced in R16 have been identified and listed in Annexure-4 for ready reference.

Agenda 5: Identification of Courses in R16 Curriculum Mapped with Employability/ Skill Development/Entrepreneurship.

Resolution 5: As per the suggestion of the BOS member in the last meeting courses for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship introduced in R16 have been identified and listed in Annexure-5 for ready reference.

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Head, ECE
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Agenda 6: To examine feedback analysis for the 2014 passout batch (As per Annexure-6).

Resolution 6: HOD places the feedback analysis report of 2014 pass out batch received from IQAC for discussion and necessary actions on that. Feedback summary of all the stake holders on the question framed and sanctioned by BOS has been placed and analyzed.

Agenda 7: To consider and approve Board of Examiners for theory and practical examination for the 1st year to 2nd year M.Tech ECE

Resolution 7: HOD of ECE suggests the names of the Board of Examiners including external examiners for practical examination and moderators for semester question papers. Members propose the names of the external examiners as Prof. (Dr.) Asok Datta, Retired Professor-ISI, Kolkata and Prof. (Dr.) Bijoy Bandyopadhyay, Calcutta University. It has been decided that external examiners and moderators can be appointed from these and in case of non availability of any examiner and moderator HOD can call any external expert from reputed organization discussing in the Departmental Academic Committee (DAC). HOD also proposes the name of subject coordinators that has been sanctioned in DAC at the beginning of the semester for internal evaluator and paper setter. The board accepts the proposal and appreciates the concept to subject coordinator for maintaining uniformity in different sections.

Agenda 8: Discussion about attainment of courses and gap analysis and setting up of attainment level for the current year

Resolution 8: HOD places Attainment achieved by all subjects for review of external members. It is concluded that attainment are achieved in all subjects and marginal increase in attainment level can be considered for next batch.

Agenda 9: Any other points with the permission of the chairman:

Resolution 9: There is no other significant discussion and the meeting ends with thanks from and to the chair.

.....
Arpita Barman Santra
Secretary,
BOS, ECE Department

.....
Dr. Saradindu Panda
HOD & Chairperson
BOS, ECE Department

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Annexure-5

List of Subjects which have been identified for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship other than the core subjects.

Name of the Course	Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship
Digital filters design and its applications	Skill Development, Employability
Advanced RF & Microwave Engineering	Skill Development, Employability
Computational Intelligence	Skill Development, Employability
Satellite communication	Skill Development, Employability, Entrepreneurship
Embedded System	Skill Development, Employability
Digital signal processing lab	Skill Development, Employability
Advanced RF & Microwave Engineering Lab	Skill Development, Employability
Wireless communication	Skill Development, Employability
Secure Communication& Coding	Skill Development, Employability
Remote Sensing Techniques & Applications	Skill Development, Employability
Computer Vision	Skill Development, Employability
Detection and Estimation Theory	Skill Development, Employability
Optical fibre communication	Skill Development, Employability
Coding & cryptography lab	Skill Development, Employability

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Principal
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Meeting was presided over by Prof. (Dr.) Sibapriya Mukherjee, Professor, Civil Engineering Department, Jadavpur University.
The following resolutions were adopted after detail deliberation.

Agenda Item No. 1: Action required based on Academic Audit score: (As Annexure-1)

Resolution:
HOD, Civil of NIT addressed to the chair giving thanks and personally briefed about the Academic audit score that Civil Department have received and many faculty members suggested many ways to improve the same. Some of the suggestions are:

- Introduction few new training/seminar program
- Revision of the syllabus as per guidelines.
- Frequent feedback system
- More interaction with students

After detail discussion, Proposition for improving academic and administrative performance of Civil Engineering Department have been Approved and accepted.

Agenda Item No. 2: Approval Of Paper Setter Name: (As Annexure-2)

Resolution:

HOD, Civil, NiT placed the list of Paper setters for the odd semester examination for Odd semester subject before the BOS. It was also informed that all paper setter shall prepare two set of question papers, to enable moderators to choose questions. Paper setters shall also prepare question for both regular and backlog students. Format for the question paper will be distributed soon. BOS Approved the list which shall be forwarded to Controller of Examination.

Agenda Item No. 3: To consider and adopt the new R16 curriculum for M.TECH (CE) programme (As per Annexure-3).

Resolution:
HOD, CE Dept. highlighted that in formation of R16 curriculum (as Annexure 3), all the points, suggestions of BOS members given in the last meeting and guidelines of regulatory bodies have been taken into consideration. This curriculum is already discussed and approved in the Departmental Academic Committee (DAC). All the BOS members express their satisfaction and approve the same to forward it to the Academic Committee (AC) for further approval. HOD also pointed out that as per the suggestion of the BOS members in the last meeting, course outcomes (as per OBE requirement) for all the courses have been prepared and also mapping with POs and PSOs (approved by BOS earlier) are defined.

Agenda Item No. 4: Identification of new courses in R16 Curriculum.

Resolution:

As per the suggestion of the BOS member in the last meeting courses which have been introduced in R16 is "Reliability of Structure" replacing the previous subject "Prestressed Concrete".

Agenda Item No. 5: Identification of Courses in R16 Curriculum Mapped with

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Employability/ Skill Development/Entrepreneurship.

Resolution:
As per the suggestion of the BOS member in the last meeting courses for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship introduced in R16 have been identified and listed in Annexure-5 for ready reference.

Agenda Item No. 6: Any other matter with the permission of the chair

Resolution:
The committee wholeheartedly supported the process of properly displaying Proper manuals and laboratory experiments procedures including test and apparatus/instrument names in each lab.

Meeting ended with vote of thanks to the expert member of the committee.

Abhipriya Halder.

Mr. Abhipriya Halder
Departmental Coordinator
BOS, CE Department

Prof. (Dr.) Biman Mukherjee
HOD & Chairperson
BOS, CE Department

HOD Civil Engineering Dept.
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Annexure-5_2016_MTech

List of Subjects OF MTech- SE - 2016, which have been identified for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship other than the core subjects.

Name of the Courses	Employability	Skill Development	Entrepreneurship
1. Bridge Engineering	YES	YES	
2. Structural Optimisation	YES	YES	YES
3. Repair & Rehabilitation of Structure	YES	YES	YES
4. Advanced Foundation Engineering	YES	YES	YES
5. Structural Reliability	YES	YES	
6. Composite Material & Structures	YES	YES	YES
7. Environmental Impact Assessment	YES	YES	YES
8. Advanced Concrete Technology		YES	
9. Construction Technology & Management	YES	YES	YES
10. Theory of Elastic Stability and Behaviour of Metal Structure	YES	YES	

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The HOD, Department of Electrical Engineering chaired the meeting and started with the welcome address. The discussions took place on the following agendas and resolutions.

Agenda 1: Confirmation of minutes of the Board of studies meeting held on 22.07.2015.

Resolution:

HOD and other members present, noted the action taken against the resolutions of last BOS minutes and confirmed.

Agenda 2: Autonomy for the institute.

Resolution:

The members appreciated for award of Autonomy status conferred by UGC against letter Ref. No. F. 22-1/2015(AC), dated 29.07.2015 (Annexure – I).

Agenda 3: Commencement of Syllabus under Autonomy.

Resolution:

As discussed with the members, the approved curriculum and syllabus will be commenced from the academic year 2016-2017 as Regulation 2016 (R16).

Agenda 4: Formation and list of Board of Examiners.

Resolution:

HOD of EE Dept. proposes the names of the Board of Examiners including external examiners for practical examination and moderators for semester question papers. Members suggested the names of the external examiners as Dr. Arabinda Das, Dr. Sawan Sen Dr. Partha Bera, Dr. Debasish Chatterjee, Dr. Shibshankar Saha, Dr. Pritam Gayen, Dr. Susanta Ray, Dr. Suddhasatwa Chakraborty, Prof. Basudeb Dey, Prof. Suparna Pal-Deb. It has been decided that external examiners and moderators can be appointed from the above-mentioned name of external examiners. In case of non-availability of any examiner and moderator HOD may call an external expert from reputed Institution through the DAC proceedings. HOD also proposed the name of all course coordinators, internal evaluator and paper setter as discussed in DAC at the commencement of the semester. The board accepted the proposal.

Agenda 5: Submission of detailed Result Analysis of academic year 2014-15 and feedback of all stakeholders.

Resolution:

HOD informed submission of detailed result analysis for the academic year 2014-15 and feedback of all stakeholders. The result analysis and feedback has been submitted to IQAC for the necessary actions pertaining to the attainment level of even semester courses.

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Agenda 6: Discussion on the Report of Academic Audit.

Resolution:

The detailed report of the Academic Audit 2014-2015 has been placed before the members present and found satisfactory.

Agenda 7: Amendment of PEOs for M.Tech. in Power Systems.

Resolution:

Under autonomy regulation, member suggested to amend the Programme Educational Objectives (PEO) for M. Tech. in Power Systems as per Annexure – II.

Meeting is ended with thanks to and from the chair.

Prof. Amlan Chakrabarti
HOD, Department of Electrical Engineering

H.O.D. EE Department
Narula Institute of Technology

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Annexure-4

List of new courses offered in M.TECH Power System in Regulation 16 curriculum

Name of the Programme	Name of the Course	Course Code	Year of introduction
M.TECH (Power System), Dept.-EE	Advanced Engineering Mathematics (EE)	EMM 101	2016
M.TECH (Power System), Dept.-EE	Advanced Power System Analysis (EE)	PSM 101	2016
M.TECH (Power System), Dept.-EE	High Voltage Transmission system (EE)	PSM102	2016
M.TECH (Power System), Dept.-EE	Soft Computing Technique (EE)	PSM104 B	2016
M.TECH (Power System), Dept.-EE	Digital Signal Processing (EE)	PSM104 C	2016
M.TECH (Power System), Dept.-EE	Lab-I Power System Hardware (EE)	PSM191	2016
M.TECH (Power System), Dept.-EE	Lab-IIFamiliarization with Power System Simulation Software (EE)	PSM192	2016
M.TECH (Power System), Dept.-EE	Power System Operation and Control (EE)	PSM201	2016
M.TECH (Power System), Dept.-EE	Power System Instrumentation (EE)	PSM202	2016
M.TECH (Power System), Dept.-EE	Advanced Power System Protection (EE)	PSM203	2016
M.TECH (Power System), Dept.-EE	Power System Simulation Lab3 (EE)	PSM291	2016
M.TECH (Power System), Dept.-EE	Power System Simulation Lab4 (EE)	PSM292	2016
M.TECH (Power System), Dept.-EE	Introduction to Management (EE)	EMM 301	2016
M.TECH (Power System), Dept.-EE	Energy Control Center – Concept & Implementation (EE)	PSM 301B	2016

H.O.D. EE Department
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Meeting was presided over by Prof. (Dr.) Sibapriya Mukherjee, Professor, Civil Engineering Department, Jadavpur University.
The following resolutions were adopted after detail deliberation.

Agenda Item No. 1: Action required based on Academic Audit score: (As Annexure-1)

Resolution:
HOD, Civil of NIT addressed to the chair giving thanks and personally briefed about the Academic audit score that Civil Department have received and many faculty members suggested many ways to improve the same. Some of the suggestions are:

- Introduction few new training/seminar program
- Revision of the syllabus as per guidelines.
- Frequent feedback system
- More interaction with students

After detail discussion, Proposition for improving academic and administrative performance of Civil Engineering Department have been Approved and accepted.

Agenda Item No. 2: Approval Of Paper Setter Name: (As Annexure-2)

Resolution:

HOD, Civil, NiT placed the list of Paper setters for the odd semester examination for Odd semester subject before the BOS. It was also informed that all paper setter shall prepare two set of question papers, to enable moderators to choose questions. Paper setters shall also prepare question for both regular and backlog students. Format for the question paper will be distributed soon. BOS Approved the list which shall be forwarded to Controller of Examination.

Agenda Item No. 3: To consider and adopt the new R18 curriculum for M.TECH (CE) programme (As per Annexure – 3) .

Resolution:
HOD, CE Dept. highlighted that in formation of R18 curriculum (as Annexure 3), all the points, suggestions of BOS members given in the last meeting and guidelines of regulatory bodies have been taken into consideration. This curriculum is already discussed and approved in the Departmental Academic Committee (DAC). All the BOS members express their satisfaction and approve the same to forward it to the Academic Committee (AC) for further approval. HOD also pointed out that as per the suggestion of the BOS members in the last meeting, course outcomes (as per OBE requirement) for all the courses have been prepared and also mapping with POs and PSOs (approved by BOS earlier) are defined.

Agenda Item No. 4: Identification of new courses in R18 Curriculum.

Resolution:

As per the suggestion of the BOS member in the last meeting courses which have been introduced in R18 is "Theory of Plates and Shell" replacing the previous subject "Structural Reliability".

Agenda Item No. 5: Identification of Courses in R18 Curriculum Mapped with

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Employability/ Skill Development/Entrepreneurship.

Resolution:

As per the suggestion of the BOS member in the last meeting courses for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship introduced in R18 have been identified and listed in Annexure-5 for ready reference.

Agenda Item No. 6: Any other matter with the permission of the chair

Resolution:

The committee wholeheartedly supported the process of properly displaying Proper manuals and laboratory experiments procedures including test and apparatus/instrument names in each lab.

Meeting ended with vote of thanks to the expert member of the committee.

Abhipriya Halder

Mr. Abhipriya Halder
Departmental Coordinator
BOS, CE Department

Prof. (Dr.) Biman Mukherjee
HOD & Chairperson
BOS, CE Department

HOD Civil Engineering Dept.
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Annexure-5_2016

List of Subjects of MTech in SE, which have been identified for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship other than the core subjects.

1. Bridge Engineering
2. Structural Optimization
3. Repair & Rehabilitation of Structure
4. Advanced Foundation Engineering
5. Theory of Plates and Shells
6. Composite Material & Structures
7. Environmental Impact Assessment
8. Advanced Concrete Technology
9. Construction Technology & Management
10. Theory of Elastic Stability and Behaviour of Metal Structure

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Annexure-5_2018_MTech

List of Subjects OF MTech- SE- 2018, which have been identified for Employability/Higher Studies/Advanced Skill Development/ Entrepreneurship other than the core subjects.

Name of the Courses	Employability	Skill Development	Entrepreneurship
1. Bridge Engineering	YES	YES	
2. Structural Optimisation	YES	YES	YES
3. Repair & Rehabilitation of Structure	YES	YES	YES
4. Advanced Foundation Engineering	YES	YES	YES
5. Theory of Plates and Shells	YES	YES	
6. Composite Material & Structures	YES	YES	YES
7. Environmental Impact Assessment	YES	YES	YES
8. Advanced Concrete Technology		YES	
9. Construction Technology & Management	YES	YES	YES
10. Theory of Elastic Stability and Behaviour of Metal Structure	YES	YES	

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Narula Institute of Technology

Department of Civil Engineering

Curriculum for B.TECH (CE)

Curricular Regulation 2015 (R15)
under Maulana Abul Kalam Azad University of Technology,

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Syllabus for B.Tech(Civil Engineering) Up to Third Year

Revised Syllabus of B.Tech CE (for the students who were admitted in Academic Session 2010-2011)

Civil Engineering

Second Year – Third Semester

A. THEORY							
Sl. No	Field	Theory	Contact hours per week				Cr. Points
			L	T	P	Total	
1	HU301	Values & Ethics in Profession	3	0	0	3	3
2	PH301	Physics - 2	3	1	0	4	4
3	CH301	Basic Environmental Engineering & Elementary Biology	(2+1)	0	0	3	3
4	CE301	Solid Mechanics	3	0	0	3	3
5	CE302	Surveying	3	1	0	4	4
6	CE303	Building Material & Construction	3	1	0	4	4
Total Theory						21	21
B. PRACTICAL							
7	PH391	Physics - 2	0	0	3	3	2
8	CE391	Solid Mechanics	0	0	3	3	2
9	CE392	Surveying Practice I	0	0	3	3	2
10	CE393	Building Design & Drawing	0	0	3	3	2
Total Practical						12	8
Total of Semester						33	29

Second Year – Fourth Semester

A. THEORY							
Sl. No	Field	Theory	Contact hours per week				Cr. Points
			L	T	P	Total	
1	M(CS)401	Numerical Methods	2	1	0	3	2
2	M402	Mathematics - 3	3	1	0	4	4
3	CE401	Fluid Mechanics	3	0	0	3	3
4	CE402	Structural Analysis	3	1	0	4	4
5	CE403	Soil Mechanics	3	1	0	4	4
Total Theory						18	17
B. PRACTICAL							
6	HU481	Technical Report Writing & Language Lab Practice	0	0	3	3	2
7	M(CS)491	Numerical Methods	0	0	2	2	1
8	CE491	Fluid Mechanics	0	0	3	3	2
9	CE492	Surveying Practice -II	0	0	3	3	2
10	CE493	Soil Mechanics Lab - I	0	0	3	3	2
Total Practical						14	9
Total of Semester						32	26

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Syllabus for B.Tech(Civil Engineering) Up to Third Year

Revised Syllabus of B.Tech CE (for the students who were admitted in Academic Session 2010-2011)

Third Year – Fifth Semester

A. THEORY							
Sl. No	Field	Theory	Contact hours per week				Cr. Points
			L	T	P	Total	
1	HU501	Economics for Engineers	3	0	0	3	3
2	CE501	Foundation Engineering	3	1	0	4	4
3	CE502	Design of RC Structures	3	1	0	4	4
4	CE503	Concrete Technology	3	0	0	3	3
5	CE504	Engineering Geology	3	0	0	3	3
Total Theory						17	17
B. PRACTICAL							
6	CE591	Soil Mechanics Lab – II	0	0	3	3	2
7	CE592	Concrete Laboratory	0	0	3	3	2
8	CE593.	Quantity Surveying, Specifications and Valuation	0	0	3	3	2
9	CE594	Engineering Geology Laboratory	0	0	3	3	2
Total Practical						12	8
Total of Semester						29	25

Third Year – Sixth Semester

A. THEORY							
Sl. No	Field	Theory	Contact hours per week				Cr. Points
			L	T	P	Total	
1	HU601	Principles of Management	2	0	0	2	2
2	CE601	Highway & Transportation Engineering	3	0	0	3	3
3	CE602	Design of Steel Structure	3	0	0	3	3
4	CE603	Construction Planning and Management	3	0	0	3	3
5	CE604	Professional Elective – I	3	0	0	3	3
6	CE605	Free Elective – I	3	0	0	3	3
Total Theory						17	17
B. PRACTICAL							
7	CE691	Highway & Transportation Engg Lab	0	0	3	3	2
8	CE692	Detailing of RC and Steel Structures	0	0	3	3	2
9	CE693	CAD Laboratory	0	0	3	3	2
10	CE681	Seminar	0	0	3	3	2
Total Practical						12	8
Total of Semester						29	25

Professional Elective – I

1. CE604A : Bridge Engineering
2. CE604B : Prestressed Concrete
3. CE604C : Structural Dynamics and Earthquake Engineering

Free Elective – I

1. CE605A : Operations Research(M)
2. CE605B : Human Resource Management(HSS)
3. CE6505C : Materials Handling(ME)

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Syllabus for B.Tech(Civil Engineering) Up to Third Year

Revised Syllabus of B.Tech CE (for the students who were admitted in Academic Session 2010-2011)

Proposed Structure for Forthcoming Semester of B.Tech Courses on CE

Fourth Year – Seventh Semester

Sl. No	Field	Theory	Contact hours per week				Cr. Points
			L	T	P	Total	
A. THEORY							
1	CE701	Environmental Engineering	3	0	0	3	3
2	CE702	Water Resource Engineering	3	0	0	3	3
3	CE703	Professional Elective II	3	0	0	3	3
4	CE704	Professional Elective III	3	0	0	3	3
5	CE705	Free Elective II	3	0	0	3	3
Total Theory						15	15
B. PRACTICAL							
6	HU781	Group Discussion	0	0	3	3	2
7	CE791.	Environmental Engg Lab	0	0	3	3	2
8	CE792	Civil Engineering Practice Sessional	0	0	3	3	2
9	CE793	Free Elective Laboratory	0	0	3	3	2
10	CE782	Industrial Training	4 weeks duration during 6th-7th Semester break				2
11	CE783	Project Part I				6	2
Total Practical						18	12
Total of Semester						33	27

Fourth Year – Eighth Semester

Sl. No	Field	Theory	Contact hours per week				Cr. Points
			L	T	P	Total	
A. THEORY							
1	HU801A HU801B	Organisational Behaviour/ Project Management	2	0	0	2	2
2	CE801	Professional Elective IV	3	0	0	3	3
3	CE802	Professional Elective V	3	0	0	3	3
Total Theory						8	8
B. PRACTICAL							
4	CE891	Structural Engineering Design Practice	0	0	6	6	4
5	CE881	Project Part II	0	0	12	12	6
6	CE882	Grand – Viva					3
Total Practical						18	13
Total of Semester						26	21

Free Elective II
CE705A Engineering Materials (ME303)
CE705B Electrical and Electronic Measurement (EE402)

Free Elective Lab
CE793A Material Testing Lab (ME493)
CE793B Electrical and Electronic Measurement Laboratory (EE492)

List of Electives:

Professional Elective – II
1. CE703A Advanced Foundation Engineering
2. CE703B Soil Stabilization and Ground Improvement Techniques
3. CE703C Advanced Highway and Transportation Engineering

Professional Elective – III
1. CE704A Advanced Structural Analysis
2. CE704B Hydraulic Structures

Professional Elective – IV
1. CE801A Environmental Pollution and Control
2. CE801B Water Resource Management and Planning
3. CE801C Remote Sensing and GIS

Professional Elective – V
1. CE802A Finite Element Method
2. CE802B Dynamics of Soils & Foundations
3. CE802C Design of Tall Buildings
4. CE802D Pavement Design

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Narula Institute of Technology

Department of Civil Engineering

Curriculum for B.TECH (CE)

Curricular Regulation 2018 (R18)
under Maulana Abul Kalam Azad University of Technology,

West Bengal, India

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81, Nilgunj Road, Agarpara, Kol-109

Department: Civil Engineering

Curriculum Structure & Syllabus

(Effective from 2018-19 admission batch)

Under Autonomy (**GR A:** ECE, EE, EIE, BME; **GR B:** CSE, IT, ME, CE, FT)

1st Semester								
Sl No	Course Type	Course Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	M 101	Mathematics -I	3	1	0	4	4
2	BS	CH 101/ PH 101	Chemistry (Gr. A) / Physics- I (Gr. B)	3	0	0	3	3
3	ES	EE 101/ EC 101	Basic Electrical Engineering (Gr. A) / Basic Electronics Engineering (Gr. B)	3	0	0	3	3
4	HS	HU 101	English	2	0	0	2	2
Total of Theory							**12**	**12**
B. PRACTICAL								
5	BS	CH 191/ PH191	Chemistry Lab (Gr. A) / Physics- I Lab (Gr. B)	0	0	3	3	1.5
6	ES	EE 191/ EC 191	Basic Electrical Engineering Lab (Gr. A) / Basic Electronics Engineering Lab (Gr. B)	0	0	3	3	1.5
7	ES	ME 191/ ME 192	Engineering Graphics & Design (Gr A) / Workshop/Manufacturing Practices (Gr-B)	0	0	3	3	1.5
8	PROJ	PR 191	PROJECT-IA	0	0	1	1	0.5
9	PROJ	PR 192	PROJECT-IB	0	0	1	1	0.5
C. MANDATORY ACTIVITIES / COURSES								
10	MC	MC 181	Induction Program	0	0	0	0	
Total of Theory, Practical & Mandatory Activities/Courses							**23**	**17.5**

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Curriculum for B.Tech 2nd Semester

Under Autonomy (GR A: ECE, EE, EIE, BME; **GR B:** CSE, IT, ME, CE, FT)

2nd Semester								
Sl No	Course Type	Course Code	Theory	Credit Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	M 201	Mathematics -II	3	1	0	4	4
2	BS	CH 201/ PH 201	Chemistry - (Gr. B) / Physics – I (Gr. A)	3	0	0	3	3
3	ES	EE 201/ EC 201	Basic Electrical Engineering (Gr. B) / Basic Electronics Engineering (Gr. A)	3	0	0	3	3
4	ES	CS 201	Programming for Problem Solving	3	0	0	3	3
5	ES	ME 201	Engineering Mechanics	3	0	0	3	3
Total of Theory							**16**	**16**
B. PRACTICAL								
6	ES	CS291	Programming for Problem Solving Lab	0	0	3	3	1.5
7	BS	CH 291/	Chemistry Lab (Gr. B) / Physics - I Lab (Gr. A)	0	0	3	3	1.5
8	ES	EE 291/	Basic Electrical Engineering Lab (Gr. B) /	0	0	3	3	1.5
9	ES	ME 291/	Engineering Graphics & Design (Gr B) / Workshop/Manufacturing	0	0	3	3	1.5
10	HS	HU 291	Language Lab	0	0	2	2	1
11	PROJ	PR 291	Project-II	0	0	1	1	0.5
12	PROJ*	PR 292	Innovative activities-I	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
13	MC	MC 281	NSS/ Physical Activities/Meditation & Yoga/Photography/ Nature Club	0	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							**34**	**24**

* Inter/ Intra Institutional Activities viz; Training with higher Institutions; Soft skill training organized by Training and Placement Cell of the respective institutions; contribution at incubation/ innovation /entrepreneurship cell of the institute; participation in conferences/ workshops/ competitions etc.; Learning at Departmental Lab/ Tinkering Lab/ Institutional workshop; Working in all the activities of Institute's Innovation Council for eg: IPR workshop/Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc. (evaluation by Programme Head through certification)

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilguni Road, Agarpara, Kol-109

3rd								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	ES	M(CS)301	Numerical Methods	3	0	0	3	3
2	BS	PH(CE)301	Physics - II	3	0	0	3	3
3	PC	CE301	Surveying	2	1	0	3	3
4	PC	CE302	Strength of Material	2	1	0	3	3
5	PC	CE303	Building Material and Construction	2	1	0	3	3
6	PC	CE304	Engineering Geology	2	1	0	3	3
Total of Theory							**18**	**18**
B. PRACTICAL								
7	ES	M(CS)391	Numerical Methods Lab	0	0	3	3	1.5
8	PC	CE391	Engineering Geology Lab	0	0	2	2	1
9	PC	CE392	Surveying Practice	0	0	3	3	1.5
10	BS	PH (CE)391	Physics-II Lab	0	0	3	3	1.5
11	PROJ	PR 391	Project-III	0	0	2	2	1
12	PROJ*	PR 392	Innovative activities-II	0	0	0	1	0.5
C. MANDATORY ACTIVITIES / COURSES								
13	MC	MC 381	Behavioural & Interpersonal skills	0	0	3	3	
Total of Theory, Practical & Mandatory Activities/Courses							**35**	**25.0**

*Students may choose either to work on participation in all the activities of Institute's Innovation Council for eg: IPR workshop/ Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc.

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilguni Road, Agarpara, Kol-109

4th								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	M401	Mathematics III	3	1	0	4	4
2	HS	HU401	Values & Ethics in Profession	2	0	0	2	2
3	PC	CE401	Structural Analysis	3	1	0	4	4
4	PC	CE402	Concrete Technology	2	0	0	2	2
5	PC	CE403	Soil Mechanics	3	0	0	3	3
Total of Theory							**15**	**15**
B. PRACTICAL								
6	PC	CE491	Building Planning And Drawing	0	0	3	3	1.5
7	PC	CE492	Concrete Lab	0	0	3	3	1.5
8	PC	CE493	Soil Mechanics Lab-I	0	0	3	3	1.5
9	PC	CE494	Quantity Surveying, Specifications and Valuation	0	0	3	3	1.5
10	PROJ	PR 491	Project-IV	0	0	2	2	1
11	PROJ*	PR 492	Innovative activities-III	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
12	MC	MC 401	Environmental Science	3	0	0	3	0
Total of Theory, Practical & Mandatory Activities/Courses							**32**	**22.5**

*Students may choose either to work on participation in all the activities of Institute's Innovation Council for eg: IPR workshop/ Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc.

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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81, Nilgunj Road, Agarpara, Kol-109

5th Semester								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	HS	HU502	Economics for Engineers	2	0	0	2	2
2	PC	CE501	Structural Design-I	2	1	0	3	3
3	PC	CE502	Foundation Engineering	3	0	0	3	3
4	PE	CE503	A. Hydraulics B. Water Supply and Plumbing C. Waste Water and Treatment	3	0	0	3	3
5	PE	CE504	A. Transportation Engineering B. Infrastructure Planning & Design C. Public Transport System	3	0	0	3	3
Total of Theory							**14**	**14**
B. PRACTICAL								
6	PE	CE591	A. Transportation and Highway Engineering Lab B. Infrastructure Planning & Design Lab C. Public Transport System Lab	0	0	3	3	1.5
7	PC	CE592	Soil Mechanics Lab-II	0	0	3	3	1.5
8	PC	CE593	Civil Engineering Lab	0	0	3	3	1.5
9	ES	CE594	Advanced Programming for Problem solving	0	0	3	3	1.5
10	PROJ	PR 591	Project-V	0	0	2	2	1
11	PROJ*	PR 592	Innovative activities-IV	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
12	MC	MC 501	Constitution of India	3	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							**31**	**21.5**

* Students may choose either to work on participation in Hackathons etc. Development of new product/ Business Plan/ registration of start-up.

Students may choose to undergo Internship / Innovation / Entrepreneurship related activities. Students may choose either to work on innovation or entrepreneurial activities resulting in start-up or undergo internship with industry/ NGO's/ Government organizations/ Micro/ Small/ Medium enterprises to make themselves ready for the industry/ Long Term goals under rural Internship. (Duration 4-6 weeks)

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilguni Road, Agarpara, Kol-109

6th Semester								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PC	CE601	Structural Design – II	3	0	0	3	3
2	PC	CE602	Construction Planning And Management	2	1	0	3	3
4	PE	CE603	A.Bridge Engineering B.Pre stressed Concrete C.Structural Dynamics and Earthquake Engineering	3	1	0	4	4
5	OE	CE604	A. Operations Research B. Human Resource Management C.Studies On Six Sigma	3	0	0	3	3
Total of Theory							**13**	**13**
B. PRACTICAL								
6	PC	CE691	Structural Design And Detailing	0	0	2	2	1
7	PC	CE692	Computer Aided Design and Drafting	0	0	3	3	1.5
11	PROJ	PR 691	Project-VI	0	0	2	2	1
12	PROJ*	PR 692	Innovative activities-V	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
13	MC	MC 681	Technical Lecture Presentation & Group Discussion-I	0	0	3	3	
Total of Theory, Practical & Mandatory Activities/Courses							**23**	**17**

*Students may choose either to work on participation in all the activities of Institute's Innovation Council for eg: IPR workshop/ Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc.

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce andsubmission of necessary certificates as evidence of activities.

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81, Nilgunj Road, Agarpara, Kol-109

7th Semester								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PC	CE701	Environmental Engineering	2	1	0	3	3
2	PE	CE702	A.Hydrology and Water Resource Engineering B.Irrigation Engineering C.Hydraulic Structure	3	0	0	3	3
3	PE	CE703	A.Ground Improvement & Technique B.Urban Planning C.Traffic Engineering & Planning	3	0	0	3	3
4	OE	CE704	A.Engineering Materials B.Electrical And Electronics Measurement C.Material Handling	3	0	0	3	3
Total of Theory							**12**	**12**
B. PRACTICAL								
5	PC	CE791	Environmental Engineering Lab	0	0	3	3	1.5
6	PE	CE792	A.Material Testing Lab B.Electrical and Electronic Measurement C. Material Handling Practical	0	0	3	3	1.5
7	PROJ	PR 791	Project-VII	0	0	0	6	3
8	PROJ*	PR 792	Innovative activities-VI	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
9	MC	MC 781	Social Awareness	0	0	3	3	0
Total of Theory, Practical & Mandatory Activities/Courses							**27**	**18.5**

* Students may choose either to work on participation in Hackathons etc. Development of new product/ Business Plan/ registration of start-up.

Students may choose to undergo Internship / Innovation / Entrepreneurship related activities. Students may choose either to work on innovation or entrepreneurial activities resulting in start-up or undergo internship with industry/ NGO's/ Government organizations/ Micro/ Small/ Medium enterprises to make themselves ready for the industry/ Long Term goals under rural Internship. (Duration 4-6 weeks)

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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8th Semester								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PE	CE801	A. Dynamics of Soil & Foundation B. Finite Element Analysis C. Advanced Structural Analysis	3	0	0	3	3
2	PE	CE802	A. Advanced Foundation Engineering B. Advanced Transportation Engineering C. Pavement Design	3	0	0	3	3
3	OE	CE803	A. Metro System and Engineering B. Air & Noise Pollution And Control C. Remote Sensing And GIS	3	0	0	3	3
4	HS	HU806	Project Management	2	0	0	2	3
Total of Theory							**11**	**11**
B. PRACTICAL								
5	PROJ	PR891	Project-VIII	0	0	0	6	3
C. MANDATORY ACTIVITIES / COURSES								
6	MC	MC 801	Essence of Indian Knowledge Tradition	0	0	3	3	0
Total of Theory, Practical & Mandatory Activities/Courses							**20**	**14**

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Narula Institute of Technology

Department of Civil Engineering

Curriculum for B.TECH (CE)

Curricular Regulation 2016 (R16)
under Maulana Abul Kalam Azad University of Technology,

West Bengal, India

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilguni Road, Agarpara, Kol-109

Autonomy Curriculum and Syllabus of B.Tech Programme
Implemented from the Academic Year 2016

Group A: ECE, EE, BME, AEIE/EIE

Group B: CSE, IT, FT, ME,CE

First Year First Semester

CURRICULUM

A. THEORY							
Sl.No	Paper Code	Theory	Contact Hours /Week				Credit Points
			L	T	P	Total	
1	M 101	Mathematics -I	3	1	0	4	4
2	CH 101/ PH 101	Chemistry (Gr. A) / Physics - I(Gr. B)	3	1	0	4	4
3	EE 101/ EC 101	Basic Electrical Engineering (Gr. A) / Basic Electronics Engineering (Gr. B)	3	1	0	4	4
4	HU 101	Communicative English	2	0	0	2	2
5	ME 101	Engineering Mechanics	3	1	0	4	4
Total of Theory						18	18
B. PRACTICAL							
7	HU181	Extra Curricular Activity (NSS/ NCC)	0	0	2	2	1
8	HU191	Lang. Lab. and Seminar Presentation	0	0	2	2	1
9	CH 191/ PH191	Chemistry Lab (Gr. A) / Physics -I Lab(Gr. B)	0	0	3	3	2
10	EE 191/ EC 191	Basic Electrical Engineering Lab (Gr. A) /Basic Electronics Engineering Lab(Gr. B)	0	0	3	3	2
11	ME 191	Engg Drawing & Graphics(Gr A)/ Workshop Practice (Gr-B)	0	0	3	3	2
Total of Practical						13	08

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilguni Road, Agarpara, Kol-109

Autonomy Curriculum and Syllabus of B.Tech Programme
Implemented from the Academic Year 2016

Group A: ECE, EE, BME, AEIE/EIE

Group B: CSE, IT, FT, ME, CE

First Year Second Semester

CURRICULUM

A. THEORY							
Sl No	Paper Code	Theory	Contact Hours /Week				Credit Points
			L	T	P	Total	
1	M 201	Mathematics -II	3	1	0	4	4
2	CH 201/ PH 201	Chemistry (Gr. B) / Physics - I(Gr. A)	3	1	0	4	4
3	EE 201/ EC 201	Basic Electrical Engineering (Gr. B) / Basic Electronics Engineering (Gr. A)	3	1	0	4	4
4	CS 201	Computer Fundamentals & Principle of Computer Programming	3	1	0	4	4
5	ME 201	Engineering Thermodynamics & Fluid Mechanics	3	1	0	4	4
Total of Theory						20	20
B. PRACTICAL							
7	CS291	Computer Fundamentals & Principle of Computer Programming Lab	0	0	3	3	2
8	CH 291/ PH291	Chemistry Lab (Gr. B) / Physics -I Lab (Gr. A)	0	0	3	3	2
9	EE 291/ EC 291	Basic Electrical Engineering Lab (Gr. B) /Basic Electronics EngineeringLab (Gr. A)	0	0	3	3	2
10	ME 291	Engg. Drawing & Graphics(Gr B)/ Workshop Practice (Gr-A)	0	0	3	3	2
Total of Practical						12	08
C.SESSIONAL							
11	MC 281	Soft Skill Development	0	0	2	2	0

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilguni Road, Agarpara, Kol-109

Autonomy Curriculum and Syllabus of B.Tech Programme

Implemented from the Academic Year 2016

Second Year Third Semester

CURRICULUM

Subject Type	Subject Code	Subject Name	Contact Hours			Contact Hours/Week	Total Credits
THEORY:			L	T	P	Total	
ES	M(CS) 301	NUMERICAL METHODS	3	0	0	3	3
BS	PH(CE) 301	PHYSICS – II	3	0	0	3	3
PC	CE 301	SURVEYING – I	2	1	0	3	3
PC	CE 302	STRENGTH OF MATERIAL	2	2	0	4	3
PC	CE 303	BUILDING MATERIAL AND CONSTRUCTION	2	1	0	3	3
PC	CE 304	ENGINEERING GEOLOGY	2	1	0	3	2
PRACTICAL:							
ES	M(CS) 391	NUMERICAL METHODS LAB	0	0	3	3	2
PC	CE 391	STRENGTH OF MATERIAL LAB	0	0	3	3	2
PC	CE 392	ENGINEERING GEOLOGY LAB	0	0	2	2	1
BS	PH(CE) 391	PHYSICS LAB	0	0	2	2	2
SESSIONAL:							
MC	MC381	TECHNICAL SKILL DEVELOPMENT	0	0	2	2	2 units
		TOTAL: ELEVEN	14	5	11	31	24

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilguni Road, Agarpara, Kol-109

Autonomy Curriculum and Syllabus of B.Tech Programme

Implemented from the Academic Year 2016

Second Year Fourth Semester

CURRICULUM

Subject Type	Subject Code	Subject Name	Contact Hours			Contact Hours/Week	Credits
THEORY:			L	T	P	Total	Total
HS	HU401	ENVIRONMENTAL SCIENCE	2	0	0	2	2
BS	M401	MATHEMATICS - III	3	1	0	4	4
PC	CE 401	SURVEYING - II	2	2	0	4	3
PC	CE 402	STRUCTURAL ANALYSIS - I	3	1	0	4	3
PC	CE 403	CONCRETE TECHNOLOGY	3	1	0	4	3
PC	CE 404	SOIL MECHANICS	3	1	0	4	3
PRACTICAL:							
PC	CE 491	SURVEYING PRACTICE – I	0	0	3	3	2
PC	CE 492	BUILDING PLANNING AND DRAWING	0	0	3	3	2
PC	CE 493	CONCRETE LAB	0	0	3	3	2
HS	HU481	TECHNICAL REPORT WRITING &LANGUAGE PRACTICE	0	0	2	2	1
		TOTAL: NINE	16	6	11	33	25

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Autonomy Curriculum and Syllabus of B.Tech Programme
Implemented from the Academic Year 2016

Third Year Fifth Semester

CURRICULUM

Subject Type	Subject Code	Subject Name	Contact Hours			Contact Hours/Week	Credits
THEORY:			L	T	P	Total	Credits
HS	HU502	VALUE AND ETHICS IN PROFESSION	2	0	0	2	2
PC	CE 501	STRUCTURAL DESIGN – I	2	2	0	4	3
PC	CE 502	QUANTITY SURVEYING, SPECIFICATION AND VALUATION	2	1	0	3	2
PC	CE 503	STRUCTURAL ANALYSIS - II	3	1	0	4	3
PC	CE 504	FOUNDATION ENGINEERING	3	1	0	4	3
PE -I	CE 505A	HYDRAULICS	3	1	0	4	4
	CE 505B	WATER SUPPLY AND PLUMBING					
	CE 505C	WASTE WATER AND TREATMENT					
PRACTICAL							
PC	CE 591	SURVEYING PRACTICE - II	0	0	3	3	2
PC	CE 592	SOIL MECHANICS LAB - I	0	0	3	3	2
PC	CE 593	CIVIL ENGINEERING LAB	0	0	3	3	2
SESSIONAL:							
MC	MC 581	PRESENTATION SKILL	0	0	2	2	2 units
		TOTAL: TEN	15	6	11	32	23

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Autonomy Curriculum and Syllabus of B.Tech Programme
Implemented from the Academic Year 2016

Third Year Sixth Semester

CURRICULUM

Subject Type	Subject Code	Subject Name	Contact Hours			Contact Hours/Week	Credits
THEORY:			L	T	P	Total	
HS	HU 603	ECONOMICS FOR ENGINEERS	2	1	0	3	2
PC	CE 601	STRUCTURAL DESIGN – II	2	2	0	4	3
PC	CE 602	ENVIRONMENTAL ENGINEERING	2	1	0	3	2
PC	CE 603	HIGHWAY AND TRANSPORTATION ENGINEERING	2	1	0	3	2
PE-II	CE 604A	ENGINEERING MATERIALS	2	2	0	4	4
	CE 604B	ELECTRICAL AND ELECTRONICS MEASUREMENT					
	CE 604C	MATERIAL HANDLING					
OE-I	CE 605A	OPERATION RESEARCH	2	2	0	4	4
	CE 605B	HUMAN RESOURCE MANAGEMENT					
	CE605C	STUDIES ON SIX SIGMA					
PRACTICAL:							
PC	CE 691	Transportation& Highway Engineering Lab	0	0	3	3	2
PC	CE 692	Structural Design And Detailing	0	0	3	3	2
PC	CE 693	Soil Mechanics Lab – II	0	0	3	3	2
PC	CE 681	Computer Aided Analysis & Design	0	0	2	2	1
		TOTAL: TEN	12	9	11	32	24

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Autonomy Curriculum and Syllabus of B.Tech Programme
Implemented from the Academic Year 2016

Fourth Year Seventh Semester

CURRICULUM

Subject Type	Subject Code	Subject Name	Contact Hours			Contact Hours/Week	Credits
THEORY:			L	T	P	Total	
PC	CE 701	Water Resource And Irrigation Engineering	2	1	0	3	2
PE-III	CE702A	Bridge Engineering	3	1	0	4	4
	CE 702B	Prestressed Concrete					
	CE 702C	Structural Dynamics And Earthquake Engineering					
PC	CE 703	Construction Planning And Management	2	2	0	4	3
OE-II	CE704A	Transportation Engineering	3	1	0	4	3
	CE 704B	Traffic Engineering & Planning					
	CE 704C	Urban Planning					
PRACTICAL:							
PC	CE 791	ENVIRONMENTAL ENGINEERING LAB	0	0	3	3	2
SESSIONAL:							
PW	CE 781	Project I	0	0	6	6	4
MC	MC 782	Seminar	0	0	0	0	2 Units
PW	CE 782	Civil Engineering Practice Sessional	0	0	3	3	3
PW	CE 783	Industrial Training	0	0	0	0	3
		TOTAL: NINE	10	5	12	27	24

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81, Nilgunj Road, Agarpara, Kol-109

Autonomy Curriculum and Syllabus of B.Tech Programme
Implemented from the Academic Year 2016

Fourth Year Eighth Semester

CURRICULUM

Subject Type	Subject Code	Subject Name	Contact Hours			Contact Hours/ Week	Credits
THEORY:			L	T	P	Total	
PE-IV	CE 801A	Dynamics of Soil & Foundation	3	1	0	4	4
	CE 801B	Finite Element Analysis					
	CE 801C	Advanced Structural Analysis					
PE-V	CE 802A	Advanced Foundation Engineering	3	1	0	4	4
	CE 802B	Ground Improvement & Technique					
	CE 802C	Advanced Transportation Engineering					
	CE 802D	Pavement Design					
OE-III	CE 803A	Hydraulic Structure	3	0	0	3	3
	CE 803B	Water Resource Management And Planning					
	CE 803C	Air & Noise Pollution And Control					
	CE 803D	Remote Sensing And GIS					
HS	HU 806	Project Management	2	1	0	3	2
SESSIONAL:							
PW	CE881	Project II	0	0	12	12	6
PW	CE882	Grand Viva	0	0	0	0	4
HS	HU891	Technical Report Writing & Group Discussion	0	0	3	3	1
		TOTAL: SEVEN	11	3	15	29	24

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81, Nilguni Road, Agarpara, Kol-109

Narula Institute of Technology

Department of Electrical Engineering

Curriculum for B.TECH (EE)

Curricular Regulation 2018 (R18)
under Maulana Abul Kalam Azad
University of Technology,
West Bengal, India

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81, Nilgunj Road, Agarpara, Kol-109

Revised Curriculum Structure
(to be effective from 2018-19 admission batch)

NARULA INSTITUTE OF TECHNOLOGY

Department: Electrical Engineering

Curriculum for B.Tech

Under Autonomy (**GR A:** ECE, EE, EIE, BME; **GR B:** CSE, IT, ME, CE, FT)

1st Semester								
Sl. No.	**Category**	**Paper Code**	**Subject**	**Contact Hours/Week**				**Credit Points**
				L	**T**	**P**	**Total**	
A. THEORY								
1	BS	M 101	Mathematics - I	3	1	0	4	4
2	BS	CH 101 / PH 101	Chemistry (Gr. A) / Physics - I (Gr. B)	3	0	0	3	3
3	ES	EE 101 / EC 101	Basic Electrical Engineering (Gr. A) / Basic Electronics Engineering (Gr. B)	3	0	0	3	3
4	HS	HU 101	English	2	0	0	2	2
Total of Theory							**12**	**12**
B. PRACTICAL								
5	BS	CH 191 / PH 191	Chemistry Laboratory (Gr. A) / Physics - I Laboratory (Gr. B)	0	0	3	3	1.5
6	ES	EE 191 / EC 191	Basic Electrical Engineering Laboratory (Gr. A) / Basic Electronics Engineering Laboratory (Gr. B)	0	0	3	3	1.5
7	ES	ME 191 / ME 192	Engineering Graphics & Design (Gr. A) / Workshop/Manufacturing Practices (Gr. B)	0	0	3	3	1.5
8	PROJ	PR 191	Project – IA	0	0	1	1	0.5
9	PROJ	PR 192	Project – IB	0	0	1	1	0.5
C. MANDATORY ACTIVITIES / COURSES								
10	MC	MC 181	Induction Program	0	0	0	0	0
Total of Theory, Practical & Mandatory Activities / Courses							**23**	**17.5**

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

2nd Semester								
Sl. No.	Category	Paper Code	Subject	Contact Hours/Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	M 201	Mathematics - II	3	1	0	4	4
2	BS	CH 201 / PH 201	Chemistry (Gr. B) / Physics - I (Gr. A)	3	0	0	3	3
3	ES	EE 201 / EC 201	Basic Electrical Engineering (Gr. B) / Basic Electronics Engineering (Gr. A)	3	0	0	3	3
4	ES	CS 201	Programming for Problem Solving	3	0	0	3	3
5	ES	ME 201	Engineering Mechanics	3	0	0	3	3
Total of Theory							**16**	**16**
B. PRACTICAL								
6	ES	CS 291	Programming for Problem Solving Laboratory	0	0	3	3	1.5
7	BS	CH 291 / PH 291	Chemistry Laboratory (Gr. B) / Physics - I Laboratory (Gr. A)	0	0	3	3	1.5
8	ES	EE 291 / EC 291	Basic Electrical Engineering Laboratory (Gr. B) / Basic Electronics Engineering Laboratory (Gr. A)	0	0	3	3	1.5
9	ES	ME 291 / ME 292	Engineering Graphics & Design (Gr. B) / Workshop/Manufacturing Practices (Gr. A)	0	0	3	3	1.5
10	HS	HU 291	Language Laboratory	0	0	2	2	1
11	PROJ	PR 291	Project – II	0	0	1	1	0.5
12	PROJ*	PR 292	Innovative Activities – I	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
13	MC	MC 281	NSS / Physical Activities / Meditation & Yoga / Photography / Nature Club	0	0	0	3	0
Total of Theory, Practical & Mandatory Activities / Courses							**34**	**24**

* Inter/ Intra Institutional Activities viz; Training with higher Institutions; Soft skill training organized by Training and Placement Cell of the respective institutions; contribution at incubation / innovation / entrepreneurship cell of the institute; participation in conferences / workshops / competitions etc.; Learning at Departmental Lab / Tinkering Lab / Institutional workshop; Working in all the activities of Institute's Innovation Council for e.g., IPR workshop / Leadership Talks / Idea / Design / Innovation / Business Completion / Technical Expos etc. (evaluation by Programme Head through certification)

Innovative activities to be evaluated by the Programme Head / Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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3rd Semester								
Sl. No.	Category	Paper Code	Subject	Contact Hours/Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	ES	EE 301	Electrical Circuit Analysis	3	1	0	4	4
2	PC	EE 302	Measurement and Instrumentation	3	0	0	3	3
3	PC	EE 303	Analog Electronics	3	0	0	3	3
4	BS	M(EE) 301	Mathematics – III	3	1	0	4	4
Total of Theory							**14**	**14**
B. PRACTICAL								
5	ES	EE 391	Electrical Circuit Analysis Laboratory	0	0	3	3	1.5
6	PC	EE 392	Measurement and Instrumentation Laboratory	0	0	3	3	1.5
7	PC	EE 393	Analog Electronics Laboratory	0	0	2	2	1
8	PROJ	PR 391	Project – III	0	0	2	2	1
9	PROJ*	PR 392	Innovative Activities – II	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
10	MC	MC 301	Environmental Science	3	0	0	3	0
Total of Theory, Practical & Mandatory Activities / Courses							**27**	**19.5**

* Students may choose either to work on participation in all the activities of Institute's Innovation Council for e.g., IPR workshop/ Leadership Talks / Idea / Design / Innovation / Business Completion / Technical Expos etc.

Innovative activities to be evaluated by the Programme Head / Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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4th Semester								
Sl. No.	Category	Paper Code	Subject	Contact Hours/Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	PH 401	Physics – II	3	0	0	3	3
2	PC	EE 401	Electrical Machines – I	3	0	0	3	3
3	PC	EE 402	Power Electronics	3	0	0	3	3
4	PC	EE 403	Digital Electronics	3	0	0	3	3
5	PC	EE 404	Electromagnetic Fields	2	0	0	2	2
6	HS	HU 401	Values and Ethics in Profession	2	0	0	2	2
Total of Theory							**16**	**16**
B. PRACTICAL								
7	BS	PH 491	Physics – II Laboratory	0	0	3	3	1.5
8	PC	EE 491	Electrical Machines – I Laboratory	0	0	3	3	1.5
9	PC	EE 492	Power Electronics Laboratory	0	0	3	3	1.5
10	PC	EE 493	Digital Electronics Laboratory	0	0	2	2	1
11	PROJ	PR 491	Project – IV	0	0	2	2	1
12	PROJ*	PR 492	Innovative Activities – III	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
13	MC	MC 481	Behavioural & Interpersonal Skills	0	0	3	3	0
Total of Theory, Practical & Mandatory Activities / Courses							**32**	**23**

* Students may choose either to work on participation in all the activities of Institute's Innovation Council for e.g., IPR workshop / Leadership Talks / Idea / Design / Innovation / Business Completion / Technical Expos etc.

Innovative activities to be evaluated by the Programme Head / Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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5th Semester								
Sl. No.	Category	Paper Code	Subject	Contact Hours/Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PC	EE 501	Electrical Machines – II	3	0	0	3	3
2	PC	EE 502	Power System – I	3	0	0	3	3
3	PC	EE 503	Control System – I	3	0	0	3	3
4	OE	EE 504	A. Data Structure B. Computer Network C. Internet of Things	3	0	0	3	3
5	PE	EE 505	A. Electrical Energy Conservation and Auditing B. Electromagnetic Waves C. Illumination Engineering D. Power Plant Engineering	3	0	0	3	3
Total of Theory							**15**	**15**
B. PRACTICAL								
6	PC	EE 591	Electrical Machines – II Laboratory	0	0	3	3	1.5
7	PC	EE 592	Power System – I Laboratory	0	0	3	3	1.5
8	PC	EE 593	Control System – I Laboratory	0	0	3	3	1.5
9	OE	EE 594	A. Data Structure Laboratory B. Computer Network Laboratory C. Internet of Things Laboratory	0	0	3	3	1.5
10	PROJ	PR 591	Project – V	0	0	2	2	1
11	PROJ*	PR 592	Innovative Activities – IV	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
12	MC	MC 501	Constitution of India	3	0	0	3	0
Total of Theory, Practical & Mandatory Activities / Courses							**32**	**22.5**

* Students may choose either to work on participation in Hackathons etc. Development of new product / Business Plan / registration of start-up.

Students may choose to undergo Internship / Innovation / Entrepreneurship related activities. Students may choose either to work on innovation or entrepreneurial activities resulting in start-up or undergo internship with industry / NGO's / Government organizations / Micro / Small / Medium enterprises to make themselves ready for the industry / Long Term goals under rural Internship. (Duration 4-6 weeks)

Innovative activities to be evaluated by the Programme Head / Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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6th Semester								
Sl. No.	Category	Paper Code	Subject	Contact Hours/Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PC	EE 601	Microprocessor and Microcontroller	3	0	0	3	3
2	PC	EE 602	Power System – II	3	0	0	3	3
3	PC	EE 603	Control System – II	3	0	0	3	3
4	OE	EE 604	A. Data Base Management System B. Embedded Systems C. Software Engineering	3	0	0	3	3
5	PE	EE 605	A. Digital Signal Processing B. High Voltage Engineering C. Computer Architecture	3	0	0	3	3
Total of Theory							**15**	**15**
B. PRACTICAL								
6	PC	EE 691	Microprocessor and Microcontroller Laboratory	0	0	2	2	1
7	PC	EE 692	Power System – II Laboratory	0	0	3	3	1.5
8	PC	EE 693	Control System – II Laboratory	0	0	3	3	1.5
9	OE	EE 694	A. Data Base Management System Lab B. Embedded Systems Lab C. Software Engineering Lab	0	0	3	3	1.5
10	PROJ	PR 691	Project – VI	0	0	2	2	1
11	PROJ*	PR 692	Innovative Activities – V	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
12	MC	MC 681	Technical Lecture Presentation & Group Discussion – I	0	0	3	3	0
Total of Theory, Practical & Mandatory Activities / Courses							**31**	**22**

* Students may choose either to work on participation in all the activities of Institute's Innovation Council for e.g., IPR workshop / Leadership Talks / Idea / Design / Innovation / Business Completion / Technical Expos etc.

Innovative activities to be evaluated by the Programme Head / Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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7th Semester								
Sl. No.	Category	Paper Code	Subject	Contact Hours/Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PC	EE 701	Electrical Drives	3	0	0	3	3
2	OE	EE 702	A. Object Oriented Programming using JAVA B. Big Data Analysis C. Digital Image Processing	3	0	0	3	3
3	PE	EE 703	A. Power System – III B. Restructured Electrical Power System C. Computer Applications in Power System	3	0	0	3	3
4	PE	EE 704	A. Power System Dynamics and Control B. Power Quality and FACTS C. HVDC Transmission Systems	3	0	0	3	3
5	HS	HU 703	Industrial and Financial Management	2	0	0	2	2
Total of Theory							**14**	**14**
B. PRACTICAL								
6	PC	EE 791	Electrical Drives Laboratory	0	0	3	3	1.5
7	OE	EE 792	A. Object Oriented Programming Laboratory B. Big Data Analysis Laboratory C. Digital Image Processing Laboratory	0	0	3	3	1.5
8	PROJ	PR 791	Project – VII	0	0	0	6	3
9	PROJ*	PR 792	Innovative Activities – VI	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
10	MC	MC 781	Technical Lecture Presentation & Group Discussion – II	0	0	3	3	0
Total of Theory, Practical & Mandatory Activities / Courses							**29**	**20.5**

* Students may choose either to work on participation in Hackathons etc. Development of new product / Business Plan / registration of start-up.

Students may choose to undergo Internship / Innovation / Entrepreneurship related activities. Students may choose either to work on innovation or entrepreneurial activities resulting in start-up or undergo internship with industry / NGO's / Government organizations / Micro / Small / Medium enterprises to make themselves ready for the industry / Long Term goals under rural Internship. (Duration 4-6 weeks)

Innovative activities to be evaluated by the Programme Head / Event Coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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8th Semester								
Sl No	Category	Paper Code	Subject	Contact Hours/Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PE	EE 801	A. Wind and Solar Energy Systems B. Utilization of Electric Power C. Line Commutated and Active Rectifiers	2	0	0	2	2
2	PE	EE 802	A. Advanced Electric Drives B. Control Systems Design C. Industrial Electrical System	3	0	0	3	3
3	HS	HU 801	Principles of Management	2	0	0	2	2
Total of Theory							7	7
B. PRACTICAL								
4	PROJ	PR 891	Project – VIII	0	0	8	8	4
C. MANDATORY ACTIVITIES / COURSES								
5	MC	MC 804	Essence of Indian Knowledge Tradition	3	0	0	3	0
Total of Theory, Practical & Mandatory Activities / Courses							18	11

Mandatory Credit Point = 160

For Honors additional 20 Credit Point is to be earned (1st Sem to 8th Sem) through MOOCs courses. All the Certificates received by the students across all semester for MOOCs Courses from approved organization (Appendix A) is to be submitted to CoE office prior to 8th Semester Examination.

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NARULA INSTITUTE OF TECHNOLOGY
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Narula Institute of Technology

Department of Electrical Engineering

Curriculum for B.TECH (EE)

Curricular Regulation 2015 (R15)
under Maulana Abul Kalam Azad
University of Technology,
West Bengal, India

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DEPARTMENT OF ELECTRICAL ENGINEERING

B.Tech First Semester Curriculum

Note: Note: Under MAKAUT (Gr A: CSE, IT, ME, CE; Gr B: ECE, EE, EIE)

Acronym	Department
ECE	Electronics and Telecommunication Engineering
EE	Electrical Engineering
EIE	Electronics & Instrumentation Engineering
CSE	Computer Science Engineering
IT	Information Technology
ME	Mechanical Engineering
CE	Civil Engineering

A. THEORY							
Sl No	Paper Code	Course Name	Contact Hours /Week				Credit Points
			L	T	P	Total	
1	HU 101	English Language & Technical Communication	2	0	0	2	2
2	PH 101/ CH 101	Physics - I (Gr. A) / Chemistry -I(Gr. B)	3	1	0	4	4
3	M 101	Mathematics-I	3	1	0	4	4
4	ES101	Basic Electrical & Electronics Engineering-I (Gr-A+Gr-B)	3	1	0	4	4
5	ME 101	Engineering Mechanics	3	1	0	4	4
Total of Theory						**18**	**18**

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81, Nilgunj Road, Agarpara, Kol-109

B. PRACTICAL							
6	PH 191/ CH191	Physics -I Laboratory (Gr.A) / Chemistry-I Laboratory (Gr.B)	0	0	3	3	2
7	ES191	Basic Electrical & Electronics Engineering-I Lab (Gr-A+Gr-B)	0	0	3	3	2
8	ME 191/ ME 192	Engineering Drawing & Computer Graphics (Gr-B)/Workshop Practice (Gr-A)	1	0	3	4	3
Total of Practical						**10**	**7**
C. **SESSIONAL**							
9	HU181	Language Laboratory	0	0	20	2	1
10	XC181	Extra Curricular Activities(NSS/NCC/NSO etc.)	0	0	2	2	1
Total of Sessional						**4**	**2**
Total of Theory, Practical and Sessional						**32**	**27**

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B.Tech Second Semester Curriculum

Note: Under Autonomy (Gr A: ECE, EE, EIE; Gr B: CSE, IT, ME, CE)

Acronym	Department
ECE	Electronics and Telecommunication Engineering
EE	Electrical Engineering
EIE	Electronics & Instrumentation Engineering
CSE	Computer Science Engineering
IT	Information Technology
ME	Mechanical Engineering
CE	Civil Engineering

A. THEORY							
Sl No	Paper Code	Course Name	Contact Hours /Week				Credit Points
			L	T	P	Total	
1	CS 201	Basic Computation & Principles of Computer Programming	3	1	0	4	4
2	CH 201/ PH 201	Chemistry (Gr. A) / Physics – I (Gr. B)	3	1	0	4	4
3	ES 201	Basic Electrical Engineering & Electronics Engineering -II	3	1	0	4	4
4	M 201	Mathematics-II	3	1	0	4	4
5	ME 201	Engineering Thermodynamics & Fluid Mechanics	3	1	0	4	4
Total of Theory						**20**	**20**

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81, Nilgunj Road, Agarpara, Kol-109

B. PRACTICAL							
6	CS291	Basic Computation & Principles of Computer Programming Laboratory	0	0	3	3	2
7	PH 291/ CH291	Physics Lab (Gr. B) / Chemistry -I Lab (Gr. A)	0	0	3	3	2
8	ES291/ EC 291	Basic Electrical & Electronics Engineering-II Lab	0	0	3	3	2
9	ME 291/ME292	Basic Engineering Drawing & Computer Graphics (Gr-A)/Workshop Practice (Gr-B)	1	0	3	4	3
Total of Practical						**13**	**9**
Total of Theory, Practical and Sessional						**33**	**29**

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Curriculum for B.Tech Third Semester

A. THEORY							
Sl No	Paper Code	Course Name	Contact Hours /Week				Credit Points
			L	T	P	Total	
1	M (CS) 301	Numerical Methods	2	1	0	3	2
2	M302	Mathematics-III	3	1	0	4	4
3	EC(EE)301	Analog Electronic circuits	3	0	0	3	3
4	EC(EE)302	Digital Electronic circuit	3	0	0	3	3
5	EE-301	Electric Circuit theory	3	1	0	4	4
6	EE-302	Field theory	3	1	0	4	4
Total of Theory						**21**	**20**
B. PRACTICAL							
7	EC(EE)391	Analog & Digital Electronic circuit Lab	0	0	3	3	2
8	M (CS)391	Numerical Method Labs	0	0	2	2	1
9	EE-391	Electric Circuit Theory Lab	0	0	3	3	2
10	HU-381	Technical Report Writing & Language Laboratory Practice	0	0	3	3	2
Total of Practical						**11**	**7**
Total of Theory, Practical/ Sessional						**32**	**27**

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Curriculum for B.Tech Fourth Semester

A. THEORY							
Sl No	Paper Code	Course Name	Contact Hours /Week				Credit Points
			L	T	P	Total	
1	HU-401	Values and Ethics in Profession	3	0	0	3	2
2	PH(EE)-401	Physics-II	3	1	0	4	4
3	ME(EE)411	Thermal Power Engineering	3	0	0	3	3
4	CH-401	Basic Environmental Engineering & Elementary Biology	3	0	0	3	3
5	EE-401	Electric Machine-I	3	1	0	4	4
6	EE-402	Electrical & Electronic measurement	3	0	0	3	4
.		**Total of Theory**				**20**	**20**
B. PRACTICAL							
7	PH(EE)-491	Physics-II Lab	0	0	3	3	2
8	ME(EE)481	Thermal power Engineering Lab	0	0	3	3	2
9	EE-491	Electric Machine-I	0	0	3	3	2
10	EE-492	Electrical & Electronic measurement Lab	0	0	3	3	2
.		**Total of Practical**				**12**	**8**
Total of Theory, Practical/ Sessional						**32**	**28**

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Curriculum for B.Tech Fifth Semester

A. THEORY							
Sl No	Paper Code	Course Name	Contact Hours /Week				Credit Points
			L	T	P	Total	
1	HU 501	Economics for Engineers	3	0	0	3	3
2	EE 501	Electric machine-II	3	1	0	4	4
3	EE 502	Power system-I	3	1	0	4	4
4	EE 503	Control system-I	3	1	0	4	4
5	EE 504	A. Data structure & algorithm, B. Computer Organization, C. Micro Processor & Micro controller	3	0	0	3	3
Total of Theory						**18**	**18**
B. PRACTICAL							
6	EE 591	Electric machine-II Lab	0	0	3	3	2
7	EE 592	Power system-I Lab	0	0	3	3	2
8	EE 593	Control system-I Lab	0	0	3	3	2
9	EE 594	A. Data structure & algorithm Lab, B. Computer Organization Lab, C. Micro Processor & Microcontroller Lab	0	0	3	3	2
10	EE 581	Seminar Lab	0	0	3	3	2
Total of Practical						**15**	**10**
Total of Theory, Practical/ Sessional						**33**	**28**

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Curriculum for B.Tech Sixth Semester

A. THEORY							
Sl No	Paper Code	Course Name	Contact Hours /Week				Credit Points
			L	T	P	Total	
1	HU 601	Principle of Management	2	0	0	2	2
2	EE 601	Control System-II	3	1	0	4	4
3	EE 602	Power System-II	3	1	0	4	4
4	EE 603	Power Electronics	3	1	0	4	4
5	EE 604	A. Software Engineering, B. Data Base Management System, C. Object Oriented Programming, D. Embedded Systems	3	0	0	3	3
6	EE 605	A. Digital Signal Processing, B. Communication Engineering, C. VLSI & Microelectronics	3	0	0	3	3
Total of Theory						20	20
B. PRACTICAL							
7	EE 691	Control System-II	0	0	3	3	2
8	EE 692	Power System-II	0	0	3	3	2
9	EE 693	Power Electronics	0	0	3	3	2
10	EE 694	A. Software Engineering, B. Data Base Management System, C. Object Oriented Programming, D. Embedded Systems Lab	0	0	3	3	2
Total of Practical						12	8
Total of Theory, Practical/ Sessional						32	28

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81, Nilgunj Road, Agarpara, Kol-109

Curriculum for B.Tech Seventh Semester

A. THEORY							
Sl No	Paper Code	Course Name	Contact Hours /Week				Credit Points
			L	T	P	Total	
1	EE 701	Electric drive	4	0	0	4	4
2	EE 702	Utilization of Electric power	3	1	0	4	4
3	EE 703	A. Power system-III, B. Control system-III, C. Electric Machine-III	3	0	0	3	3
4	EE 704	A. High voltage Engineering, B. Power Plant Engineering, C. Power generation and economics, D. Renewable & Non conventional Energy	3	0	0	3	3
5	EE 705	A.Computer Network, B. AI & Soft Computing, C. Digital Communication, D. Digital Image Processing	3	0	0	3	3
Total of Theory						17	17
B. PRACTICAL							
6	EE 781	Seminar on industrial training	0	0	3	3	2
7	EE 791	Electric Drive	0	0	3	3	2
8	EE 792	A. Computer Network, B. AI & Soft Computing, C.Digital Communication, D. Digital Image Processing	0	0	3	3	2
9	EE 782	Electrical system design-I	0	0	3	3	2
10	EE 783	Project-I	0	0	3	3	2
Total of Practical						15	10
Total of Theory, Practical/ Sessional						32	27

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Curriculum for B.Tech Eighth Semester

A. THEORY							
Sl No	Paper Code	Course Name	Contact Hours /Week				Credit Points
			L	T	P	Total	
1	HU 801A	Organizational Behaviour	2	0	0	2	2
2	EE 801	A. HVDC transmission, B. Illumination Engineering, C. Energy management & audit, D. Digital Speech Signal Processing	3	0	0	3	3
3	EE 802	A. Power plant instrumentation & Control, B. Sensors & Transducers, C. Biomedical Instrumentation, D. Process control	3	0	0	3	3
Total of Theory						**08**	**08**
B. PRACTICAL							
4	EE 881	Project	0	0	12	12	6
5	EE 882	Electrical system Lab-II	0	0	6	6	4
6	EE 883	Grand Viva	0	0	0	0	3
Total of Practical						**18**	**13**
Total of Theory, Practical/ Sessional						**26**	**21**

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Narula Institute of Technology

Department of Electrical Engineering

Curriculum for B.TECH (EE)

Curricular Regulation 2016 (R16)
under Maulana Abul Kalam Azad
University of Technology,

West Bengal, India

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Department: Electrical Engineering
Curriculum Structure & Syllabus
(Effective from 2016-17 admission batch)

Under Autonomy (GR A: ECE, EE, BME, AEIE/EIE; **GR B:** CSE, IT, FT, ME, CE)

1st Semester								
Sl. No.	**Category**	**Paper Code**	**Subject**	**Contact Hours/Week**				**Credit Points**
				L	**T**	**P**	**Total**	
A. THEORY								
1	BS	M 101	Mathematics – I	3	1	0	4	4
2	BS	CH 101 / PH 101	Chemistry – I (Gr. A) / Physics – I (Gr. B)	3	1	0	4	4
3	ES	EE 101 / EC 101	Basic Electrical Engineering (Gr. A) / Basic Electronics Engineering (Gr. B)	3	1	0	4	4
4	HS	HU 101	Communicative English	2	0	0	2	2
5	ES	ME 101	Engineering Mechanics	3	1	0	4	4
Total of Theory							**18**	**18**
B. PRACTICAL								
6	HS	HU 191	Language Laboratory and Seminar Presentation	0	0	2	2	1
7	BS	CH 191 / PH 191	Chemistry – I Laboratory (Gr. A) / Physics – I Laboratory (Gr. B)	0	0	3	3	2
8	ES	EE 191 / EC 191	Basic Electrical Engineering Laboratory (Gr. A) / Basic Electronics Engineering Laboratory (Gr. B)	0	0	3	3	2
9	ES	ME 191 / ME 192	Engineering Drawing and Graphics (Gr. A) / Workshop Practice (Gr. B)	0	0	3	3	2
Total of Practical							**11**	**07**
C. SESSIONAL								
10	HS	XC 181	Extra-Curricular Activity (NSS / NCC)	0	0	2	2	1
Total of Theory, Practical and Sessional							**31**	**26**

Principal
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81, Nilgunj Road, Agarpara, Kol-109

2nd Semester								
Sl. No.	Category	Paper Code	Subject	Contact Hours/Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	M 201	Mathematics – II	3	1	0	4	4
2	BS	CH 201 / PH 201	Chemistry – I (Gr. B) / Physics – I (Gr. A)	3	1	0	4	4
3	ES	EE 201 / EC 201	Basic Electrical Engineering (Gr. B) / Basic Electronics Engineering (Gr. A)	3	1	0	4	4
4	ES	CS 201	Computer Fundamentals and Principle of Computer Programming	3	1	0	4	4
5	ES	ME 201	Engineering Thermodynamics and Fluid Mechanics	3	1	0	4	4
Total of Theory							**20**	**20**
B. PRACTICAL								
6	ES	CS 291	Computer Fundamentals and Principle of Computer Programming Laboratory	0	0	3	3	2
7	BS	CH 291 / PH 291	Chemistry – I Laboratory (Gr. B) / Physics – I Laboratory (Gr. A)	0	0	3	3	2
8	ES	EE 291 / EC 291	Basic Electrical Engineering Laboratory (Gr. B) / Basic Electronics Engineering Laboratory (Gr. A)	0	0	3	3	2
9	ES	ME 291 / ME 292	Engineering Drawing and Graphics (Gr. B) / Workshop Practice (Gr. A)	0	0	3	3	2
Total of Practical							**12**	**08**
C. SESSIONAL								
10	MC	MC 281	Soft Skill Development	0	0	2	2	0
Total of Theory, Practical and Sessional							**34**	**28**

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3rd Semester								
Sl. No.	Category	Paper Code	Subject	Contact Hours/Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	M 301	Mathematics – III	3	1	0	4	4
2	PC	EC(EE) 301	Digital Electronics	3	1	0	4	3
3	PC	EC(EE) 302	Analog Electronic Circuits	3	0	0	3	3
4	PC	EE 301	Circuits Theory and Networks	3	1	0	4	4
5	PC	EE 302	Field Theory	3	0	0	3	3
6	ES	ME(EE) 301	Thermal Power Engineering	2	0	0	2	2
Total of Theory							**20**	**19**
B. PRACTICAL								
7	PC	EC(EE) 391	Analog and Digital Electronics Laboratory	0	0	3	3	2
8	PC	EE 391	Circuit Theory and Network Laboratory	0	0	3	3	2
9	ES	ME(EE) 391	Thermal Power Engineering Laboratory	0	0	2	2	1
10	HS	HU 381	Technical Report Writing and Language Practice	0	0	2	2	1
Total of Practical							**10**	**06**
Total of Theory, Practical and Sessional							**30**	**25**

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilguni Road, Agarpara, Kol-109

4th Semester								
Sl. No.	Category	Paper Code	Subject	Contact Hours/Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	PH(EE) 401	Physics – II	3	0	0	3	3
2	PC	EE 401	Electrical Machines I	3	1	0	4	4
3	PC	EE 402	Electrical and Electronics Measurement	3	0	0	3	3
4	BS	M(CS) 401	Numerical Methods	3	0	0	3	2
5	ES	CS(EE) 402	Data Structure	3	0	0	3	2
Total of Theory							**16**	**14**
B. PRACTICAL								
6	BS	PH(EE) 491	Physics – II Laboratory	0	0	3	3	2
7	PC	EE 491	Electrical Machines – I Laboratory	0	0	3	3	2
8	PC	EE 492	Electrical and Electronics Measurement Laboratory	0	0	3	3	2
9	BS	M(CS) 491	Numerical Methods Laboratory	0	0	2	2	1
10	ES	CS(EE) 492	Data Structure Laboratory	0	0	2	2	1
Total of Practical							**11**	**08**
C. SESSIONAL								
11	MC	MC 481	Technical Skill Development	0	0	2	2	0 (2 Units)
Total of Theory, Practical and Sessional							**27**	**22**

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

5th Semester								
Sl. No.	Category	Paper Code	Subject	Contact Hours/Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	HS	HU 501	Environmental Science	2	0	0	2	2
2	PC	EE 501	Electric Machine – II	3	1	0	4	4
3	PC	EE 502	Power Systems – I	3	1	0	4	4
4	PC	EE 503	Control Systems – I	3	1	0	4	4
5	PC	EE 504	Microprocessor and Microcontroller	3	0	0	3	3
Total of Theory							**17**	**17**
B. PRACTICAL								
6	PC	EE 591	Electrical Machines – II Laboratory	0	0	3	3	2
7	PC	EE 592	Power Systems – I Laboratory	0	0	3	3	2
8	PC	EE 593	Control System – I Laboratory	0	0	3	3	2
9	PC	EE 594	Microprocessor and Microcontroller Laboratory	0	0	3	3	2
10	PW	EE581	Electrical System Design – I	0	1	3	4	2
Total of Practical							**16**	**10**
C. SESSIONAL								
11	MC	MC 581	Group Discussion and Seminar	0	0	2	2	0 (2 Units)
Total of Theory, Practical and Sessional							**35**	**27**

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81, Nilgunj Road, Agarpara, Kol-109

6th Semester								
Sl. No.	Category	Paper Code	Subject	Contact Hours/Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PC	EE 601	Control System II	3	0	0	3	3
2	PC	EE 602	Power System II	3	0	0	3	3
3	PC	EE 603	Power Electronics	3	0	0	3	3
4	PC	EC(EE) 604	Digital Signal Processing*	3	0	0	3	3
5	PE	EE 605	A. Non-conventional Energy Sources and Applications B. Computational Intelligence C. Introduction to Robotics D. Mechatronics	3	1	0	4	4
6	OE	CS(EE) 606	A. Introduction to Programming in JAVA B. Object Oriented Programming using C++ C. Computer Architecture and Operating Systems D. Software Engineering	3	0	0	3	3
Total of Theory							**19**	**19**
B. PRACTICAL								
7	PC	EE 691	Control System II Laboratory	0	0	3	3	2
8	PC	EE 692	Power System II Laboratory	0	0	3	3	2
9	PC	EE 693	Power Electronics Laboratory	0	0	3	3	2
10	OE	CS(EE) 696	A. Introduction to Programming in JAVA Laboratory B. Object Oriented Programming using C++ Laboratory C. Computer Architecture and Operating Systems Laboratory D. Software Engineering Laboratory	0	0	2	2	1
11	PW	EE 681	Electrical System Design II	0	1	3	4	2
12	PW	EE 671	Industrial Training	4 Weeks				2
Total of Practical							**15**	**11**
Total of Theory, Practical and Sessional							**34**	**30**

** As per recommendations of External Expert, the course has been changed from PE to PC.*

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81, Nilgunj Road, Agarpara, Kol-109

7th Semester								
Sl. No.	Category	Paper Code	Subject	Contact Hours/Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	HS	HU 702	Values and Ethics in Profession	2	0	0	2	2
2	PC	EE 701	Electric Drives	3	0	0	3	3
3	PE	EE 702	A. Utilization of Electric Power B. Advanced Power Electronics C. Illumination Engineering	3	1	0	4	4
4	PE	EE 703	A. Advanced Power Systems B. Power Generation and Economics C. High Voltage Engineering D. Advanced Electrical Measurement and Instrumentation	3	1	0	4	4
5	OE	CS(EE) 705	A. Artificial Intelligence and Soft Computing B. Digital Image Processing C. Computer Networking D. Data Base Management System	3	0	0	3	3
Total of Theory							**16**	**16**
B. PRACTICAL								
7	PC	EE 791	Electric Drives Laboratory	0	0	3	3	2
8	OE	CS(EE) 795	A. Artificial Intelligence and Soft Computing Laboratory B. Digital Image Processing Laboratory C. Computer Networking Laboratory D. Data Base Management System Laboratory	0	0	2	2	1
9	PW	EE 781	Assigned Project – I	0	0	6	6	4
10	PW	EE 771	Seminar on Industrial Training and Report	0	0	0	0	1
Total of Practical							**11**	**08**
C. SESSIONAL								
11	MC	MC 781	Entrepreneurship Development	0	0	0	2	0 (2 Units)
Total of Theory, Practical and Sessional							**29**	**24**

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

8th Semester								
Sl. No.	Category	Paper Code	Subject	Contact Hours/Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	HS	HU 805	Industrial and Financial Management	2	0	0	2	2
2	PE	EE 801	A. HVDC Transmission B. Energy Management and Audit C. Power Plant Engineering	3	0	0	3	3
3	PE	EE 802	A. Sensors and Transducers B. Process Control and Instrumentation C. Electronic Instrumentation and Control	3	1	0	4	4
Total of Theory							**09**	**09**
B. PRACTICAL								
7	PW	EE 881	Project and Thesis	0	0	12	12	6
8	PW	EE 871	Grand Viva	0	0	0	0	3
Total of Practical							**12**	**09**
Total of Theory, Practical and Sessional							**21**	**18**

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

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Curriculum for B.TECH (IT)

Curricular Regulation 2015 (R15)
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Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Syllabus for B.Tech(Information Technology) Up to Fourth Year

Revised Syllabus of B.Tech IT (for the students who were admitted in Academic Session 2010-2011)

IT

Second Year - Third Semester

Sl.No.	Field	Theory	Contact Hours/Week				Cr. Points
			L	T	P	Total	
A. THEORY							
1	HU301	Values & Ethics in Profession	3	0	0	3	3
2	PH301	Physics-2	3	1	0	4	4
3	CH301	Basic Environmental Engineering & Elementary Biology;	3	0	0	3	3
4	CS301	Analog & Digital Electronics	3	0	0	3	3
5	CS302	Data Structure & Algorithm	3	1	0	4	4
6	CS303	Computer Organisation	3	1	0	4	4
Total of Theory						**21**	**21**
B. PRACTICAL							
7	PH391	Physics-2	0	0	3	3	2
8	CS391	Analog & Digital Electronics	0	0	3	3	2
9	CS392	Data Structure & Algorithm	0	0	3	3	2
10	CS393	Computer Organisation	0	0	3	3	2
Total of Practical						**12**	**8**
Total of Semester						**33**	**29**

Second Year - Fourth Semester

Sl.No.	Field	Theory	Contact Hours/Week				Cr. Points
			L	T	P	Total	
A. THEORY							
1	M(CS)401	Numerical Methods	2	1	0	3	2
2	M401	Mathematics-3	3	1	0	4	4
3	CS401	Communication Engg & Coding Theory	2	0	0	3	3
4	CS402	Formal Language & Automata Theory	3	1	0	4	4
5	IT401	Object Oriented Programming & UML	3	1	0	4	4
Total of Theory						**18**	**17**
B. PRACTICAL							
6	HU481	Technical Report Writing & Language Lab Practice	0	0	3	3	2
7	M(CS)491	Numerical Methods	0	0	2	2	1
8	CS491	Communication Engg & Coding Theory	0	0	3	3	2
9	CS492	Software Tools	0	0	3	3	2
10	IT491	Object Oriented Programming & UML (IT)	0	0	3	3	2
Total of Practical						**14**	**9**
Total of Semester						**32**	**26**

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Syllabus for B.Tech(Information Technology) Up to Fourth Year

Revised Syllabus of B.Tech IT (for the students who were admitted in Academic Session 2010-2011)

Third Year - Fifth Semester

Sl.No	Field	Theory	Contact Hours/Week				Cr. Pts
			L	T	P	Total	
A. THEORY							
1	HU501	Economics for Engineers	3	0	0	3	3
2	IT501	Design & Analysis of Algorithm	3	1	0	4	4
3	IT502	Computer Architecture	3	1	0	4	4
4	IT503	Operating System	3	0	0	3	3
5	F. E. IT504A IT504B IT504C IT504D IT504E IT504F	Circuit Theory & Network (EE) Data Communication (ECE) Digital Signal Processing (ECE) Operation Research (M) Microprocessors & Microcontrollers(CSE) Programming Practices using C++	3	0/1	0	3/4	3/4
		Total of Theory				**17/18**	**17-18**
B. PRACTICAL							
6	IT591	Algorithm Lab	0	0	3	3	2
7	IT592	Computer Architecture	0	0	3	3	2
8	IT593	Operating System Lab	0	0	3	3	2
9	F.E. IT594A IT594B IT594C IT594D IT594E IT594F	A. Circuit Theory & Network (EE) B. Data Communication (ECE) C. Digital Signal Processing (ECE) D. Operation Research (M) E. Microprocessors & Microcontrollers(CSE) F. Programming Practices using C++	0	0	3	3	2
		Total of Practical				**12**	**8**
		Total of Semester				**29/30**	**25-26**

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Third Year - Sixth Semester

Sl.No.	Field	Theory	Contact Hours/Week				Cr. Pts
			L	T	P	Total	
A. THEORY							
1	HU601	Principles of Management	2	0	0	2	2
2	IT.601	Data Base Management System	3	0	0	3	3
3	IT602	Computer Networking	3	0	0	3	3
4	IT603	Software Engg	3	0	0	3	3
5	P.E. IT604A IT604B IT604C IT604D	 Information Theory & Coding Computer Graphics Pattern Recognition ERP	3	0	0	3	3
6	F. E. IT605A IT605B IT605C IT605D	 Discrete Mathematics (M) Human Resource Management (HSS) Compiler Design (CSE) Artificial Intelligence (CSE)	3	0/1	0	3/4	3/4
Total of Theory						**17/18**	**17-18**
B. PRACTICAL							
7	IT691	Data Base Management System Lab	0	0	3	3	2
8	IT692	Computer Networking Lab	0	0	3	3	2
9	IT693	Software Engineering	0	0	3	3	2
10	IT681	**Seminar**	**0**	**0**	**3**	**3**	**2**
Total of Practical						**12**	**8**
Total of Semester						**29/30**	**25-26**

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81, Nilgunj Road, Agarpara, Kol-109

Fourth Year - Seventh Semester

Sl. No.	Field	Theory	Contact Hours/Week				Cr. Pts
			L	T	P	Total	
2.1.1.1.1. A. THEORY							
1	IT701	Internet Technology	3	0	0	3	3
2	IT702	Multimedia	3	0	0	3	3
3	IT703	A. E-Commerce B. Soft Computing C. Image Processing	3	0	0	3	3
4	IT704	A. Distributed Operating System B. Cloud Computing C. Data Warehousing & Data Mining D. Sensor Networks E. Mobile Computing	3	0	0	3	3
5	IT705	A. Bio Informatics (BI) B. Control System (EE) C. Modelling & Simulation (M) D. Microelectronics & VLSI Design(ECE) E. Advanced Data Communication & Coding	3	0	0	3	3
Total of Theory						**15**	**15**
B. PRACTICAL							
6	HU781	Group Discussion	0	0	3	3	2
7	IT791	Internet Technology	0	0	3	3	2
8	IT792	Multimedia	0	0	3	3	2
9	IT793	A. E-Commerce B. Soft Computing C. Image Processing	0	0	3	3	2
10	IT794	Industrial training	4 wks during 6th -7 th Sem-break				2
11	IT795	Project-1				3	2
Total of Practical						**15**	**12**
Total of Semester						**30**	**27**

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81, Nilgunj Road, Agarpara, Kol-109

Fourth Year - Eighth Semester

Sl. No.	Field	Theory	Contact Hours/Week				Cr. Pts
			L	T	P	Total	
2.1.1.1.2.		**A. THEORY**					
1	**HU801A** **HU801B**	A. Organisational Behaviour B. Project Management	2	0	0	2	2
2	**IT801**	A. Advanced Computer Architecture B. Parallel Computing C. Natural Language Processing D. Cryptography & Network Security)	3	0	0	3	3
3	**IT802**	A. Technology Management (HSS) B. Cyber Law & Security Policy (HSS) C. Optical Networking (ECE) D. Low Power Circuits & Systems (ECE) E. Business Analytics(CSE) F. Robotics(EE & ME	3	0	0	3	3
	Total of Theory					**8**	**8**
2.1.1.1.3.		**B. PRACTICAL**					
4	**IT891**	Design Lab / Industrial problem related practical training	0	0	6	6	4
5	**IT892**	Project-2	0	0	12	12	6
6	**IT893**	Grand Viva					3
	Total of Practical					**18**	**13**
	Total of Semester					**26**	**21**

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

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Department of Information Technology

Curriculum for B.TECH (IT)

Curricular Regulation 2016 (R16)
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Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Curriculum of B.Tech (IT) Programme
Implemented from the Academic Year 2016

1ST YEAR, 1ST SEMESTER

Sl. No	Subject Category	Subject Code	Subject Name	Contact hours/Week				Total Credits
				L	T	P	Total	
			THEORY					
1	BS	M101	MATHEMATICS-I	3	1	0	4	4
2	BS	PH101	PHYSICS-I	3	1	0	4	4
3	ES	EC101	BASIC ELECTRONICS ENGINEERING	3	1	0	4	4
4	ES	ME101	ENGINEERING MECHANICS	3	1	0	4	4
5	HS	HU101	COMMUNICATIVE ENGLISH	2	0	0	2	2
Total no. of Theory:								**18**
			PRACTICAL					
6	BS	PH191	PHYSICS-I LAB	0	0	3	3	2
7	ES	EC191	BASIC ELECTRONICS ENGINEERING LAB	0	0	3	3	2
8	ES	ME192	WORKSHOP PRACTICE	0	0	3	3	2
9	HS	HU191	LANGUAGE LAB & SEMINAR PRESENTATION	0	0	3	3	1
Total no. of Practical:								**7**
			SESSIONAL					
10	HS	XC181	EXTRA CURRICULAR ACTIVITY (NSS/NCC)	0	0	2	2	1
TOTAL								**26**

1ST YEAR, 2ND YEAR SEMESTER

Sl. No	Subject Category	Subject Code	Subject Name	Contact Hours/Week				Total Credits
				L	T	P	Total	
			THEORY					
1	BS	M201	MATHEMATICS-II	3	1	0	4	4
2	BS	CH201	CHEMISTRY	3	1	0	4	4
3	ES	EE201	BASIC ELECTRICAL ENGINEERING	3	1	0	4	4
4	ES	CS201	COMPUTER FUNDAMENTALS AND PRINCIPLE OF COMPUTER PROGRAMMING	3	1	0	4	4
5	ES	ME201	ENGINEERING THERMODYNAMICS AND FLUID MECHANICS	3	1	0	4	4
Total no. of Theory:								**20**
			PRACTICAL					
6	BS	CH291	CHEMISTRY LAB	0	0	3	3	2
7	ES	CS291	COMPUTER FUNDAMENTALS AND PRINCIPLE OF COMPUTER PROGRAMMING LAB	0	0	3	3	2
8	ES	EE291	BASIC ELECTRICAL ENGINEERING LAB	0	0	3	3	2
9	ES	ME291	ENGINEERING DRAWING AND GRAPHICS	0	0	3	3	2
Total no. of Practical:								**8**
			SESSIONAL					
10	MC	MC281	SOFT SKILL DEVELOPMENT	0	0	3	3	2 units
TOTAL								**28**

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

2ND YEAR, 3RD SEMESTER

Sl. No	Subject Category	Subject Code	Subject Name	Contact hours/Week				Total Credits
				L	T	P	Total	
THEORY								
1	BS	M(IT)301	MATHEMATICS- III	3	1	0	4	4
2	BS	PH(IT)301	PHYSICS- II	3	0	0	3	3
3	BS	M(IT)302	NUMERICAL METHODS AND STATISTICS	3	0	0	3	3
4	ES	EC(IT)303	ANALOG AND DIGITAL ELECTRONICS	3	0	0	3	3
5	PC	IT301	DATA STRUCTURE & ALGORITHM	3	1	0	4	4
Total no. of Theory:								**17**
PRACTICAL								
6	BS	PH(IT)391	PHYSICS-II LAB	0	0	3	3	2
7	BS	M(IT)392	NUMERICAL METHODS AND STATISTICS LAB	0	0	3	3	2
8	ES	EC(IT)393	ANALOG & DIGITAL ELECTRONICS LAB	0	0	3	3	2
9	PC	IT391	DATA STRUCTURE LAB	0	0	3	3	2
Total no. of Practical:								**8**
SESSIONAL								
10	HS	HU381	TECHNICAL REPORT WRITING AND LANGUAGE PRACTICE	0	0	3	3	1
TOTAL								**26**

2ND YEAR, 4TH SEMESTER

Sl. No	Subject Category	Subject Code	Subject Name	Contact Hours/Week				Total Credits
				L	T	P	Total	
THEORY								
1	HS	HU401	ENVIRONMENTAL SCIENCE	2	0	0	2	2
2	PC	IT401	COMPUTER ORGANIZATION & ARCHITECTURE	3	1	0	4	4
3	PC	IT402	COMMUNICATION ENGINEERING & CODING THEORY	3	0	0	3	3
4	PC	IT403	FORMAL LANGUAGE AND AUTOMATA THEORY	3	0	0	3	3
5	PC	IT404	OBJECT ORIENTED PROGRAMMING USING JAVA	3	0	0	3	3
Total no. of Theory:								**15**
PRACTICAL								
6	PC	IT491	COMPUTER ORGANIZATION & ARCHITECTURE LAB	0	0	3	3	2
7	PC	IT492	COMMUNICATION ENGINERING & CODING THEORY LAB	0	0	3	3	2
8	PC	IT494	OBJECT ORIENTED PROGRAMMING LAB	0	0	3	3	2
Total no. of Practical:								**6**
SESSIONAL								
9	MC	MC481	TECHNICAL SKILL DEVELOPMENT	0	0	3	3	2 units
TOTAL								**21**

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

3RD YEAR, 5TH SEMESTER

Sl. No	Subject Category	Subject Code	Subject Name	Contact Hours/Week				Total Credits
				L	T	P	Total	
THEORY								
1	PC	IT501	DESIGN ANALYSIS OF ALGORITHM	3	1	0	4	4
2	PC	IT502	SOFTWARE ENGINEERING	3	1	0	4	4
3	PC	IT503	OPERATING SYSTEM	3	1	0	4	4
4	PE	IT504A IT504B IT504C	PROGRAMMING PRACTICE WITH C++ ARTIFICIAL INTELLIGENCE OPERATIONS RESEARCH	3	1	0	4	4
5	HS	HU505	INDUSTRIAL AND FINANCIAL MANAGEMENT	2	0	0	2	2
Total no. of Theory:								**18**
PRACTICAL								
6	PC	IT591	DESIGN ANALYSIS OF ALGORITHM LAB	0	0	3	3	2
7	PC	IT592	SOFTWARE ENGINEERING LAB	0	0	3	3	2
8	PC	IT 593	OPERATING SYSTEM LAB	0	0	3	3	2
9	PE	IT 594A IT 594B IT 594C	PROGRAMMING PRACTICE WITH C++ LAB ARTIFICIAL INTELLIGENCE LAB OPERATIONS RESEARCH LAB	0	0	3	3	2
Total no. of Practical:								**8**
SESSIONAL								
10	PW	IT581	MINI PROJECT - I	0	0	4	4	2
TOTAL:								**28**

3RD YEAR: 6TH SEMESTER

Sl. No	Subject Category	Subject Code	Subject Name	Contact Hours/Week				Total Credits
				L	T	P	Total	
THEORY								
1	PC	IT 601	DATABASE MANAGEMENT SYSTEM	3	1	0	4	4
2	PC	IT 602	WEB TECHNOLOGY	3	0	0	3	3
3	PC	IT 603	COMPUTER NETWORKING	3	1	0	4	4
4	PE	IT 604 A IT 604 B IT 604 C IT 604 D	ERP INFORMATION & CODING THEORY MICROPROCESSOR & MICROCONTROLLER DIGITAL IMAGE PROCESSING	3	1	0	4	4
5	OE	ECE(IT)605A IT 605 B IT 605 C IT 605 D IT 605 E IT 605 F	DIGITAL SIGNAL PROCESSING COMPILER DESIGN GREEN COMPUTING SOFT COMPUTING PROJECT MANAGEMENT HUMAN RESOURCE MANAGEMENT	3	0	0	3	3
Total no. of Theory:								**18**
PRACTICAL								
6	PC	IT691	DATABASE MANAGEMENT SYSTEM LAB	0	0	3	3	2
7	PC	IT692	WEB TECHNOLOGY LAB	0	0	3	3	2
8	PC	IT693	COMPUTER NETWORKING LAB	0	0	3	3	2
9	PC	IT694	SYSTEM ENGINEERING LAB	0	0	3	3	2
Total no. of Practical:								**8**
SESSIONAL								
10	PW	IT682	MINI PROJECT - II	0	0	4	4	2
11	MC	MC681	SEMINAR/GD/ PRESENTATION SKILL/ FOREIGN LANGUAGE	0	0	3	3	2 units
TOTAL								**28**

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

4TH YEAR: 7TH SEMESTER

Sl. No	Subject Category	Subject Code	Subject Name	Contact Hours/Week				Total Credits
				L	T	P	Total	
THEORY								
1	PC	IT701	E - COMMERCE	3	0	0	3	3
2	PE	IT702A IT702B IT702C	COMPUTER GRAPHICS AND MULTIMEDIA PATTERN RECOGNITION INTERNET TECHNOLOGY	3	0	0	3	3
3	PE	IT703 A IT703 B IT703 C	CLOUD COMPUTING DISTRIBUTED SYSTEMS DATA WAREHOUSING AND DATA MINING	3	0	0	3	3
4	OE	IT704A EE(IT)704B ECE(IT)704C IT704D	MODELLING AND SIMULATION CONTROL SYSTEM MICROELECTRONICS AND VLSI DESIGN MOBILE COMMUNICATION	3	0	0	3	3
Total no. of Theory:								**12**
PRACTICAL								
5	PC	IT791	E – COMMERCE LAB	0	0	3	3	2
6	PE	IT792A IT792B IT792C	COMPUTER GRAPHICS & MULTIMEDIA LAB PATTERN RECOGNITION LAB INTERNET TECHNOLOGY LAB	0	0	3	3	2
Total no. of Practical:								**4**
SESSIONAL								
7	PW	IT781	INDUSTRIAL TRAINING	0	0	0	4 weeks	2
8	PW	IT782	PROJECT-I	0	0	6	6	3
9	MC	IT783	SEMINAR/GD/ PRESENTATION SKILL/ FOREIGN LANGUAGE	0	0	3	3	2 units
TOTAL								**21**

4TH YEAR: 8TH SEMESTER

Sl. No	Subject Category	Subject Code	Subject Name	Contact Hours/Week				Total Credits
				L	T	P	Total	
THEORY								
1	PE	IT801A IT801B IT801C IT801D	ADVANCED COMPUTER ARCHITECTURE CRYPTOGRAPHY AND NETWORK SECURITY NATURAL LANGUAGE PROCESSING BIO-INFORMATICS	3	0	0	3	3
2	OE	IT802A IT802B IT802C IT802D	BUSINESS ANALYTICS CYBER LAW AND SECURITY POLICY ADVANCED DBMS INTERNET OF THINGS	3	1	0	4	4
3	HS	HU802	VALUES & ETHICS IN PROFESSIONS	2	0	0	2	2
Total no. of Theory:								**9**
PRACTICAL								
SESSIONAL								
4	PW	IT 881	DESIGN LAB/ INDUSTRIAL PROBLEM RELATED PRACTICAL TRAINING	0	0	3	3	2
5	PW	IT 882	PROJECT II	0	0	12	12	6
6	PW	IT 883	GRAND VIVA	0	0	0	0	3
TOTAL								**20**

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81, Nilgunj Road, Agarpara, Kol-109

		Total Credit	Percentage (%)	Range of Total Credits (%) as per AICTE	
				Minimum	Maximum
HS	Humanities and Social Sciences	11	5.55	5	10
BS	Basic Sciences	34	17.17	15	20
ES	Engineering Sciences	35	17.67	15	20
PW	Project Work/ Seminar/ Industrial Training etc.	20	10.10	10	15
PC	Professional -Core	67	33.83	30	40
PE	Professional -Electives	21	10.60	10	15
OE	Open Electives	10	5.05	5	10
MC	Mandatory Course	0	8units		
	Total:	198			

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Narula Institute of Technology

Department of Information Technology

Curriculum for B.TECH (IT)

Curricular Regulation 2018 (R18)
under Maulana Abul Kalam Azad
University of Technology,
West Bengal, India

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Curriculum Structure

(Effective from 2018-19 Admission Batch)

Department: Information Technology

Curriculum for B. Tech Under Autonomy
(**GR A:** ECE, EE, BME; **GR B:** CSE, IT, ME, CE)

1st Semester								
Sl No	**Course Code**	**Paper Code**	**Theory**	**Contact Hours /Week**				**Credit Points**
				L	**T**	**P**	**Total**	
A. THEORY								
1	BS	M101	Mathematics -I	3	1	0	4	4
2	BS	CH101/ PH101	Chemistry (Gr. A) / Physics- I (Gr. B)	3	0	0	3	3
3	ES	EE101/ EC101	Basic Electrical Engineering (Gr. A) / Basic Electronics Engineering (Gr. B)	3	0	0	3	3
4	HS	HU101	English	2	0	0	2	2
Total of Theory							**12**	**12**
B. PRACTICAL								
5	BS	CH191/ PH191	Chemistry Lab (Gr. A) / Physics- I Lab (Gr. B)	0	0	3	3	1.5
6	ES	EE191/ EC191	Basic Electrical Engineering Lab (Gr. A) / Basic Electronics Engineering Lab (Gr. B)	0	0	3	3	1.5
7	ES	ME191/ ME192	Engineering Graphics & Design (Gr A) / Workshop / Manufacturing Practices (Gr-B)	0	0	3	3	1.5
8	PROJ	PR191	Project-IA	0	0	1	1	0.5
9	PROJ	PR192	Project-IB	0	0	1	1	0.5
C. MANDATORY ACTIVITIES / COURSES								
10	MC	MC181	Induction Program	0	0	0	0	
Total of Theory, Practical & Mandatory Activities/Courses							**23**	**17.5**

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2nd Semester								
Sl No	Course Code	Paper Code	Theory	Credit Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	M201	Mathematics -II	3	1	0	4	4
2	BS	CH201/ PH201	Chemistry - (Gr. B) / Physics – I (Gr. A)	3	0	0	3	3
3	ES	EE201/ EC201	Basic Electrical Engineering (Gr. B) / Basic Electronics Engineering (Gr. A)	3	0	0	3	3
4	ES	CS201	Programming for Problem Solving	3	0	0	3	3
5	ES	ME201	Engineering Mechanics	3	0	0	3	3
Total of Theory							**16**	**16**
B. PRACTICAL								
6	ES	CS291	Programming for Problem Solving Lab	0	0	3	3	1.5
7	BS	CH291/ PH291	Chemistry Lab (Gr. B) / Physics - I Lab (Gr. A)	0	0	3	3	1.5
8	ES	EE291/ EC291	Basic Electrical Engineering Lab (Gr. B) / Basic Electronics Engineering Lab (Gr. A)	0	0	3	3	1.5
9	ES	ME291/ ME292	Engineering Graphics & Design (Gr B) / Workshop/Manufacturing Practice (Gr-A)	0	0	3	3	1.5
10	HS	HU291	Language Lab	0	0	2	2	1
11	PROJ	PR291	Project-II	0	0	1	1	0.5
12	PROJ*	PR292	Innovative Activities-I	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
13	MC	MC281	NSS/ Physical Activities/Meditation & Yoga/Photography/ Nature Club	0	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							**34**	**24.0**

* Inter/ Intra Institutional Activities viz; Training with higher Institutions; Soft skill training organized by Training and Placement Cell of the respective institutions; contribution at incubation/ innovation /entrepreneurship cell of the institute; participation in conferences/ workshops/ competitions etc.; Learning at Departmental Lab/ Tinkering Lab/ Institutional workshop; Working in all the activities of Institute's Innovation Council for eg: IPR workshop/Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc. (evaluation by Programme Head through certification)

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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3rd Semester								
SL No	Type	Code	THEORY	Contact Hours/Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PC	IT301	Data Structure and Algorithm	3	0	0	3	3
2	PC	IT302	Analog and Digital Electronics	3	0	0	3	3
3	BS	M(IT)301	Mathematics -III	3	1	0	4	4
4	BS	PH301	Physics-II	3	0	0	3	3
5	ES	M(IT)302	Numerical Methods and Statistics	3	0	0	3	3
Total of Theory							**16**	**16**
B. PRACTICAL								
6	PC	IT391	Data Structure Lab	0	0	3	3	1.5
7	PC	IT392	Analog and Digital Electronics Lab	0	0	3	3	1.5
8	BS	PH391	Physics-II Lab	0	0	3	3	1.5
9	ES	M(IT)392	Numerical Methods and Statistics Lab	0	0	3	3	1.5
10	PROJ	PR391	Project-III	0	0	2	2	1
11	PROJ*	PR392	Innovative Activities-II	0	0	0	1	0.5
C. MANDATORY ACTIVITIES / COURSES								
12	MC	MC381	Behavioural and Interpersonal Skills	0	0	3	3	
Total of Theory, Practical & Mandatory Activities/Courses							**34**	**23.5**

*Students may choose either to work on participation in all the activities of Institute's Innovation Council for eg: IPR workshop/ Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc.

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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81, Nilgunj Road, Agarpara, Kol-109

4th Semester								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PC	IT401	Computer Organization & Architecture	3	0	0	3	3
2	PC	IT402	Object Oriented Programming using Java	3	0	0	3	3
3	PC	IT403	Formal Language and Automata Theory	3	0	0	3	3
4	PC	IT404	Communication Engineering & Coding Theory	3	0	0	3	3
5	HS	HU401	Values & Ethics in Profession	2	0	0	2	2
Total of Theory							**14**	**14**
B. PRACTICAL								
6	PC	IT491	Computer Organization & Architecture Lab	0	0	3	3	1.5
7	PC	IT492	Object Oriented Programming Lab	0	0	3	3	1.5
8	PC	IT493	Programming Skill Development Lab	0	0	3	3	1.5
9	PROJ	PR491	Project-IV	0	0	2	2	1
10	PROJ*	PR492	Innovative Activities-III	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
11	MC	MC401	Environmental Science	0	0	3	3	
Total of Theory, Practical & Mandatory Activities/Courses							**28**	**20**

*Students may choose either to work on participation in all the activities of Institute's Innovation Council for eg: IPR workshop/ Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc.

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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5th Semester								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PC	IT501	Design & Analysis of Algorithm	3	0	0	3	3
2	PC	IT502	Software Engineering	3	0	0	3	3
3	PC	IT503	Operating System	3	0	0	3	3
4	HS	HU503	Industrial & Financial Management	2	0	0	2	2
5	PE	IT504	A. Programming Practice with C++ B. Artificial Intelligence and Expert System C. Microprocessor and Microcontroller	3	0	0	3	3
Total of Theory							**14**	**14**
B. PRACTICAL								
6	PC	IT591	Algorithm Lab	0	0	3	3	1.5
7	PC	IT592	Software Engineering Lab	0	0	3	3	1.5
8	PC	IT593	Operating System Lab	0	0	3	3	1.5
9	PE	IT594	A. Programming Practice with C++ Lab B. Artificial Intelligence and Expert System Lab C. Microprocessor and Microcontroller Lab	0	0	3	3	1.5
10	PROJ	PR591	Project-V	0	0	2	2	1
11	PROJ*	PR592	Innovative Activities-IV	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
12	MC	MC501	Constitution of India	3	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							**31**	**21.5**

* Students may choose either to work on participation in Hackathons etc. Development of new product/ Business Plan/ registration of start-up.

Students may choose to undergo Internship / Innovation / Entrepreneurship related activities. Students may choose either to work on innovation or entrepreneurial activities resulting in start-up or undergo internship with industry/ NGO's/ Government organizations/ Micro/ Small/ Medium enterprises to make themselves ready for the industry/ Long Term goals under rural Internship. (Duration 4-6 weeks)

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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81, Nilgunj Road, Agarpara, Kol-109

6th Semester								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PC	IT601	Database Management System	3	0	0	3	3
2	PC	IT602	Web Technology	3	0	0	3	3
3	PC	IT603	Computer Networking	3	0	0	3	3
4	PE	IT604	A. E-Commerce and ERP B. Digital Image Processing C. Soft Computing	3	0	0	3	3
	Total of Theory						**12**	**12**
B. PRACTICAL								
5	PC	IT691	Database System Lab	0	0	3	3	1.5
6	PC	IT692	Web Technology Lab	0	0	3	3	1.5
7	PC	IT693	Computer Networking Lab	0	0	3	3	1.5
8	PE	IT694	A. E-Commerce and ERP Lab B. Digital Image Processing Lab C. Soft Computing Lab	0	0	3	3	1.5
9	PROJ	PR691	Project-VI	0	0	2	2	1
10	PROJ*	PR692	Innovative Activities-V	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
11	MC	MC681	Technical Lecture Presentation & Group Discussion-I	0	0	3	3	
Total of Theory, Practical & Mandatory Activities/Courses							**29**	**19.5**

*Students may choose either to work on participation in all the activities of Institute's Innovation Council for eg: IPR workshop/ Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc.

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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7th Semester								
Sl No	Course Code	Paper Code	Theory	Contact Hours/Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PE	IT701	A. Cloud Computing B. Computer Graphics and Multimedia C. Distributed System D. Machine Learning	3	0	0	3	3
2	PE	IT702	A. Cryptography and Network Security B. Data Warehousing and Data Mining C. Advanced Computer Architecture D. Compiler Design	3	0	0	3	3
3	OE	IT703	A. Sensor Network B. Pattern Recognition C. Internet Technology D. Robotics	3	0	0	3	3
4	OE	IT704	A. Modeling and Simulation B. Microelectronics and VLSI Design C. Mobile Communication D. Operations Research	3	0	0	3	3
Total of Theory							**12**	**12**
B. PRACTICAL								
5	PE	IT791	A. Cloud Computing Lab B. Computer Graphics and Multimedia Lab C. Distributed System Lab D. Machine Learning using R Programming Lab	0	0	3	3	1.5
6	PROJ	PR791	Project-VII	0	0	9	9	4.5
7	PROJ*	PR792	Innovative Activities-VI	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
8	MC	MC781	Seminar/GD/ Presentation Skill/ Foreign Language	0	0	3	3	
Total of Theory, Practical & Mandatory Activities/Courses							**27**	**18.5**

*Students may choose either to work on participation in Hackathons etc. Development of new product/ Business Plan/ registration of start-up.

Students may choose to undergo Internship / Innovation / Entrepreneurship related activities. Students may choose either to work on innovation or entrepreneurial activities resulting in start-up or undergo internship with industry/ NGO's/ Government organizations/ Micro/ Small/ Medium enterprises to make themselves ready for the industry/ Long Term goals under rural Internship. (Duration 4-6 weeks)

Innovative activities to be evaluated by the Programme Head / Event Coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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8th Semester								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	HS	HU804	Principles of Management	2	0	0	2	2
2	OE	IT801	A. Block Chain B. Big Data Analytics C. Virtual Reality D. Natural Language Processing	3	0	0	3	3
3	OE	IT802	A. Bio-Informatics B. Embedded System C. Internet of Things (IoT) D. Deep Learning	3	0	0	3	3
4	OE	IT803	A. Data Sciences B. Cyber Law and IPR C. Cluster and Grid Computing D. Entrepreneurship Development	3	0	0	3	3
Total of Theory							**11**	**11**
B. PRACTICAL								
5	PROJ	PR891	Project-VIII	0	0	9	9	4.5
C. MANDATORY ACTIVITIES / COURSES								
6	MC	MC801	Essence of Indian Knowledge Tradition	3	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							**23**	**15.5**

Mandatory Credit Point=160

For Honours Degree additional 20 Credit Point is to be earned (1st Sem to 8th Sem) through MOOCs courses. All the Certificates received by the students across all semester for MOOCs Courses from approved organization (Appendix A) is to be submitted to the Office of the Controller of Examination prior to 8th Semester Examination and the Credit earned through MOOCs courses will be reflected in their Results.

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Narula Institute of Technology

Department of Mechanical Engineering

Curriculum for B.TECH (ME)

Curricular Regulation 2016 (R16)
under Maulana Abul Kalam Azad
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West Bengal, India

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DEPARTMENT OF MECHANICAL ENGINEERING

Curriculum - 2016

First Year First Semester

A. THEORY							
Sl No	Course Code	Theory	Contact Hours /Week				Credit Points
			L	T	P	Total	
1	M 101	Mathematics -I	3	1	0	4	4
2	CH 101/ PH 101	Chemistry (Gr. A) / Physics - I(Gr. B)	3	1	0	4	4
3	EE 101/ EC 101	Basic Electrical Engineering (Gr. A) / Basic Electronics Engineering (Gr. B)	3	1	0	4	4
4	HU 101	Professional Communication	2	0	0	2	2
5	ME 101	Engineering Mechanics	3	1	0	4	4
Total of Theory						18	18
B. PRACTICAL							
6	HU191	Lang. Lab. and Seminar Presentation	0	0	2	2	1
7	CH 191/ PH191	Chemistry Lab (Gr. A) / Physics -I Lab(Gr. B)	0	0	3	3	2
8	EE 191/ EC 191	Basic Electrical Engineering Lab (Gr. A) /Basic Electronics Engineering Lab(Gr. B)	0	0	3	3	2
9	ME 191	Engg Drawing & Graphics(Gr A)/ Workshop Practice (Gr-B)	0	0	3	3	2
Total of Practical						11	07
C. SESSIONAL							
10	XC181.	Extra Curricular Activity (NSS/ NCC)	0	0	2	2	1
Total of Semester		26					

Group A (ECE , EE , AEIE , BIOMEDICAL)		Group B (CSE , IT , FT ,ME,CE)	
1st Semester	2nd Semester	1st Semester	2nd Semester
Chemistry	Physics - I	Physics - I	Chemistry
Basic Electrical Engineering	Basic Electronics Engineering	Basic Electronics Engineering	Basic Electrical Engineering
Engg Drawing & Graphics	Workshop Practice	Workshop Practice	Engg Drawing & Graphics

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81, Nilgunj Road, Agarpara, Kol-109

First Year Second Semester

A. THEORY							
Sl. No	Course Code	Theory	Contact Hours /Week				Credit Points
			L	T	P	Total	
1	M 201	Mathematics -II	3	1	0	4	4
2	CH 201/PH 201	Chemistry (Gr. B) / Physics - I(Gr. A)	3	1	0	4	4
3	EE 201/ EC 201	Basic Electrical Engineering (Gr. B) / Basic Electronics Engineering (Gr. A)	3	1	0	4	4
4	CS 201	Computer Fundamentals & Principle of Computer Programming	3	1	0	4	4
5	ME 201	Engineering Thermodynamics & Fluid Mechanics	3	1	0	4	4
Total of Theory						20	20
B. PRACTICAL							
6	CS291	Computer Fundamentals & Principle of Computer Programming Lab	0	0	3	3	2
7	CH 291/ PH291	Chemistry Lab (Gr. B) / Physics -I Lab (Gr. A)	0	0	3	3	2
8	EE 291/ EC 291	Basic Electrical Engineering Lab (Gr. B) /Basic Electronics Engineering Lab (Gr. A)	0	0	3	3	2
9	ME 291	Engg Drawing & Graphics(Gr B)/ Workshop Practice (Gr-A)	0	0	3	3	2
Total of Practical						13	08
C. SESSIONAL							
10	MC 281	Soft Skill Development	0	0	2	2	0
Total of Semester		28					

Group A (ECE , EE , AEIE , BIOMEDICAL)		Group B (CSE , IT , FT ,ME,CE)	
1st Semester	2nd Semester	1st Semester	2nd Semester
Chemistry	Physics - I	Physics - I	Chemistry
Basic Electrical Engineering	Basic Electronics Engineering	Basic Electronics Engineering	Basic Electrical Engineering
Engg Drawing & Graphics	Workshop Practice	Workshop Practice	Engg Drawing & Graphics

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Second Year, 3rdSEMESTER

Sl. No.	Subject Type	Subject Code	Subject Name	Contact hours/Week				Total Credits
				L	T	P	Total	
	A. THEORY							
1	PC	ME 301	APPLIED THERMODYNAMICS	3	0	0	3	3
2	PC	ME 302	STRENGTH OF MATERIALS	3	0	0	3	3
3	PC	ME 303	FLUID MECHANICS	3	0	0	3	3
4	ES	EE(ME)301	ELECTRICAL MACHINES	3	0	0	3	3
5	BS	M(ME) 301	MATHEMATICS- III	3	0	0	3	3
6	BS	PH(ME) 301	PHYSICS- II	3	0	0	3	3
Total of Theory							18	18
	B. PRACTICAL							
7	PC	ME 391	STRENGTH OF MATERIALS LAB	0	0	3	3	2
8	PC	ME 392	MACHINE DRAWING- I	0	0	3	3	2
9	ES	EE(ME)391	ELECTRICAL MACHINES LAB	0	0	2	2	1
10	BS	PH(ME)391	PHYSICS-II LAB	0	0	3	3	2
Total of Practical							11	7
	C. SESSIONAL							
11	MC	MC 381	TECHNICAL SKILL DEVELOPMENT	0	0	2	2 units	0
Total: Eleven				18	0	13	31	25

SecondYear, 4thSEMESTER

Subject Type	Subject Code	Subject Name	Contact Hours / Week				Total Credits
			L	T	P	Total	
A. THEORY							
PC	ME 401	FLUID MACHINERY	3	0	0	3	3
PC	ME 402	PRIMARY MANUFACTURING PROCESS	3	0	0	3	3
PC	ME 403	ENGINEERING MATERIALS	3	0	0	3	3
PC	ME 404	MECHANISMS	3	0	0	3	3
BS	M(CS)401	NUMERICAL METHODS	3	0	0	3	3
HU	HU 401	ENVIRONMENTAL SCIENCE	2	0	0	2	2
Total of Theory						17	17
B. PRACTICAL							
PC	ME 491	FLUID MECHANICS & HYDRAULIC MACHINES LAB	0	0	3	3	2

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PC	ME 492	MANUFACTURING TECHNOLOGY LAB	0	0	3	3	2
PC	ME 493	MATERIAL TESTING LAB	0	0	3	3	2
PC	ME 494	MACHINE DRAWING-II	0	0	3	3	2
BS	M(ME) 491	NUMERICAL METHODS LAB	0	0	3	3	2
Total of Practical						**15**	**10**
C. SESSIONAL							
HS	HU 481	TECHNICAL REPORT WRITING & LANGUAGE PRACTICE	0	0	2	2	1
		Total: Twelve	**17**	**0**	**15**	**34**	**28**

Third Year, 5th SEMESTER

Subject Type	Subject Code	Subject Name	Contact Hours/Week				Total Credits
			L	T	P	Total	
A. THEORY:							
PC	ME 501	HEAT TRANSFER	3	0	0	3	3
PC	ME 502	DESIGN OF MACHINE ELEMENTS-I	3	0	0	3	3
PC	ME 503	DYNAMICS OF MACHINES	3	0	0	3	3
PC	ME 504	METROLOGY & MEASUREMENT	3	0	0	3	3
HU	HU 502	VALUES & ETHICS IN PROFESSION	2	0	0	2	2
PE-I	ME 505A	REFRIGERATION & AIR CONDITIONING	3	0	0	3	3
	ME 505B	MECHATRONICS					
	ME 505C	APPLIED FLUID MECHANICS					
Total of Theory						17	17
B. PRACTICAL:							
PC	ME591	HEAT TRANSFER LAB	0	0	3	3	2
PC	ME 592	DYNAMICS OF MACHINES LAB	0	0	3	3	2
PC	ME 593	METROLOGY & MEASUREMENT LAB	0	0	2	2	1
PE LAB-I	ME 594 A	REFRIGERATION & AIR CONDITIONING LAB	0	0	3	3	2
	ME 594 B	MECHATRONICS LAB					
	ME 594 C	APPLIED FLUID MECHANICS LAB					
Total of Practical						11	7
C. SESSIONAL							
PROJECT	ME 581	MINI PROJECT-I	0	0	3	3	2
MC	MC 582	SEMINAR	0	0	2	2	0
TOTAL: Twelve			17	0	16	33	26

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81, Nilgunj Road, Agarpara, Kol-109

ThirdYear:6th SEMESTER

Subject Type	Subject Code	Subject Name	Contact Hours/Week				Total Credits
			L	T	P	Total	
A. THEORY:							
PC	ME 601	MACHINING PRINCIPLES & MACHINE TOOLS	3	0	0	3	3
PC	ME 602	DESIGN OF MACHINE ELEMENTS-II	3	0	0	3	3
PC	ME 603	IC ENGINE & GAS TURBINE	3	0	0	3	3
PE-II	ME 604A	ROBOTICS: MECHANICS AND CONTROL	3	0	0	3	3
	ME 604B	COMPOSITE MATERIALS					
	ME 604C	FLUID POWER CONTROL					
OE-I	ME605A	RENEWABLE ENERGY SYSTEMS	3	0	0	3	3
	ME 605B	COMPUTATIONAL FLUID DYNAMICS					
	ME 605C	GAS DYNAMICS AND JET PROPULSION					
Total of Theory						**15**	**15**
B. PRACTICAL:							
PC	ME 691	MACHINING & MACHINE TOOLS LAB	0	0	3	3	2
PC	ME 692	DESIGN PRACTICE LAB	0	0	2	2	1
PC	ME 693	I C ENGINE LAB	0	0	3	3	2
PE-II LAB	ME 694 A	ROBOTICS LAB	0	0	3	3	2
	ME 694 B	COMPOSITE MATERIALS LAB					
	ME 694 C	FLUID POWER CONTROL LAB					
Total of Practical						**11**	**7**
C. SESSIONAL:							
PROJECT	ME 681	MINI PROJECT-II	0	0	3	3	2
MC	MC 682	GROUP DISCUSSION	0	0	2	2	0
		TOTAL: Eleven	**15**	**0**	**16**	**31**	**24**

Note:
Vacational Training to be conducted up to 6th semester and to be evaluated in 7th semester

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Fourth Year: 7th Semester

Subject Type	Subject Code	Subject Name	Contact Hours/Week				Total Credits
			L	T	P	Total	
A. THEORY:							
PC	ME 701	POWER PLANT ENGINEERING	3	0	0	3	3
PC	ME 702	ADVANCED MANUFACTURING TECHNOLOGY	3	0	0	3	3
PE-III	ME 703 A	ADVANCED WELDING TECHNOLOGY	3	0	0	3	3
	ME 703 B	BIOMECHANICS & BIOMATERIALS					
	ME 703 C	FINITE ELEMENT METHOD					
PE-IV	ME 704 A	TRIBOLOGY	3	0	0	3	3
	ME 704 B	OPERATIONS RESEARCH					
	ME 704 C	MATERIALS HANDLING					
OE-II	ME 705 A	ENERGY CONSERVATION & MANAGEMENT	3	0	0	3	3
	ME 705 B	QUALITY & RELIABILITY ENGINEERING					
	ME 705 C	HYDRO, WIND AND WAVE POWER					
Total of Theory						**15**	**15**
B. PRACTICAL:							
PC	ME 791	ADVANCED MANUFACTURING LAB	0	0	2	2	1
PE-III lab	ME 793 A	ADVANCED WELDING LAB	0	0	2	2	1
	ME 793 B	BIOMECHANICS & BIOMATERIALS LAB					
	ME 793 C	FINITE ELEMENT METHOD LAB					
Total of Practical						**4**	**2**
C. SESSIONAL:							
PW	ME 781	PROJECT- I	0	0	6	6	3
PW	ME 782	DESIGN OF MECHANICAL SYSTEM	0	0	3	3	2
PW	ME 783	VIVA-VOCE ON VACATIONAL TRAINING	0	0	0	0	2
Total of Sessional						9	7
		TOTAL: Ten	**15**	**0**	**13**	**28**	**24**

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81, Nilgunj Road, Agarpara, Kol-109

Fourth Year: 8th SEMESTER

Subject Type	Subject Code	Subject Name	Contact Hours/Week				Total Credits
			L	T	P	Total	
A. THEORY:							
HU	HU 804	PRICIPLES OF MANAGEMANT	2	0	0	2	2
PE-V	ME 802A	AUTOMOBILE ENGINEERING	3	0	0	3	3
	ME 802B	CAD/CAM					
	ME 802C	AUTOMATION & CONTROL					
OE-III	ME 803A	TURBO MACHINERY	2	0	0	2	2
	ME 803B	MAINTENANCE ENGINEERING					
	ME 803C	NUMERICAL HEAT TRANSFER					
OE-IV	ME 804A	SAFETY & OCCUPATIONAL HEALTH	2	0	0	2	2
	ME 804B	NUCLEAR POWER GENERATION AND SUPPLY					
	ME 804C	FRACTURE MECHANICS					
Total of Theory						9	9
B. SESSIONAL:							
PW	ME 881	PROJECT II	0	0	12	12	6
PW	ME 882	GRAND VIVA	0	0	0	0	2
		TOTAL: SIX	**9**	**0**	**12**	**21**	**17**

HS	Humanities and Social Sciences	**PC**	Professional -Core
BS	Basic Sciences	**PE**	Professional -Electives
ES	Engineering Sciences	**OE**	Open Electives

Credit points evaluation for B.Tech (ME) Programme - Total Credit: 198

Humanities and Social Sciences including Management (HS)					
Course Code	Credits	Total Credits	Range of Total credits (%) as per AICTE Min.	Max.	Assigned Credits Autonomy syllabus (%)
HU 101	2	10	5	10	5.05
HU 191	1				
HU 401	2				
HU 481	1				
HU 502	2				
HU 804	2				
Basic Sciences including Mathematics, Physics, Chemistry, Biology (BS)					
Course Code	Credits	Total Credits	Range of Total credits (%) as per AICTE		Assigned Credits for Autonomy syllabus (%)

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

			Min.	Max.	
CH201	4				
M101	4	33	15	20	16.66
CH291	2				
PH101	4				
M201	4				
PH191	2				
M(ME)301	3				
PH(ME)301	3				
PH(ME)391	2				
M(ME)401	3				
M(ME)491	2				

Engineering Sciences (ES)

Course Code	Credits	Total Credits	Range of Total credits (%) as per AICTE norms Min.	Max.	Assigned Credits for Autonomy syllabus (%)
ME101	4				
EE101	4	33	15	20	16.66
ME191	2				
EE191	2				
CS201	3				
ME201	4				
EC201	4				
EC291	2				
ME291	2				
CS291	2				
EE(ME)301	3				
EE(ME)391	1				

Professional Subjects-Core (PC)

Course Code	Credits	Total Credits	Range of Total credits (%) as per AICTE norms Min.	Max.	Assigned Credits for Autonomy syllabus (%)
ME301	3				
ME302	3	71	30	40	35.85
ME303	3				
ME391	2				
ME 392	2				
ME401	3				
ME402	3				
ME403	3				
ME404	3				
ME 491	2				
ME 492	2				
ME 493	2				
ME 494	2				
ME501	3				
ME 502	3				
ME 503	3				

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

ME 504	3			
ME 591	2			
ME 592	2			
ME 593	1			
ME 601	3			
ME 602	3			
ME 603	3			
ME 691	2			
ME 692	1			
ME 693	2			
ME 701	3			
ME 702	3			
ME 791	1			

Professional Subjects – Electives (PE)

Course Code	Credits	Total Credits	Range of Total credits (%) as per AICTE norms Min.	Max.	Assigned Credits for Autonomy syllabus (%)
ME 505 (A/B/C)	3	20	10	15	10.05
ME 594(A/B/C)	2				
ME 604(A/B/C)	3				
ME 694(A/B/C)	2				
ME 703(A/B/C)	3				
ME704(A/B/C)	3				
ME 793(A/B/C)	1				
ME 802(A/B/C)	3				

Open Subjects- Electives (OE)

Course Code	Credits	Total Credits	Range of Total credits (%) as per AICTE norms Min.	Max.	Assigned Credits for Autonomy syllabus (%)
ME 605(A/B/C)	3	10	5	10	5.05
ME 705(A/B/C)	3				
ME 803(A/B/C)	2				
ME 804(A/B/C)	2				

Project Work, Seminar and/or Internship in Industry

Course Code	Credits	Total Credits	Range of Total credits (%) as per AICTE norms Min.	Max.	Assigned Credits for Autonomy syllabus (%)
ME 581	2	20	10	15	10.10
ME 681	2				
ME 781	3				
ME 782	2				
ME 783	2				
ME 881	6				
ME 882	2				
XC 181	1				

Principal
NARULA INSTITUTE OF TECHNOLOGY

Narula Institute of Technology

Department of Mechanical Engineering

Curriculum for B.TECH (ME)

Curricular Regulation 2015 (R15)
under Maulana Abul Kalam Azad
University of Technology,
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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

West Bengal University of Technology
B.Tech in Mechanical Engineering Syllabus
COURSE STRUCTURE IN MECHANICAL ENGINEERING

B. THIRD SEMESTER

A. THEORY:

A. THEORY							
	Code	**Subjects**	**Contacts (periods/week)**				**Credit points**
			L	T	P	Total	
1.	ME 301	Fluid Mechanics	3	1	0	4	4
2.	ME 302	Thermodynamics	4	0	0	4	4
3.	M 303	Mathematics	3	1	0	4	4
4.	ME 304	Mechanics of Deformable Bodies	3	0	0	3	3
5.	ME 305	Computer Graphics & Solid Modelling	3	0	0	3	3
6.	EE(ME) 306	Electrical Machines	3	0	0	3	3
Total of Theory						**21**	**21**

B. PRACTICAL:

B. PRACTICAL							
	Code	**Subjects**	**Contacts (periods/week)**				**Credit points**
			L	T	P	Total	
1.	ME 395	Graphics Laboratory - I	0	0	4	4	3
2.	ME 396	Manufacturing Process Laboratory	0	0	3	3	2
3.	EE(ME) 396	Electrical Machines Laboratory	0	0	3	3	2
Total of Practical						**10**	**7**
Total of 3rd Semester						**31**	**28**

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

West Bengal University of Technology
B.Tech in Mechanical Engineering Syllabus
COURSE STRUCTURE IN MECHANICAL ENGINEERING

C. FOURTH SEMESTER

A. THEORY:

A. THEORY							
	Code	**Subjects**	**Contacts (periods/week)**				**Credit points**
			L	T	P	Total	
1.	ME 401	Fluid Machinery	3	0	0	3	3
2.	ME 402	Engineering Thermodynamics	3	0	0	3	3
3.	ME 403	Measurements and Instrumentation	3	0	0	3	3
4.	ME 404	Analysis and Synthesis of Linkages and Machines	3	0	0	3	3
5.	ME 405	Materials Science and Technology	3	0	0	3	3
6.	ME 406	Manufacturing Technology	3	0	0	3	3
Total of Theory						**18**	**18**

B. PRACTICAL:

B. PRACTICAL							
	Code	**Subjects**	**Contacts (periods/week)**				**Credit points**
			L	T	P	Total	
1.	ME 491	Fluid Mechanics and Fluid Machinery Laboratory	0	0	3	3	2
2.	ME 493	Measurements and Instrumentation Laboratory	0	0	3	3	2
3.	ME 496	Manufacturing Technology Laboratory	0	0	3	3	2
4.	ME 498	Graphics Laboratory - II	0	0	3	3	2
Total of Practical						**12**	**8**

C. SESSIONAL:

C. SESSIONAL							
	Code	**Subjects**	**Contacts (periods/week)**				**Credit points**
			L	T	P	Total	
1.	HU 481	Technical Report Writing & / Language Practice Laboratory	0	0	3	3	2
Total of Sessional						**3**	**2**
Total of 4th Semester						**33**	**28**

- Non-credit industrial visits to local establishments.
- 4 week practical training at an Institute approved organization during vacation, to be credited in Semester-V.

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

West Bengal University of Technology
B.Tech in Mechanical Engineering Syllabus

COURSE STRUCTURE IN MECHANICAL ENGINEERING

D. FIFTH SEMESTER

A. THEORY:

A. THEORY							
	Code	**Subjects**	**Contacts (periods/week)**				**Credit points**
			L	T	P	Total	
1.	ME 501	I.C. Engine and Steam Turbine	4	0	0	4	4
2.	ME 502	Heat Transfer	3	1	0	4	4
3.	ME 503	Design of Machine Elements	3	0	0	3	3
4.	ME 504	Technology of Machining	4	0	0	4	4
5.	ME 505	Environmental Management	3	0	0	3	3
Total of Theory						**18**	**18**

B. PRACTICAL:

B. PRACTICAL							
	Code	**Subjects**	**Contacts (periods/week)**				**Credit points**
			L	T	P	Total	
1.	ME 592	Thermal Engineering Laboratory - I	0	0	3	3	2
2.	ME 593	Design Practice - I	0	0	3	3	2
3.	ME 594	Manufacturing Technology Laboratory	0	0	3	3	2
4.	ME 596	Strength of Materials Laboratory	0	0	3	3	2
Total of Practical						**12**	**8**

C. SESSIONAL:

C. SESSIONAL							
	Code	**Subjects**	**Contacts (periods/week)**				**Credit points**
			L	T	P	Total	
1.	ME 599	Vocational Training					2
Total of Sessional							**2**
Total of 5th Semester						**30**	**28**

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

West Bengal University of Technology
B.Tech in Mechanical Engineering Syllabus

COURSE STRUCTURE IN MECHANICAL ENGINEERING

E. SIXTH SEMESTER

A. THEORY:

A. THEORY							
	Code	**Subjects**	**Contacts (periods/week)**				**Credit points**
			L	T	P	Total	
1.	ME 601	Automation, CNC Machines and Robotics	4	0	0	4	4
2.	ME 602	Mechatronics and Modern Control	3	0	0	3	3
3.	ME 603	Energy Conversion and Management	4	0	0	4	4
4.	ME 604	Design of Mechanical Systems	4	0	0	4	4
5.	ME 605	Dynamics of Machines	3	0	0	3	3
Total of Theory						**18**	**18**

B. PRACTICAL:

B. PRACTICAL							
	Code	**Subjects**	**Contacts (periods/week)**				**Credit points**
			L	T	P	Total	
1.	ME 692	Mechatronics and Modern Control Laboratory	0	0	3	3	2
2.	ME 694	Design Practice – II	0	0	3	3	2
3.	ME 695	Dynamics of Machines Laboratory	0	0	3	3	2
4.	ME 696	Thermal Engineering Laboratory-II	0	0	3	3	2
Total of Practical						**12**	**8**

C. SESSIONAL:

C. SESSIONAL							
	Code	**Subjects**	**Contacts (periods/week)**				**Credit points**
			L	T	P	Total	
1.	ME 699	Seminar	0	0	3	3	2
Total of Sessional						**3**	**2**
Total of 6th Semester						**33**	**28**

- Industrial training for 6 weeks as arranged by the Institute during vacation at the end of sixth semester, to be credited in the seventh semester.

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

West Bengal University of Technology
B.Tech in Mechanical Engineering Syllabus

COURSE STRUCTURE IN MECHANICAL ENGINEERING
F. SEVENTH SEMESTER

A. THEORY:

A. THEORY							
	Code	**Subjects**	**Contacts (periods/week)**				**Credit points**
			L	T	P	Total	
1.	ME 701	Advanced Manufacturing Technology	3	0	0	3	3
2.	ME 702	Advances in Materials Processing	3	0	0	3	3
3.	ME 703	Operations Research and Industrial Management	3	1	0	4	4
4.	HU 701	Ethics in Engineering Profession	3	0	0	3	3
5.	HU 702	Engineering Economy & Financial Management	3	0	0	3	3
Total of Theory						**16**	**16**

B. PRACTICAL:

B. PRACTICAL							
	Code	**Subjects**	**Contacts (periods/week)**				**Credit points**
			L	T	P	Total	
1.	ME 794	CAD – CAM Laboratory	0	0	3	3	2
2.	ME 795	Project	0	0	9	9	6
Total of Practical						**12**	**8**

C. SESSIONAL:

C. SESSIONAL							
	Code	**Subjects**	**Contacts (periods/week)**				**Credit points**
			L	T	P	Total	
1.	ME 798	Vacational Training					2
2.	G. ME 799	H. Seminar on assigned Topic	0	0	3	3	2
Total of Sessional						**3**	**4**
Total of 7th Semester						**31**	**28**

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

West Bengal University of Technology
B.Tech in Mechanical Engineering Syllabus

COURSE STRUCTURE IN MECHANICAL ENGINEERING

I. EIGHTH SEMESTER

A. THEORY:

A. THEORY							
	Code	**Subjects**	**Contacts (periods/week)**				**Credit points**
			L	T	P	Total	
1.	ME 801	Industrial Engineering	3	0	0	3	3
2.		Elective – I	3	0	0	3	3
3.		Elective – II	3	0	0	3	3
4.		Elective - III	3	0	0	3	3
Total of Theory						**12**	**12**

B. PRACTICAL:

B. PRACTICAL							
	Code	**Subjects**	**Contacts (periods/week)**				**Credit points**
			L	T	P	Total	
1.	ME 891	Industrial Engineering Laboratory	0	0	3	3	2
Total of Practical						**3**	**2**

C. SESSIONAL:

C. SESSIONAL							
	Code	**Subjects**	**Contacts (periods/week)**				**Credit points**
			L	T	P	Total	
1.	ME 898	Project / Thesis with defence of project	0	0	12	12	8
2.	ME 881	Participation in Institutional Activities					2
3.	ME 899	Comprehensive Viva-Voce					4
Total of Sessional						**12**	**14**
Total of 8th Semester						**27**	**28**

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Narula Institute of Technology

Department of Mechanical Engineering

Curriculum for B.TECH (ME)

Curricular Regulation 2018 (R18)
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Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Revised Curriculum Structure (to be effective from 2018-19 admission batch)

Department: Mechanical Engineering

Curriculum for B.Tech

Under Autonomy (GR A: ECE, EE, EIE, BME; GR B: CSE, IT, ME, CE,FT)

1st Semester								
Sl No	Course Type	Course Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	M 101	Mathematics -I	3	1	0	4	4
2	BS	CH 101/ PH 101	Chemistry (Gr. A) / Physics- I (Gr. B)	3	0	0	3	3
3	ES	EE 101/ EC 101	Basic Electrical Engineering (Gr. A) / Basic Electronics Engineering (Gr. B)	3	0	0	3	3
4	HS	HU 101	English	2	0	0	2	2
			Total of Theory				**12**	**12**
B. PRACTICAL								
5	BS	CH 191/ PH191	Chemistry Lab (Gr. A) / Physics- I Lab (Gr. B)	0	0	3	3	1.5
6	ES	EE 191/ EC 191	Basic Electrical Engineering Lab (Gr. A) / Basic Electronics Engineering Lab (Gr. B)	0	0	3	3	1.5
7	ES	ME 191/ ME 192	Engineering Graphics & Design (Gr A) / Workshop/Manufacturing Practices (Gr-B)	0	0	3	3	1.5
8	PROJ	PR 191	PROJECT-IA	0	0	1	1	0.5
9	PROJ	PR 192	PROJECT-IB	0	0	1	1	0.5
C. MANDATORY ACTIVITIES / COURSES								
10	MC	MC 181	Induction Program	0	0	0	0	
Total of Theory, Practical & Mandatory Activities/Courses							**22**	**17.5**

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

2nd Semester								
Sl No	Course Type	Course Code	Theory	Credit Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	M 201	Mathematics -II	3	1	0	4	4
2	BS	CH 201/ PH 201	Chemistry - (Gr. B) / Physics – I (Gr. A)	3	0	0	3	3
3	ES	EE 201/ EC 201	Basic Electrical Engineering (Gr. B) / Basic Electronics Engineering (Gr. A)	3	0	0	3	3
4	ES	CS 201	Programming for Problem Solving	3	0	0	3	3
5	ES	ME 201	Engineering Mechanics	3	0	0	3	3
Total of Theory							**16**	**16**
B. PRACTICAL								
6	ES	CS291	Programming for Problem Solving Lab	0	0	3	3	1.5
7	BS	CH 291/ PH 291	Chemistry Lab (Gr. B) / Physics - I Lab (Gr. A)	0	0	3	3	1.5
8	ES	EE 291/ EC 291	Basic Electrical Engineering Lab (Gr. B) / Basic Electronics Engineering Lab (Gr. A)	0	0	3	3	1.5
9	ES	ME 291/ ME 292	Engineering Graphics & Design (Gr B) / Workshop/Manufacturing Practice (Gr-A)	0	0	3	3	1.5
10	HS	HU 291	Language Lab	0	0	2	2	1
11	PROJ	PR 291	Project-II	0	0	1	1	0.5
12	PROJ*	PR 292	Innovative activities-I	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
13	MC	MC 281	NSS/ Physical Activities/Meditation & Yoga/Photography/ Nature Club	0	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							**34**	**24**

* Inter/ Intra Institutional Activities viz; Training with higher Institutions; Soft skill training organized by Training and Placement Cell of the respective institutions; contribution at incubation/ innovation /entrepreneurship cell of the institute; participation in conferences/ workshops/ competitions etc.; Learning at Departmental Lab/ Tinkering Lab/ Institutional workshop; Working in all the activities of Institute's Innovation Council for eg: IPR workshop/Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc. (evaluation by Programme Head through certification)

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

3rd Semester								
SL No	Course Type	Course Code	Theory	Contact Hours/Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PC	ME 301	Engineering Thermodynamics	3	0	0	3	3
2	PC	ME 302	Strength of Material	3	0	0	3	3
3	PC	ME 303	Fluid Mechanics	3	0	0	3	3
4	PC	ME 304	Materials Engineering	3	0	0	3	3
5	BS	M 301	Mathematics -III	3	1	0	4	4
6	BS	PH(ME)301	Physics - II	3	0	0	3	3
Total of Theory							**19**	**19**
B. PRACTICAL								
7	PC	ME 391	Material Testing Lab	0	0	3	3	1.5
8	PC	ME 392	Machine Drawing	0	0	3	3	1.5
9	BS	PH(ME)391	Physics – II Lab	0	0	2	2	1
10	PROJ	PR 391	Project-III	0	0	2	2	1
11	PROJ*	PR 392	Innovative activities-II	0	0	0	1	0.5
C. MANDATORY ACTIVITIES / COURSES								
12	MC	MC 301	Environmental Science	3	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							**32**	**24.5**

*Students may choose either to work on participation in all the activities of Institute's Innovation Council for eg: IPR workshop/ Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc.

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

4th Semester								
Sl No	Course Type	Course Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PC	ME401	Fluid Machinery	3	0	0	3	3
2	PC	ME402	Manufacturing Process	3	0	0	3	3
3	PC	ME403	Kinematics &Dynamics of Machines	3	0	0	3	3
4	PC	ME404	Applied Thermodynamics	3	0	0	3	3
5	ES	ME405	Data Structure and algorithm	2	0	0	2	2
6	ES	M(ME)401	Numerical Methods	2	0	0	2	2
Total of Theory							**16**	**16**
B. PRACTICAL								
7	PC	ME491	Fluid Mechanics & Fluid Machines Lab	0	0	3	3	1.5
8	PC	ME492	Manufacturing Process Lab	0	0	3	3	1.5
9	PC	ME493	Dynamics of Machine Lab	0	0	3	3	1.5
10	PROJ	PR 491	Project-IV	0	0	2	2	1
11	PROJ*	PR 492	Innovative activities-III	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
12	MC	MC401	Constitution of India	3	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							**30**	**22**

*Students may choose either to work on participation in all the activities of Institute's Innovation Council for eg: IPR workshop/ Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc.

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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81, Nilgunj Road, Agarpara, Kol-109

5th Semester								
Sl No	Course Type	Course Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PC	ME 501	Heat Transfer	3	0	0	3	3
2	PC	ME 502	Manufacturing Technology	3	0	0	3	3
3	PC	ME 503	Design of Machine Elements	3	0	0	3	3
4	PC	ME 504	Refrigeration and Air Conditioning	3	0	0	3	3
5	PE	ME 505	A. Composite Materials B. Solid Mechanics C. Computer Aided Design	3	0	0	3	3
Total of Theory							**15**	**15**
B. PRACTICAL								
6	PC	ME591	Heat Transfer and Refrigeration Lab	0	0	3	3	1.5
7	PC	ME592	Manufacturing Technology Lab	0	0	3	3	1.5
8	PROJ	PR 591	Project-V	0	0	2	2	1
9	PROJ*	PR 592	Innovative activities-IV	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
10	MC	MC 581	Technical Seminar Presentation	0	0	3	3	
Total of Theory, Practical & Mandatory Activities/Courses							**26**	**19.5**

* Students may choose either to work on participation in Hackathons etc. Development of new product/ Business Plan/ registration of start-up.

Students may choose to undergo Internship / Innovation / Entrepreneurship related activities. Students may choose either to work on innovation or entrepreneurial activities resulting in start-up or undergo internship with industry/ NGO's/ Government organizations/ Micro/ Small/ Medium enterprises to make themselves ready for the industry/ Long Term goals under rural Internship. (Duration 4-6 weeks)

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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6th Semester								
Sl No	Course Type	Course Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PC	ME601	Internal Combustion Engine and Gas Turbine	3	0	0	3	3
2	PE	ME602	A. Power Plant Engineering B. Fluid Power control C. Total Quality Management	3	0	0	3	3
3	OE	ME 603	A. Electrical Machines B. Data Base Management System C. Internet Of Things	3	0	0	3	3
4	OE	ME 604	A. Mechatronics Systems B. Computational Fluid Dynamics C. Finite Element Analysis	3	0	0	3	3
5	HS	HU601	Values & Ethics in Profession	2	0	0	2	2
			Total of Theory				**14**	**14**
B. PRACTICAL								
6	PC	ME 691	Internal Combustion Engine Lab	0	0	3	3	1.5
7	OE	ME692	A. Mechatronics Systems Lab B. Computational Fluid Dynamics Lab C. Finite Element Analysis Lab	0	0	3	3	1
7	PROJ	PR 691	Project-VI**	0	0	2	2	1
8	PROJ*	PR 692	Innovative activities-V	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
10	MC	MC 681	Group Discussion	0	0	3	3	
			Total of Theory, Practical & Mandatory Activities/Courses				**22**	**18**

*Students may choose either to work on participation in all the activities of Institute's Innovation Council for eg: IPR workshop/ Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc.

** Design and Modelling of 3D Machine Elements using AUTOCAD/SOLIDWORKS/CATIA/CREO

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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7th Semester								
Sl No	Course Type	Course Code	Theory	Contact Hours/Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	HS	HU 704	Principle of Management	2	0	0	2	2
2	PC	ME 701	Advanced Manufacturing Technology	3	0	0	3	3
3	PE	ME 702	A. Materials Handling B. Design Of Transmission System C. Nuclear Power Generation & Supply	3	0	0	3	3
4	PE	ME 703	A. Renewable Energy System B. Tribology C. Reliability & Maintenance	3	0	0	3	3
5	OE	ME 704	A. Operation Research B. Robotics C. Biomechanics & Biomaterials	3	0	0	3	3
			Total of Theory				**14**	**14**
B. PRACTICAL								
6	PC	ME 791	CNC Machine & Robotics Lab	0	0	3	3	1.5
7	PROJ	PR 791	Project-VIIA**	0	0	3	3	1.5
8	PROJ	PR 792	Project-VIIB	0	0	6	6	3
9	PROJ*	PR 793	Innovative activities-VI	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
10	MC	MC 781	Behavioural and Interpersonal Skills	0	0	3	3	
			Total of Theory, Practical & Mandatory Activities/Courses				**29**	**20.5**

*Students may choose either to work on participation in Hackathons etc. Development of new product/ Business Plan/ registration of start-up.

Students may choose to undergo Internship / Innovation / Entrepreneurship related activities. Students may choose either to work on innovation or entrepreneurial activities resulting in start-up or undergo internship with industry/ NGO's/ Government organizations/ Micro/ Small/ Medium enterprises to make themselves ready for the industry/ Long Term goals under rural Internship. (Duration 4-6 weeks)

Innovative activities to be evaluated by the Programme Head / Event Coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

** PR791A - Part Modelling, Assembly, Simulation of Mechanical Systems based on Structural and Thermal Hydraulic analysis using ANSYS/SOLIDWORKS/CATIA/NASTRAN/SOLIDEDGE or similar software

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8th Semester								
Sl No	Course Type	Course Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	HS	HU 803	Industrial & Financial Management	2	0	0	2	2
2	PE	ME 801	A. Automobile Engineering B. Turbomachinery C. Gas Dynamics & Jet Propulsion	3	0	0	3	3
3	OE	ME802	A. 3D Printing and Design B. Nanotechnology C. Industrial Instrumentation	3	0	0	3	3
4	OE	ME803	A. Artificial Intelligence B. Safety & Occupational Health C. Microprocessor in Automation	3	0	0	3	3
Total of Theory							**11**	**11**
B. PRACTICAL								
5	PROJ	PR 891	Project-VIII	0	0	0	6	3
C. MANDATORY ACTIVITIES / COURSES								
6	MC	MC 801	Essence of Indian Knowledge Tradition	3	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							**20**	**14**

Mandatory Credit Point=160

Total Credit = (17.5+24+24.5+22+19.5+18+20.5+14) = 160

For Honors additional 20 Credit Point is to be earned (1st Sem to 8th Sem) through MOOCs courses. All the Certificates received by the students across all semester for MOOCs Courses from approved organization (Appendix A) is to be submitted to COE office prior to 8th Semester Examination.

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Narula Institute of Technology

Department of Computer Science and Engineering

Curriculum for M.TECH (CSE)

Curricular Regulation 2015 (R15)
under Maulana Abul Kalam Azad
University of Technology,

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The New unified Syllabus for both CSe & IT are to b…rily followed from the session 2013-14.Details of some electives are yet to be received for approval by BoS. The…can only be offered after the details are approved by BoS & uploaded on the University website. No ele…than those listed & detailed are to be offered.

M.Tech. Computer Science & Engineering

Semester - 1

Sr. No:	Paper Code	Paper Name	Class Hours			Credit
Sr. No:	Paper Code	**Theory**	L	T	P	Cr. Pt.
1	PGCSE101	Advanced Engineering Mathematics [Compusory]	3	1	0	4
2	PGCSE102	Advanced Operating System [Compulsory]	4	0	0	4
3	PGCSE103	Advanced Computer Architecture [Compulsory]	4	0	0	4
4	PGCSE104	Advanced Algorithms [Compulsory]	4	0	0	4
5	PGCSE105	Elective - I A) Artificial Neural Networks B) Agent Based Intelligent Systems C) Advanced Soft Computing D) Object Oriented Information System Design E) **Software Engineering & CASE tools** F) **Computer Graphics & Multimedia**	4	0	0	4
		Total	19	1	0	**20**
		Practical				
6	PGCSE191	Operating System Laboratory [Compulsory]	0	0	3	2
7	PGCSE192	A) Advanced Programming Lab	0	0	3	2
		Total	0	0	6	**4**
		Seminar				
8	PGCSE193	Seminar – Based on literature survey	0	2	0	**1**
		Total	19	3	6	**25**

Semester - 2

Sr. No:	Paper Code	Paper Name	Class Hours			Credit
		Theory	L	T	P	
1	PGCSE201	Advanced DBMS [Compulsory]	4	0	0	4
2	PGCSE202	Advanced Computer Network & Security [Compulsory]	4	0	0	4
3	PGCSE203	Theory of Computation [Compulsory]	4	0	0	4
4	PGCSE204	Elective - I I A) **Cluster, Grid and Cloud Computing** B) Mobile Computing C) Advanced Web Technology D) Soft Computing E) Cryptography & Computer Security	4	0	0	4

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5	PGCSE205	Elective - III A) Image Processing B) Pattern Recognition C) Real-time Embedded Systems & Programming D) Complex Systems E) Distributed System Principle	4	0	0	4
		Total	20	0	0	**20**
		Practical				
6	PGCSE291	Part-I – Computer Networking & DBMS Laboratory [Compulsory]	0	0	3	2
		Total	0	0	3	**2**
		Seminar & Viva				
7	PGCSE292	Seminar – Term paper leading to project.	0	2	0	1
8						
		Total	20	2	6	**23**

Semester - 3

Sr. No:	Paper Code	Paper Name	lass Hou s			Credit
		Theory	L	T	P	
1	PGCSE301 Management	A: Project Management & Enterpreneurship B: Teaching & Research Methodologies	4	0	0	4
2	PGCSE302	Elective - IV A) Human Computer Interaction B) Bioinformatics C) Data Mining & Data Ware Housing D) Compiler Construction E) VLSI Design	4	0	0	4
		Total	8	0	0	**8**
		Project				
3	PGCSE393	Project – Part 1 (Dissertation I + Defence of Project - I)	0	0	18	4+8=12
		Total	8	0	18	**20**

Semester - 4

Sr. No:	Paper Code	Paper Name	lass rs ou			Credit
		Project	L	T	P	

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1	PGCSE491	Project – Part II (Dissertation II + Defence of Project - II)	0	0	24	6+18= 24
2	PGCSE481	Comprehensive Viva Voce				4
		Total	0	0	24	**28**

Total credits = 96

PGCSE101: Advanced Engineering Mathematics

Compulsory:

Module I

Numerical Analysis:

Introduction to Interpolation formulae: Stirling, Bessel's, Spline. **Solutions of system of linear and non-linear simultaneous equations**: SOR algorithm, Newton's method, (8 **L**)

Module II

Stochastic process:

Probability: review, random variables, random processes, Random walk, brownian motion, markov process, queues: (M/M/1) : (• /FIFO), (M/M/1) : (N/FIFO). (**8 L**)

Module III

Advanced linear algebra:

Vector spaces, linear transformations, eigenvalues, Eigenvectors, some applications of eigenvalue problems, symmetric, skew-symmetric And orthogonal matrices, similarity of matrices, basis of Eigen vectors, diagonalisation. **(8L)**

Module IV

Advanced Graph Theory:

Connectivity, Matching, Hamiltonian Cycles, Coloring Problems, Algorithms for searching an element in a data structure (DFS, BFS). (**8 L**)

Optional:

Module V

A: Complex Variables: Review of Complex variables, Conformal mapping and transformations, Functions of complex variables, Integration with respect to complex argument, Residues and basic theorems and applications of residues. (8L) **Module - V**

B: Combinatorics: Basic Combinatorial Numbers, Generating Functions and Recurrence Relations, InclusionExclusion Principles **(8L)**

Module V

C: Optimization Technique: Calculus of several variables, Implicit function theorem, Nature of singular points, Necessary and sufficient conditions for optimization, Elements of calculus of variation, Constrained Optimization, Lagrange multipliers, Gradient method, Dynamic programming. (8L)

Module – V

D: Fourier series and Transform: Revision of Fourier series, integrals and transforms and their properties. The 2dimensional fourier transform, convolution theorem, Parseval's formula, discrete fourier transform, fast fourier transform **(8L) Module V**

E: Z-transforms: sequence, representation of sequence, basic operations on Sequences, z-transforms, properties of ztransforms, change on scale, shifting Property, inverse z-transform, solution of difference equations, region of Convergence, bilinear (s to z) transform **(8L)**

Module V

F: Walsh function and hadamard transform: generating walsh functions of Order n, characteristics and applications of walsh function, hadamard Matrix, properties, fast hadamard transform, applications**(4L)** Wavelet transform**:** fundamentals, the fourier transform and the short term Fourier transform, resolution problems, multi-resolution analysis, the Continuous wavelet transform, the discrete wavelet transform**(4L)**

References books:

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Narula Institute of Technology

Department of Electronics and Communication Engineering

Curriculum for

M.TECH (ECE)

Curricular Regulation 2015 (R15)

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M. Tech – ECE (Communication)
For all institutes affiliated to
West Bengal University of Technology

1st semester

Theory:							
Code	Subject	Contacts periods per week				Full marks	Credit
		L	T	P	Total		
MCE 101	Advanced Engg. Math.	3	1	0	4	100	4
MCE102	**Compulsory:** Advanced digital communication	4	0	0	4	100	4
MCE103	**Compulsory:** Advanced digital signal processing	4	0	0	4	100	4
MCE104	**Compulsory:** Advanced microwave communication engineering	4	0	0	4	100	4
MCE105	**Elect I:** A. Computer communication & networking B. Telecommunication engineering C. Statistical communication D. Microwave applications E. Remote sensing techniques & applications.	4	0	0	4	100	4
	Total of theory				**20**	**500**	**20**
Practical							
MCE191	**Lab I:** Advanced communication Lab	0	0	3	3	100	2
MVE193	**Lab II:** Design and Simulation Lab	0	0	3	3	100	2
	Total of practical				**6**	**200**	**4**
Sessional							
MCE183	Seminar I	0	2	0	2	100	1
	Total credit of 1st semester:				**28**	**800**	**25**

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M. Tech – ECE (Communication)
For all institutes affiliated to
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2nd semester

Theory:							
Code	**Subject**	**Contacts periods per week**				**Full marks**	**Credit**
		L	**T**	**P**	**Total**		
MCE 201	**Compulsory:** Photonics and Optical Communication	4	0	0	4	100	4
MCE 202	**Compulsory:** Error control coding	4	0	0	4	100	4
MCE 203	**Compulsory:** Mobile communication	4	0	0	4	100	4
MCE 204	**Elect II:** A. Cryptography & network security B. Artificial intelligence & soft computing C. Integratable circuits & Design D. Microwave measurement Techniques	4	0	0	4	100	4
MCE 205	**Elect III:** A. Satellite communication B. Image processing & pattern recognition C. Multimedia communication D. Advanced antenna and wave propagation	4	0	0	4	100	4
	Total of theory				**20**	**500**	**20**
Practical							
MCE 291	**Lab III:** Communication systems Lab	0	0	3	3	100	2
Sessional							
MCE 281	Term paper leading to thesis	0	2	0	2	100	1
	Total credit of 2nd semester:				**25**	**700**	**23**

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M. Tech – ECE (Communication)
For all institutes affiliated to
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3rd semester

Theory:							
Code	**Subject**	**Contacts periods per week**				**Full marks**	**Credit**
		L	**T**	**P**	**Total**		
MCE 301	**Compulsory:** PROJECT DEVELOPMENT AND RESOURCE MANAGEMENT	4	0	0	4	100	4
MCE 302	**Elect IV:** A. EMI/EMC B. Ad-hoc networking C. Optical signal processing D. Convergence in communication technology	4	0	0	4	100	4
Sessional							
MCE 381	Dissertation (Part-I)				24	100	4
MCE 382	Defense of dissertation (Part-I)					100	8
	Total credit of 3rd semester:				**32**	**400**	**20**

4TH semester

Sessional:							
Code	**Subject**	**Contacts periods per week**				**Full marks**	**Credit**
		L	**T**	**P**	**Total**		
Sessional							
MCE 481	Dissertation (Completion)				24	100	6
MCE 482	Post-submission defense of dissertation					100	18
MCE 483	Comprehensive Viva-Voce					100	4
	Total credit of 4th semester:				**24**	**300**	**28**
	Grand Total of credits:						**96**

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Department of Electronics and Communication Engineering

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Curricular Regulation 2016 (R16)
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Narula Institute of Technology
Department of Electronics & Communication Engineering
Curriculum of M Tech in ECE
(Total Credit: 90)

1st Semester

Code	Subject	Contacts periods per week				Credit
		L	T	P	Total	
MECE 101	Advanced Engineering mathematics	3	0	0	3	3
MECE 102	Advanced Digital communication	3	1	0	4	4
MECE 103	Digital filters design and its applications	3	1	0	4	4
MECE 104	Advanced RF & Microwave Engineering	3	1	0	4	4
MECE 105	Computational Intelligence	3	0	0	3	3
MECE 106	A. Satellite communication B. Communication networks C. Embedded System	3	0	0	3	3
MECE 192	Advanced communication lab	0	0	3	3	2
MECE 193	Digital signal processing lab	0	0	3	3	2
MECE 194	Advanced RF & Microwave Engineering Lab	0	0	3	3	2
						27

2nd Semester

Code	Subject	Contacts periods per week				Credit
		L	T	P	Total	
MECE 201	EMI/EMC	3	1	0	4	4
MECE 202	Wireless communication	3	1	0	4	4
MECE 203	Secure Communication& Coding	3	1	0	4	4
MECE 204	Remote sensing techniques & applications.	3	1	0	4	4
MECE 205	A. Image processing & Pattern recognition B. Computer Vision C. Detection and Estimation Theory	3	0	0	3	3
MECE 206	A. Optical fibre communication B. Ad-hoc networking C. Multimedia Communication	3	0	0	3	3
MECE 291	Coding & cryptography lab	0	0	3	3	2
MECE 292	Wireless communication lab	0	0	3	3	2
MECE 293	A. Image processing & Pattern Recognition Lab B. Advanced Simulation Lab	0	0	3	3	2
						28

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3rd Semester

Code	Subject	Contacts periods per week				Credit
		L	T	P	Total	
MECE 301	Research Methodology	3	0	0	3	2
MECE 391	Technical Seminar	0	0	3	3	2
MECE 392	Computational Intelligence Lab	0	0	3	3	2
MECE 393	Thesis Part-I	0	0	3	3	10
		0	**0**	**9**	**9**	**16**

4th Semester

Code	Subject	Contacts periods per week				Credit
		L	T	P	Total	
MECE 491	Thesis Part-II	0	0	3	3	10
MECE 492	Comprehensive Viva Voce	0	0	0	0	9
	Total	**0**	**0**	**3**	**3**	**19**
	Total Credit (Sem: I+II+III+IV) =90					

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Narula Institute of Technology

Department of Master of Computer Application

Curriculum for

MCA

Curricular Regulation 2016 (R16)
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NARULA INSTITUTE OF TECHNOLOGY
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Narula Institute of Technology
Department of Computer Applications

Course Curriculum & Syllabus of Master of Computer Application (MCA) Program

First Semester							
SN	Course Code	Course Name	Contact Hours/Week				Credits
			L	T	P	Total	
THEORY							
1	MCA 101	Computer Organization & Architecture	3	1	-	4	4
2	MCA 102	System Analysis & System Programming	3	1	-	4	4
3	MCA 103	Programming with C	3	1	-	4	4
4	MCA 104	Discrete Mathematical Structures & Graph Theory	3	1	-	4	4
5	HU 101	Business English & Communication	3	1	-	4	4
PRACTICAL							
6	MCA 191	Computer Architecture & Microprogramming Lab	-	-	4	4	3
7	MCA 193	C Language Lab	-	-	4	4	3
8	HU 191	Business English & Communication Lab	-	-	4	4	3
		Total				32	29

Second Semester							
SN	Course Code	Course Name	Contact Hours/Week				Credits
			L	T	P	Total	
THEORY							
1	MCA 201	Data Communication & Computer Networks	3	1	-	4	4
2	MCA 202	Software Engineering & TQM	3	1	-	4	4
3	MCA 203	Data Structures & Algorithms	3	1	-	4	4
4	MCA 204	Operating Systems	3	1	-	4	4
5	MCA 205	Statistical & Numerical Methods	3	1	-	4	4
PRACTICAL							
6	MCA 293	Data Structure & Algorithm Lab	-	-	4	4	3
7	MCA 294	Operating Systems Lab	-	-	4	4	3
8	MCA 295	Statistical & Numerical Computing Lab	-	-	4	4	3
SESSIONAL							
9	MCA 280 *	Technical Communication	-	-	-	-	0
		Total				32	29

* Qualifying/Mandatory Paper

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Department of Computer Applications

Third Semester							
SN	Course Code	Course Name	Contact Hours/Week				Credits
			L	T	P	Total	
THEORY							
1	MCA 301	UNIX & Shell Programming	3	1	-	4	4
2	MCA 302	Database Management System	3	1	-	4	4
3	MCA 303	Object Oriented Programming Using C++	3	1	-	4	4
4	MCA 304	Operation Research & Optimization Techniques	3	1	-	4	4
5	MBA 301	Management & Accountancy	3	1	-	4	4
PRACTICAL							
6	MCA 391	UNIX & Shell Programming Lab	-	-	4	4	3
7	MCA 392	Database Management System Lab	-	-	4	4	3
8	MCA 393	Object Oriented Programming Using C++ Lab	-	-	4	4	3
SESSIONAL							
	MCA 380*	Technical Seminar	-	-	-	-	0
		Total				32	29

* Qualifying/Mandatory Paper

Fourth Semester							
SN	Course Code	Course Name	Contact Hours/Week				Credits
			L	T	P	Total	
THEORY							
1	MCA 401	Formal Language and Automata Theory	3	1	-	4	4
2	MCA 402	Computer Graphics & Multimedia	3	1	-	4	4
3	MCA 403	Programming with Java	3	1	-	4	4
4	MCA 404	Artificial Intelligence	3	1	-	4	4
5	HU 401	Values & Ethics	3	1	-	4	4
PRACTICAL							
6	MCA 492	Computer Graphics & Multimedia Lab	-	-	4	4	3
7	MCA 493	Java Lab	-	-	4	4	3
8	MCA 495	Visual Basic Lab	-	-	8	8	4
		Total				36	30

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Narula Institute of Technology
Department of Computer Applications

Fifth Semester								
SN	Course Code	Course Name	Contact Hours/Week				Credits	
			L	T	P	Total		
THEORY								
1	MCA 501	Distributed System	3	1	-	4	4	
2	MCA E 502 A/B/C	Elective – 1	3	1	-	4	4	
3	MCA E 503 A/B/C	Elective – 2	3	1	-	4	4	
4	MCA E 504 A/B/C	Elective – 3	3	1	-	4	4	
5	MCA E 505 A/B/C	Elective – 4	3	1	-	4	4	
PRACTICAL								
6	MCA E 592 A/B/C	Elective – 1 Lab	-	-	4	4	3	
7	MCA 596	Minor Project	-	-	8	8	6	
8	MCA 580*	Group Discussion	-	-	-	-	0	
Total						32	29	

* Qualifying/Mandatory Paper

Sixth Semester							
SN	Course Code	Course Name	Contact Hours/Week				Credits
			L	T	P	Total	
1	MCA 691	Major Project	-	-	30	30	30
2	MCA 692	Grand Viva	-	-	-	-	4
Total						30	34

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Elective Courses		
Elective Number	**Course Code**	**Course Name**
1	MCAE 502A	Advanced Java Technologies
	MCAE 502B	Python Programming
	MCAE 502C	Linux System Administration
2	MCAE 503A	Computational Intelligence
	MCAE 503B	Mobile Computing
	MCAE 503C	Compiler Design
3	MCAE 504A	E-commerce & Cyber-Law
	MCAE 504B	Big Data
	MCAE 504C	Image Processing
4	MCAE 505A	Network Security & Cryptography
	MCAE 505B	Cloud Computing
	MCAE 505C	Internet of Things

Elective - 1 Lab		
Elective Number	**Course Code**	**Course Name**
1	MCAE 592A	Advanced Java Technologies Lab
	MCAE 592B	Python Programming Lab
	MCAE 592C	Linux System Administration Lab

Semester	Credits
Semester-I	29
Semester-II	29
Semester-III	29
Semester-IV	30
Semester-V	29
Semester-VI	34
Total	**180**

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Narula Institute of Technology

Department of Master of Computer Application

Curriculum for

MCA

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COURSE STRUCTURE FOR MCA

FIRST SEMESTER

A. THEORY							
SL. NO.	CODE	THEORY	CONTACTS (PERIODS/WEEK)				CREDITS
			L	T	P	TOTAL	
1	MCA101	Computer Organisation & Architecture	3	1	-	4	4
2	MCA102	Business Systems and Applications	3	1	-	4	4
3	MCA103	Computer Programming with C	3	1	-	4	4
4	MM101	Discrete Mathematical Structure	3	1	-	4	4
5	HU101	Business English and Communication	3	1	-	4	4
Total of Theory						**20**	**20**
B. PRACTICAL							
6	MCA191	Micro Programming & Architecture Lab	-	-	4	4	3
7	MCA193	Programming lab (C)	-	-	4	4	3
8	HU191	Business presentation and language lab	-	-	4	4	3
Total of Practical						**12**	**9**
Total of Semester			**32**				**29**

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COURSE STRUCTURE FOR MCA

SECOND SEMESTER

A. THEORY							
SL. NO.	CODE	THEORY	CONTACTS (PERIODS/WEEK)				CREDITS
			L	T	P	TOTAL	
1	MCA201	Data Communication & Computer Networks	3	1	-	4	4
2	MCA202	Information Systems Analysis & Design	3	1	-	4	4
3	MCA203	Data Structures with C	3	1	-	4	4
4	MCA204	Data Base Management System I	3	1	-	4	4
5	MCA205	Object-Oriented Programming With C++	3	1	-	4	4
Total of Theory						**20**	**20**
B. PRACTICAL							
6	MCA293	Data structure lab	-	-	4	4	3
7	MCA294	Database lab	-	-	4	4	3
8	MCA295	Object-Oriented Programming lab (C++)	-	-	4	4	3
Total of Practical						**12**	**9**
Total of Semester			**32**				**29**

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COURSE STRUCTURE FOR MCA

Third Semester

A. THEORY							
SL. NO.	CODE	THEORY	CONTACTS (PERIODS/WEEK)				CREDITS
			L	T	P	TOTAL	
1	MCA301	Operating Systems and Systems Software	3	1	-	4	4
2	MCA302	Unix and Shell Programming	3	1	-	4	4
3	MCA303	Intelligent Systems	3	1	-	4	4
4	MM301	Statistics and Numerical Techniques	3	1	-	4	4
5	MBA301	Business Management	2	-	-	2	2
6	MBA302	Management Accounting	2	-	-	2	2
Total of Theory						**20**	**20**
B. PRACTICAL							
7	MCA392	Unix lab	-	-	4	4	3
8	MM 391	Statistics and Numerical Analysis lab	-	-	4	4	3
9	MBA392	Accounting Systems lab	-	-	4	4	3
Total of Practical						**12**	**9**
Total of Semester			**32**				**29**

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COURSE STRUCTURE FOR MCA

Fourth Semester

A. THEORY							
SL. NO.	CODE	THEORY	CONTACTS (PERIODS/WEEK)				CREDITS
			L	T	P	TOTAL	
1	MCA401	Software Engineering & TQM	3	1	-	4	4
2	MCA402	Graphics & Multimedia	3	1	-	4	4
3	MCA403	Data Base Management System II	3	1	-	4	4
4	MM401	Operation Research & Optimisation Techniques	3	1	-	4	4
5	HU401	Environment and Ecology	3	-	-	3	3
Total of Theory						**19**	**19**
B. PRACTICAL							
6	MCA491	Software Project Management lab	-	-	4	4	3
7	MCA492	Graphics & Multimedia Lab	-	-	4	4	3
8	MCA493	Advanced Database lab	-	-	4	4	3
Total of Practical						**12**	**9**
Total of Semester			**31**				**28**

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COURSE STRUCTURE FOR MCA

Fifth Semester

A. THEORY							
SL. NO.	CODE	THEORY	CONTACTS (PERIODS/WEEK)				CREDITS
			L	T	P	TOTAL	
1	MCA E501/A/B/C	Elective 1	3	1	-	4	4
2	MCA E502/A/B	Elective 2	3	1	-	4	4
3	MCA E503/A/B	Elective 3	3	1	-	4	4
4	MCA E504/A/B	Elective 4	3	1	-	4	4
5	HU501	Values and Ethics of Profession	3	-	-	3	3
Total of Theory						**19**	**19**
B. PRACTICAL							
6	MCA E592/A/B	Elective 2 Lab	-	-	4	4	3
7	MCA591	Minor project and seminar	-	-	12	12	9
Total of Practical						**16**	**12**
Total of Semester			**35**				**31**

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COURSE STRUCTURE FOR MCA

Sixth Semester

A. THEORY							
SL. NO.	CODE	THEORY	CONTACTS (PERIODS/WEEK)				CREDITS
			L	T	P	TOTAL	
			0	0	-	0	0
Total of Theory						0	0
B. PRACTICAL							
1	MCA691	Major project and seminar	-	-	36	36	29
Total of Practical						36	29
Total of Semester			36				29

Electives for Semesters 5

Elective No	Course Code	Topic
2	MCA E502A	System Administration and Linux
	MCA E502B	Windows Programming With VB
3	MCA E503A	Advanced Unix programming
	MCA E503B	Object Oriented Programming With Java
4	MCA E504A	Compiler Design
	MCA E504B	E-Commerce
1	MCA E501A	Distributed database management
	MCA E501B	Image Processing
	MCA E501C	Parallel Programming

Summary

Semester No	Contact hr/wk	Credit
1	32	29
2	32	29
3	32	29
4	31	28
5	35	31
6	36	29
Total		175

Semester duration: 15 weeks

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Department of Civil Engineering

Curriculum for

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Course Structure & Curriculum
For
M. Tech Course
in
STRUCTURAL ENGINEERING
CURRICULUM STRUCTURE

FIRST SEMESTER

A. THEORY

Sl. No.	Code	Subjects	Contacts (Period / Week)				Credits
			L	T	P	Total	
1.	SE (CE) 101	Advanced Engineering Mathematics	3	1	0	4	4
2.	SE102	Industrial Management	4	0	0	4	4
3.	SE103	Advanced Structural Analysis	4	0	0	4	4
4.	SE104	Soil Structure Interaction	4	0	0	4	4
5.	SE105	Elective - I	4	0	0	4	4
Total of Theory						20	20

B. LABORATORY / PRACTICAL

Sl. No.	Code	Subjects	Contacts (Period / Week)				Credits
			L	T	P	Total	
6.	SE191	Structural Laboratory I	0	0	3	3	2
7.	SE192	CAD LAB	0	0	3	3	2
8.	SE181	Seminar - I	0	2	0	2	1
Total of Practical/Laboratory						8	5
Total of Semester						28	25

Elective – I: **One subject to be chosen from the following subjects.**

Code	Subjects
SE105A	Bridge Engineering
SE105B	Structural Optimisation
SE105C	Repair & Rehabilitation of Structure

SECOND SEMESTER

A. THEORY

Sl. No.	Code	Subjects	Contacts (Period / Week)				Credits
			L	T	P	Total	
1.	SE201	Advanced Structural Design	4	0	0	4	4
2.	SE202	Structural Dynamics & Earthquake Engineering	4	0	0	4	4
3.	SE203	Theory of Elasticity & Plasticity	4	0	0	4	4
4.	SE204	Elective – II	4	0	0	4	4
5.	SE205	Elective – III	4	0	0	4	4
Total of Theory						20	20

B. LABORATORY / PRACTICAL

Sl. No.	Code	Subjects	Contacts (Period / Week)				Credits
			L	T	P	Total	
1.	SE281	Seminar - II	0	2	0	2	1
2.	SE292	Structural Laboratory II	0	0	3	3	2
		Total of Practical/Laboratory				5	3
		Total of Semester				25	23

Elective – II: **One subject to be chosen from the following subjects.**

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Code	Subjects
SE204A	Advanced Foundation Engineering
SE204B	Prestressed Concrete Structures
SE204C	Composite Material & Structures

Elective – III: One subject to be chosen from the following subjects.

Code	Subjects
SE205A	Environmental Impact Assessment
SE205B	Advanced Concrete Technology
SE205C	Construction Technology & Management
SE 205D	Theory of Elastic Stability and Behaviour of Metal Structure

THIRD SEMESTER

A. THEORY

Sl. No.	Code	Subjects	Contacts (Period / Week)				Credits
			L	T	P	Total	
1.	SE381	Pre-submission Defense of Dissertation	0	0	0	0	4
2.	SE382	Dissertation (Progress)	0	0	0	24	18
		Total of Semester				24	22

FOURTH SEMESTER

B. THEORY

Sl. No.	Code	Subjects	Contacts (Period / Week)				Credits
			L	T	P	Total	
1.	SE481	Dissertation (Completion)	0	0	0	24	18
2.	SE482	Post-submission Defense of Dissertation	0	0	0	0	6
	SE282	Comprehensive Exam (Viva-Voce)	0	0	0		4
		Total of Semester				24	28

Total Credit Point: 98

ADVANCED ENGINEERING MATHEMATICS
(CODE: SE (CE) 101)

TOTAL CONTACT HOURS	: 52	INTERNAL ASSESSMENT	: 30
LECTURE	: 39	EXAMINATION	: 70

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Narula Institute of Technology

Department of Electrical Engineering

Curriculum for

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Curricular Regulation 2015 (R15)

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MASTER OF TECHNOLOGY
IN
Power System

COMMON CURRICULUM & SYLLABU

1st Semester

Theory:

Sl. No.	Code	Paper	Contacts periods per week			Total	Credits
1.	EMM101	Advanced Engineering Math.	3	1	0	4	4
2.	PSM 101	Advanced control system	4	0	0	4	4
3.	PSM 102	Power System Analysis	4	0	0	4	4
4.	PSM 103	Power system planning & reliability	4	0	0	4	4
5.	PSM 104	Elective-I (Any one) a) Power plant Instrumentation b) Electric Drive c) Optimization Technique	4	0	0	4	4
		Total of Theory	19	1	0	20	20

Practical:

Sl. No.	Code	Paper	Contacts periods per week			Tota l	Credits
1.	PSM 191	Lab-I (Power System Hardware)	0	0	3	3	2
2.	PSM 192	Lab-II [Introduction to Modern Power System Software (ETAP, Power World Simulation, Mi-Power)]	0	0	3	3	2
3.	PSM 181	Seminar-I	0	0	3	3	2
		Total of Practical			09	09	5
		Total				29	26

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

MASTER OF TECHNOLOGY
IN
Power System

COMMON CURRICULUM & SYLLABU

2nd Semester

Theory:

Sl. No.	Code	Paper	Contacts periods per week			Total	Credits
1.	PSM 201	Power System Operation & Control	4	0	0	4	4
2.	PSM 202	Power System Apparatus	4	0	0	4	4
3.	PSM 203	Power System Protection	4	0	0	4	4
4.	PSM 204	Elective-II (Any one) a) High voltage DC transmission b)Power System Security & State Estimation	4	0	0	4	4
5.	PSM 205	Elective-III (Any one) a) Power system transients b) Power system planning and reliability c) Generation of non conventional energy	4	0	0	4	4
		Total of Theory	20	0	0	20	20

Practical:

Sl. No.	Code	Paper	Contacts periods per week			Total	Credits
1.	PSM 291	Laboratory-III	0	0	3	3	2
2.	PSM 292	Laboratory-IV	0	0	3	3	2
3.	PSM 281	Seminar-II	0	0	3	3	2
		Total of Practical				9	6
		Total	20	00	09	29	26

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MASTER OF TECHNOLOGY
IN
Power System

COMMON CURRICULUM & SYLLABU

3rd Semester

Theory:

Sl. No.	CODE	Paper	Contacts periods Per weeks			Total Contact Hrs	Credits
			L	T	P		
1	EMAN 301	Introduction to Management	4	0	0	4	4
2	PSM 301	Elective IV	4	0	0	4	4
		Total of Theory				8	8

Sessional:

Sl. No.	CODE	Paper	Contacts periods Per weeks			Total Contact Hrs	Credits
			L	T	P		
1	PSM 382	Pre-submission Defense of Dissertation	0	0	0	0	4
2	PSM 381	Dissertation (Part-I)	0	0	0	20	10
		Total of Sessional				20	14
TOTAL OF SEMESTER:						28	22

4th Sem

Sessional:

Sl. No.	CODE	Paper	Contacts periods Per weeks			Total	Credits
1	PEM 481	Dissertation (Completion)	0	0	0	24	14
2	PEM 482	Post-submission Defense of Dissertation	0	0	0	0	8
4.	PSM 483	Comprehensive Viva-Voce					4
						24	26
TOTAL OF SEMESTER:						24	26

Total Credits: 26 + 30 + 22 + 22 = 100

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Department of Electrical Engineering

Curriculum for

M.TECH (Power System)

Curricular Regulation 2016 (R16)
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AUTONOMOUS CURRICULUM
DEPARTMENT OF ELECTRICAL ENGINEERING
NARULA INSTITUTE OF TECHNOLOGY
M.TECH IN ELECTRICAL ENGINEERING - POWER SYSTEM

Course Structure and Scheme of Evaluation

FIRST SEMESTER

SL. NO	SUBJECT CODE	NAME OF THE SUBJECT	HRS/WEEK			TOTAL CONTACT HOURS	CREDITS
			LECTURE	TUTORIAL	PRACTICAL		
		THEORY					
1	EMM 101	Advanced Engineering Mathematics	3	1	0	4	4
2	PSM 101	Advanced Power System Analysis	3	1	0	4	4
3	PSM 102	High Voltage Transmission System	4	0	0	4	4
		Elective I & II					
4	PSM 103B	Power System Apparatus	4	0	0	4	3
5	PSM 104A	Optimization Techniques	4	0	0	4	3
		Total of Theory	**18**	**2**	**0**	**20**	**18**
		SESSIONAL					
1	PSM 191	Lab-I (Power System Hardware)	0	0	3	3	2
2	PSM 192	Lab-II (Familiarization with Power System Simulation Software)	0	0	3	3	2
3	PSM(MC) 101	Seminar – I (3 units)	0	0	3	3	0
		Total of Sessional	**0**	**0**	**9**	**9**	**4**
		Total of Theory & Sessional	**18**	**2**	**9**	**29**	**22**

SECOND SEMESTER

SL. NO.	SUBJECT CODE	NAME OF THE SUBJECT	HRS/WEEK			TOTAL CONTACT HOURS	CREDITS
			LECTURE	TUTORIAL	PRACTICAL		
		THEORY					
1	PSM 201	Power System Operation and Control	3	1	0	4	4
2	PSM 202	Power System Instrumentation	3	1	0	4	4
3	PSM 203	Advanced Power System Protection	4	0	0	4	4
		ELECTIVE-III & IV					
1	PSM 204A	Power System Transients	4	0	0	4	3
2	PSM 205C	Advanced Microprocessor and Microcontroller	4	0	0	4	3
		Total of Theory	**18**	**2**	**0**	**20**	**18**
		SESSIONAL					
1	PSM 291	Lab - III (Power System	0	0	3	3	2

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81, Nilguni Road, Agarpara, Kol-109

		Simulation Lab)					
2	PSM 292	Lab - IV (Power System Simulation Lab)	0	0	3	3	2
3	PSM(MC) 201	Seminar - II	0	0	3	3	0
		Total of Sessional	**0**	**0**	**9**	**9**	**4**
		Total of Theory & Sessional	**20**	**0**	**9**	**29**	**22**

THIRD SEMESTER

SL. NO.	SUBJECT CODE	NAME OF THE SUBJECT	HRS/WEEK			TOTAL CONTACT HOURS	CREDITS
			LECTURE	TUTORIAL	PRACTICAL		
		THEORY					
1	EMM 301	Introduction to Management	2	0	0	2	2
		ELECTIVE-V					
1	PSM 301B	Power System Harmonics	3	0	0	3	3
		Total Theory	**5**	**0**		**5**	**5**
		SESSIONAL					
1	PSM 391	Pre-Submission Defense of Dissertation	0	0	0	0	4
2	PSM 392	Dissertation (Phase-I)	0	0	20	20	10
		Total Sessional	**0**	**0**	**20**	**20**	**14**
		Total of Theory & Sessional	**5**	**0**	**20**	**25**	**19**

FOURTH SEMESTER

SL. NO.	SUBJECT CODE	NAME OF THE SUBJECT	HRS/WEEK			TOTAL CONTACT HOURS	CREDITS
			LECTURE	TUTORIAL	PRACTICAL		
1	PSM 491	Dissertation (Phase-II)	0	0	24	24	14
2	PSM 492	Post-Submission Defense of Dissertation	0	0	0	0	8
3	PSM 294	Comprehensive Viva-Voce	0	0	0	0	4
		Total			**24**	**24**	**26**

Total Credits = 22 + 22 + 19 + 26 = 89

Elective I
i) Power System Planning and Reliability - PSM 103 (a)
ii) Power System Apparatus - PSM 103 (b)
iii) Power Quality - PSM 103 (c)

Elective II
i) Optimization Techniques - PSM 104 (a)
ii) Soft Computing Technique - PSM 104 (b)
iii) Digital Signal Processing - PSM 104 (c)

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iv) Object Oriented Programming - PSM 104 (d)

Elective III
i) Power System Transient – PSM 204 (a)
ii) Flexible A.C. Transmission System - PSM 204 (b)
iii) Advanced Electrical Drives - PSM 204 (c)

Elective IV
i) Advanced Control System- PSM 205 (a)
ii) Modeling and Simulation of dynamic systems - PSM 205 (b)
iii) Advanced Microprocessor and Microcontroller – PSM 205 (c)

Elective V
i) Non-conventional Energy Systems and Microgrid - PSM 301 (a)
ii) Power System Harmonics - PSM 301 (b)
iii) Energy Control Center – Concept & Implementation – PSM 301 (c)

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81, Nilguni Road, Agarpara, Kol-109

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Department of Civil Engineering

Curriculum for

M.TECH (Structural Engineering)

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Course Structure & Curriculum
For
M. Tech Course
in
STRUCTURAL ENGINEERING
CURRICULUM STRUCTURE

FIRST SEMESTER

A. THEORY

Sl. No.	Code	Subjects	Contacts (Period / Week)				Credits
			L	T	P	Total	
1.	SE (CE) 101	Advanced Engineering Mathematics	3	1	0	4	4
2.	SE102	Industrial Management	4	0	0	4	4
3.	SE103	Advanced Structural Analysis	4	0	0	4	4
4.	SE104	Soil Structure Interaction	4	0	0	4	4
5.	SE105	Elective - I	4	0	0	4	4
Total of Theory						20	20

B. LABORATORY / PRACTICAL

Sl. No.	Code	Subjects	Contacts (Period / Week)				Credits
			L	T	P	Total	
6.	SE191	Structural Laboratory I	0	0	3	3	2
7.	SE192	CAD LAB	0	0	3	3	2
8.	SE181	Seminar - I	0	2	0	2	1
Total of Practical/Laboratory						8	5
Total of Semester						28	25

Elective – I: **One subject to be chosen from the following subjects.**

Code	Subjects
SE105A	Bridge Engineering
SE105B	Structural Optimisation
SE105C	Repair & Rehabilitation of Structure

SECOND SEMESTER

A. THEORY

Sl. No.	Code	Subjects	Contacts (Period / Week)				Credits
			L	T	P	Total	
1.	SE201	Advanced Structural Design	4	0	0	4	4
2.	SE202	Structural Dynamics & Earthquake Engineering	4	0	0	4	4
3.	SE203	Theory of Elasticity & Plasticity	4	0	0	4	4
4.	SE204	Elective – II	4	0	0	4	4
5.	SE205	Elective – III	4	0	0	4	4
Total of Theory						20	20

B. LABORATORY / PRACTICAL

Sl. No.	Code	Subjects	Contacts (Period / Week)				Credits
			L	T	P	Total	
1.	SE281	Seminar - II	0	2	0	2	1
2.	SE292	Structural Laboratory II	0	0	3	3	2
		Total of Practical/Laboratory				5	3
		Total of Semester				25	23

Elective – II: **One subject to be chosen from the following subjects.**

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Code	Subjects
SE204A	Advanced Foundation Engineering
SE204B	Structural Reliability
SE204C	Composite Material & Structures

Elective – III: One subject to be chosen from the following subjects.

Code	Subjects
SE205A	Environmental Impact Assessment
SE205B	Advanced Concrete Technology
SE205C	Construction Technology & Management
SE 205D	Theory of Elastic Stability and Behaviour of Metal Structure

THIRD SEMESTER

A. THEORY

Sl. No.	Code	Subjects	Contacts (Period / Week)				Credits
			L	T	P	Total	
1.	SE381	Pre-submission Defense of Dissertation	0	0	0	0	4
2.	SE382	Dissertation (Progress)	0	0	0	24	18
		Total of Semester				24	22

FOURTH SEMESTER

B. THEORY

Sl. No.	Code	Subjects	Contacts (Period / Week)				Credits
			L	T	P	Total	
1.	SE481	Dissertation (Completion)	0	0	0	24	18
2.	SE482	Post-submission Defense of Dissertation	0	0	0	0	6
	SE282	Comprehensive Exam (Viva-Voce)	0	0	0		4
		Total of Semester				24	28

Total Credit Point: 98

ADVANCED ENGINEERING MATHEMATICS
(CODE: SE (CE) 101)

TOTAL CONTACT HOURS	: 52	INTERNAL ASSESSMENT	30
LECTURE	: 39	EXAMINATION	70

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Narula Institute of Technology

Department of Electronics and Communication Engineering

Curriculum & Syllabus for

B.TECH (ECE)

Curricular Regulation 2015 (R15)

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ECE SECOND YEAR: THIRD SEMESTER

Sl.No.	Field	Theory	Contact Hours/Week				Cr. Points
			L	T	P	Total	
A. THEORY							
1	M(CS)301	Numerical Methods	2	1	0	3	2
2	M302	Mathematics-III	3	1	0	4	4
3	EC301	1. Circuit Theory & Networks	3	1	0	4	4
4	EC302	2. Solid State Device	3	0	0	3	3
5	EC303	1. Signals & Systems	3	0	0	3	3
6	EC304	2. Analog Electronic Circuits	3	1	0	4	4
Total of Theory						**21**	**20**
B. PRACTICAL							
7	M(CS)391	Nunerical Lab	0	0	2	2	1
8	EC391	Circuit Theory & Network Lab	0	0	3	3	2
9	EC392	Solid State Devices	0	0	3	3	2
10	EC393	1. Signal System Lab	0	0	3	3	2
11	EC394	2. Analog Electronic Circuits Lab	0	0	3	3	2
Total of Practical						**14**	**9**
Total of Semester						**35**	**29**

ECE SECOND YEAR: FOURTH SEMESTER

Sl.No.	Field	Theory	Contact Hours/Week				Cr. Points
			L	T	P	Total	
A. THEORY							
1	HU401	Values & Ethics in Profession	3	0	0	3	3
2	PH401	Physics-II	3	1	0	4	4
3	CH401	Basic Environmental Engineering & Elementary Biology	2+1	0	0	3	3
4	EC401	1. EM Theory & Transmission Lines	3	1	0	4	4
5	EC402	2. Digital Electronic & Integrated Circuits	3	1	0	4	4
Total of Theory						**18**	**18**
B. PRACTICAL							
6	HU481	Technical Report Writing & Language Lab Practice	0	0	3	3	2
7	PH491	Physics-II Lab	0	0	3	3	2
8	EC491	1. EM Theory & Tx Lines Lab	0	0	3	3	2
9	EC492	2. Digital Electronic & Integrated Circuits Lab	0	0	3	3	2
Total of Practical						**12**	**8**
Total of Semester						**30**	**26**

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81, Nilgunj Road, Agarpara, Kol-109

Third Year - Fifth Semester

Sl.No	Paper Code	Theory	Contact Hours/Week				Cr. Pts
			L	T	P	Total	
A. THEORY							
1	HU-501	Economics for Engineers	3	0	0	3	3
2	EC-501	Analog Communication	3	1	0	4	4
3	EC-502	Microprocessors & Microcontrollers	3	1	0	4	4
4	EC-503	Control System	3	0	0	3	3
5	F. E.- EC 504A EC-504B	Computer Architecture Data structure & C	3	1	0	4	3/4
		Total of Theory				18	18
B. PRACTICAL							
6	EC-591	Analog Communication*	0	0	3	3	2
7	EC-592	Microprocessors & Microcontrollers*	0	0	3	3	2
8	EC -593	Control System*	0	0	3	3	2
9	F.E. EC-594A EC-594B	Computer Architecture Data structure & C	0	0	3	3	2
		Total of Practical				12	8
		Total of Semester				30	26

Laboratories to have both physical experiments and simulation. Only virtual laboratory is not accepted

Third Year - Sixth Semester

Sl.No.	Field	Theory	Contact Hours/Week				Cr. Pts
			L	T	P	Total	
A. THEORY							
1	HU-601	Principles of Management	2	0	0	2	2
2	EC601	Digital Communications	3	0	0	3	3
3	EC602	Digital Signal Processing	3	0	0	3	3
4	EC 603	Telecommunication System	3	0	0	3	3
5	(No Lab) EC-604A EC-604B	Antenna Theory & Propagation Information Theory & Coding	3	0	0	3	3
6	(With Lab) EC-605A EC-605B EC-605C	Object Oriented Programming (IT) Programming Language (CSE) Electronic Measurement & Instrumentation(EI)	3	0	0	3	3
		Total of Theory				17	17
B. PRACTICAL							
8	EC691	Digital Communications	0	0	3	3	2
9	EC 692	Digital Signal Processing	0	0	3	3	2
10	F.E. EC-695A EC-695B EC-695C	Object Oriented Programming (IT) Programming Lanuage (CSE) Electronic Measurement & Instrumentation	0	0	3	3	2
11	EC-681	Seminar	0	0	3	3	2
		Total of Practical				12	8
		Total of Semester				29	25

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Proposed

Fourth Year - Seventh Semester

A. THEORY

Sl. No.	Field	Theory Name of Paper	Contact Hours/Week L	T	P	Total	Cr. Pts
1	EC701	Wireless Communication & N/W	3	0	0	3	3
2	EC702	Microelectronics & VLSI Designs	3	0	0	3	3
3	EC703 (With Lab)	A. RF & Microwave Engg. B. Optical Communication & N/W C. Computer Networks D. FPGA & Reconfigurable Computing	3	0	0	3	3
4	EC704 (No Lab)	A. Radar Engg B. Embedded Systems C. Biomedical Instrumentation	3	0	0	3	3
5	F. E. EC705	A. Artificial Intelligence (CSE) B. Robotics (CSE) C. Data Base Management System D. Power Electronics	3	0	0	3	3
		Total of Theory				**15**	**15**

B. PRACTICAL

		Name of Paper					
6	HU781	Group Discussion	0	0	3	3	2
7	EC792	VLSI Design Lab	0	0	3	3	2
8	EC793	A. RF & Microwave Engg. Lab B. Optical Communication & N/W Lab C. Computer Networks Lab D. FPGA & Reconfigurable Computing lab	0	0	3	3	2
9	F.E EC795	A. Artificial Intelligence Lab(CSE) B. Robotics lab(CSE) C. Data Base Management System Lab (CSE) D. Power Electronics Lab(EE)	0	0	3	3	2
10	EC781	**Industrial training**	**4 wks during 6th -7 th Sem-break**				2
11	EC782	**Project part 1**				3	2
		Total of Practical				**15**	**12**
		Total of Semester				**30**	**27**

Fourth Year - Eighth Semester

A. THEORY

Sl. No.	Field	Theory Paper Name	Contact Hours/Week L	T	P	Total	Cr. Pts
1	HU801A	Organisational Behaviour	2	0	0	2	2
3	EC801 (No Lab)	A. Smart Antenna B. Digital Image Processing C. Satellite Communication & Remote Sensing	3	0	0	3	3
	EC802 (No Lab)	A. Neural N/W & Applications (CSE) B. Material Sc. & Engg (Mat. Sc) C. Renewable Energy (EE) D. Audio & Speech Processing (CSE)	3	0	0	3	3
		Total of Theory				**8**	**8**

B. PRACTICAL

	EC881	Design Lab / Industrial problem related practical training	0	0	6	6	4
	EC882	Project part-2	0	0	12	12	6
	EC893	Grand viva					3
		Total of Practical				**18**	**13**
		Total of Semester				**26**	**21**

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Narula Institute of Technology

Department of Electronics and Communication Engineering

Curriculum & Syllabus for

B.TECH (ECE)

Curricular Regulation 2018 (R18)

under Maulana Abul Kalam Azad University of Technology, West Bengal, India

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NARULA INSTITUTE OF TECHNOLOGY
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Department: Electronics & Communication Engineering

Curriculum Structure (Effective from 2018-19 admission batch)

Curriculum for B.Tech

Under Autonomy (GR A: ECE, EE, EIE, BME; **GR B:** CSE, IT, ME, CE, FT)

1st Semester								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	M 101	Mathematics -I	3	1	0	4	4
2	BS	CH 101/ PH 101	Chemistry (Gr. A) / Physics- I (Gr. B)	3	0	0	3	3
3	ES	EE 101/ EC 101	Basic Electrical Engineering (Gr. A) / Basic Electronics Engineering (Gr. B)	3	0	0	3	3
4	HS	HU 101	English	2	0	0	2	2
Total of Theory							**12**	**12**
B. PRACTICAL								
5	BS	CH 191/ PH191	Chemistry Lab (Gr. A) / Physics- I Lab (Gr. B)	0	0	3	3	1.5
6	ES	EE 191/ EC 191	Basic Electrical Engineering Lab (Gr. A) / Basic Electronics Engineering Lab (Gr. B)	0	0	3	3	1.5
7	ES	ME 191/ ME 192	Engineering Graphics & Design (Gr A) / Workshop/Manufacturing Practices (Gr-B)	0	0	3	3	1.5
8	PROJ	PR 191	PROJECT-IA	0	0	1	1	0.5
9	PROJ	PR 192	PROJECT-IB	0	0	1	1	0.5
C. MANDATORY ACTIVITIES / COURSES								
8	MC	MC 181	Induction Program	0	0	0	0	
Total of Theory, Practical & Mandatory Activities/Courses							**23**	**17.5**

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2nd Semester								
Sl No	Course Code	Paper Code	Theory	Credit Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	M 201	Mathematics –II	3	1	0	4	4
2	BS	CH 201/ PH 201	Chemistry - (Gr. B) / Physics – I (Gr. A)	3	0	0	3	3
3	ES	EE 201/ EC 201	Basic Electrical Engineering (Gr. B) / Basic Electronics Engineering (Gr. A)	3	0	0	3	3
4	ES	CS 201	Programming for Problem Solving	3	0	0	3	3
5	ES	ME 201	Engineering Mechanics	3	0	0	3	3
Total of Theory							**16**	**16**
B. PRACTICAL								
6	ES	CS291	Programming for Problem Solving Lab	0	0	3	3	1.5
7	BS	CH 291/ PH 291	Chemistry Lab (Gr. B) / Physics - I Lab (Gr. A)	0	0	3	3	1.5
8	ES	EE 291/ EC 291	Basic Electrical Engineering Lab (Gr. B) / Basic Electronics Engineering Lab (Gr. A)	0	0	3	3	1.5
9	ES	ME 291/ ME 292	Engineering Graphics & Design (Gr B) / Workshop/Manufacturing Practice (Gr-A)	0	0	3	3	1.5
10	HS	HU 291	Language Lab	0	0	2	2	1
11	PROJ	PR 291	Project-II	0	0	1	1	0.5
12	PROJ*	PR 292	Innovative activities-I	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
13	MC	MC 281	NSS/ Physical Activities/Meditation & Yoga/Photography/ Nature Club	0	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							**34**	**24**

* Inter/ Intra Institutional Activities viz; Training with higher Institutions; Soft skill training organized by Training and Placement Cell of the respective institutions; contribution at incubation/ innovation /entrepreneurship cell of the institute; participation in conferences/ workshops/ competitions etc.; Learning at Departmental Lab/ Tinkering Lab/ Institutional workshop; Working in all the activities of Institute's Innovation Council for eg: IPR workshop/Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc. (evaluation by Programme Head through certification)

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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81, Nilgunj Road, Agarpara, Kol-109

3rd Semester								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	M 301	Mathematics-III	3	1	0	4	4
2	ES	M (CS) 301	Numerical Methods	3	0	0	3	3
3	PC	EC 301	Solid State Devices	3	0	0	3	3
4	PC	EC 302	Circuit Theory & Networks	3	0	0	3	3
5	ES	EC 303	Data Structure	3	0	0	3	3
6	HS	HU 301	Values & Ethics in Profession	2	0	0	2	2
Total of Theory							**18**	**18**
B. PRACTICAL								
7	ES	M (CS) 391	Numerical Methods Lab	0	0	3	3	1.5
8	PC	EC 392	Circuit Theory & Networks Lab	0	0	3	3	1.5
9	ES	EC 393	Data Structure Lab	0	0	3	3	1.5
10	PROJ	PR 391	Project-III	0	0	2	2	1
11	PROJ*	PR 392	Innovative activities-II	0	0	0	1	0.5
C. MANDATORY ACTIVITIES / COURSES								
12	MC	MC 381	Behavioural & Interpersonal skills	0	0	3	3	
Total of Theory, Practical & Mandatory Activities/Courses							**33**	**24**

*Students may choose either to work on participation in all the activities of Institute's Innovation Council for eg: IPR workshop/ Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc.

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

4th Semester								
Sl No	Course Code	Paper Code		Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	PH(ECE) 401	Physics II	3	0	0	3	3
2	PC	EC 401	Signals & Systems	3	0	0	3	3
3	PC	EC 402	Analog Electronic Circuits	3	0	0	3	3
4	PC	EC 403	Digital Electronic Circuits	3	0	0	3	3
5	PC	EC 404	Antenna & wave propagation	3	0	0	3	3
Total of Theory							**15**	**15**
B. PRACTICAL								
6	BS	PH(ECE)491	Physics II Lab	0	0	3	3	1.5
7	PC	EC 492	Analog Electronic Circuits Lab	0	0	3	3	1.5
8	PC	EC 493	Digital Electronic Circuits Lab	0	0	3	3	1.5
9	PC	EC 494	Antenna & wave propagation Lab	0	0	3	3	1.5
10	PROJ	PR 491	Project-IV	0	0	2	2	1
11	PROJ*	PR 492	Innovative activities-III	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
12	MC	MC 401	Environmental Science	3	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							**32**	**22.5**

*Students may choose either to work on participation in all the activities of Institute's Innovation Council for eg: IPR workshop/ Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc.

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

5th Semester								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	HS	HU 502	Economics for Engineers	2	0	0	2	2
2	PC	EC 501	Analog & Digital Communication Systems	3	0	0	3	3
3	PC	EC 502	Microprocessor & Micro Controller	3	0	0	3	3
4	PC	EC 503	Digital Signal Processing	3	0	0	3	3
5	PE	EC 504	A. Information Theory & Coding B. Renewable Energy Sources & Applications C. Nano Electronics	3	0	0	3	3
Total of Theory							**14**	**14**
B. PRACTICAL								
6	PC	EC 591	Analog & Digital Communication Systems Lab	0	0	3	3	1.5
7	PC	EC 592	Microprocessor & Micro Controller Lab	0	0	3	3	1.5
8	PC	EC 593	Digital Signal Processing Lab	0	0	3	3	1.5
10	PROJ	PR 591	Project-V	0	0	2	2	1
11	PROJ*	PR 592	Innovative activities-IV	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
12	MC	MC 501	Constitution of India	3	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							**31**	**20**

* Students may choose either to work on participation in Hackathons etc. Development of new product/ Business Plan/ registration of start-up.

Students may choose to undergo Internship / Innovation / Entrepreneurship related activities. Students may choose either to work on innovation or entrepreneurial activities resulting in start-up or undergo internship with industry/ NGO's/ Government organizations/ Micro/ Small/ Medium enterprises to make themselves ready for the industry/ Long Term goals under rural Internship. (Duration 4-6 weeks)

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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6th Semester								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PC	EC 601	VLSI & Microelectronics	3	0	0	3	3
2	PC	EC 602	Control System	3	0	0	3	3
3	PC	EC 603	RF & Microwave Engineering	3	0	0	3	3
4	PE	EC 604	A. Mobile Communication & Network	3	0	0	3	3
			B. Advanced Microprocessor & Microcontroller					
			C. Introduction to Python					
5	OE	EC 605	A. Object Oriented Programming using JAVA	3	0	0	3	3
			B. Computer Communication & Network Security					
			C. Artificial Intelligence & Robotics					
	Total of Theory						**15**	**15**
B. PRACTICAL								
6	PC	EC 691	VLSI & Microelectronics Lab	0	0	3	3	1.5
7	PC	EC 692	Control System Lab	0	0	3	3	1.5
	PC	EC 693	RF & Microwave Engineering Lab	0	0	3	3	1.5
8	PE	EC 694	A. Mobile Communication & Network Lab	0	0	3	3	1.5
			B. Advanced Microprocessor & Microcontroller Lab					
			C. Python Programming Lab					
9	OE	EC 695	A. Object Oriented Programming using JAVA Lab	0	0	3	3	1.5
			B. Computer Communication & Network Security Lab					
			C. Artificial Intelligence & Robotics Lab					
10	PROJ	PR 691	Project-VI	0	0	2	2	1
11	PROJ*	PR 692	Innovative activities-V	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
12	MC	MC 681	Technical Lecture Presentation & Group Discussion-I	0	0	3	3	
Total of Theory, Practical & Mandatory Activities/Courses							**32**	**24**

*Students may choose either to work on participation in all the activities of Institute's Innovation Council for eg: IPR workshop/ Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc.

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

7th Semester								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	HS	HU 704	Principles of Management	2	0	0	2	2
2	PE	EC 701	A. Satellite & Optical Communication	3	0	0	3	3
			B. Digital Image & Video Processing					
			C. Remote Sensing & GIS					
3	OE	EC 702	A. Data Base Management Systems	3	0	0	3	3
			B. Machine Learning					
			C. Internet of Things (IOT)					
Total of Theory							**8**	**8**
B. PRACTICAL								
4	PE	EC 791	A. Satellite & Optical Communication Lab	0	0	3	3	1.5
			B. Digital Image & Video Processing Lab					
			C. Remote Sensing & GIS Lab					
5	OE	EC 792	A. Data Base Management Systems Lab	0	0	3	3	1.5
			B. Machine Learning Lab					
			C. Internet of Things (IOT) Lab					
6	PROJ	PR 791	Project-VII	0	0	0	6	3
7	PROJ*	PR 792	Innovative activities-VI	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
8	MC	MC 781	Technical Lecture Presentation & Group Discussion-II	0	0	3	3	
Total of Theory, Practical & Mandatory Activities/Courses							**23**	**14.5**

*Students may choose either to work on participation in Hackathons etc. Development of new product/ Business Plan/ registration of start-up.

Students may choose to undergo Internship / Innovation / Entrepreneurship related activities. Students may choose either to work on innovation or entrepreneurial activities resulting in start-up or undergo internship with industry/ NGO's/ Government organizations/ Micro/ Small/ Medium enterprises to make themselves ready for the industry/ Long Term goals under rural Internship. (Duration 4-6 weeks)

Innovative activities to be evaluated by the Programme Head / Event Coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

8th Semester								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PE	EC 801	A. Adaptive Signal Processing B. Wireless Sensor Network C. Embedded System	3	0	0	3	3
2	OE	EC 802	A. Cloud Computing B. Data Science C. Block Chain	3	0	0	3	3
3	OE	EC 803	A. Biomedical Electronics & Imaging B. Automotive Electronics C. Physical Design, Verification & Testing	3	0	0	3	3
Total of Theory							9	9
B. PRACTICAL								
4	PE	EC 891	A. Adaptive Signal Processing Lab B. Wireless Sensor Network Lab C. Embedded System Lab	0	0	3	3	1.5
5	PROJ	PR 891	Project-VIII	0	0	0	6	3
C. MANDATORY ACTIVITIES / COURSES								
6	MC	MC 801	Essence of Indian Knowledge Tradition	3	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							21	13.5

Mandatory Credit Point=160

For Honors additional 20 Credit Point is to be earned (1st Sem to 8th Sem) through MOOCs courses. All the Certificates received by the students across all semester for MOOCs Courses from approved organization (Appendix A) is to be submitted to CoE office prior to 8th Semester Examination.

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Narula Institute of Technology

Department of Electronics and Communication Engineering

Curriculum & Syllabus for

B.TECH (ECE)

Curricular Regulation 2016 (R16)

under Maulana Abul Kalam Azad University of Technology, West Bengal, India

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

ELECTRONICS & COMMUNICATION ENGINEERING DEPARTMENT

Curriculum for 2016-20 Batch & 2017-21 Batch

Course Code	Course Title	Total Number of contact hours				Credits
		Lecture (L)	Tutorial (T)	Practical (P)	Total Hours	
Semester I						
M 101	Mathematics-I	3	1	0	4	4
CH 101	Chemistry	3	1	0	4	4
EE 101	Basic Electrical Engineering	3	1	0	4	4
HU 101	Communicative English	2	0	0	2	2
ME 101	Engineering Mechanics	3	1	0	4	4
XC181	Extra-Curricular Activity (NSS)	0	0	2	2	1
HU191	Lang. Lab. and Seminar Presentation	0	0	2	2	1
CH 191	Chemistry Lab	0	0	3	3	2
EE 191	Basic Electrical Engineering Lab	0	0	3	3	2
ME 191	Engineering Drawing & Graphics	0	0	3	3	2
Total						26
Semester II						
M 201	Mathematics -II	3	1	0	4	4
PH 201	Physics - I	3	1	0	4	4
EC 201	Basic Electronics Engineering	3	1	0	4	4
CS 201	Computer Fundamentals & Principle of Computer Programming	3	1	0	4	4
ME 201	Engineering Thermodynamics & Fluid Mechanics	3	1	0	4	4
CS291	Computer Fundamentals & Principle of Computer Programming Lab	0	0	3	3	2
PH291	Physics -I Lab	0	0	3	3	2
EC 291	Basic Electronics Engineering Lab	0	0	3	3	2
ME 291	Workshop Practice	0	0	3	3	2
MC 281	Soft Skill Development	0	0	2	2	0
Total						28

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

ELECTRONICS & COMMUNICATION ENGINEERING DEPARTMENT

Curriculum for 2016-20 Batch & 2017-21 Batch

Course Code	Course Title	Total Number of contact hours				Credits
		Lecture (L)	Tutorial (T)	Practical (P)	Total Hours	
Semester III						
M 301	Mathematics-III	3	1	0	4	4
M(CS) 301	Numerical Methods	3	0	0	3	3
EC 301	Solid State Devices	3	0	0	3	3
EC 302	Circuit Theory & Networks	3	1	0	4	4
CS(ECE) 301	Data Structure	3	0	0	3	3
M(CS) 391	Numerical Methods Lab	0	0	3	3	2
EC 392	Circuit Theory & Network Lab	0	0	3	3	2
CS(ECE) 391	Data Structure Lab	0	0	3	3	2
MC381	Technical Skill Development	0	0	2	2	2Units
Total						23
Semester IV						
PH(ECE)401	Physics II	3	0	0	3	3
EC 401	Signals & Systems	3	0	0	3	3
EC 402	Analog Electronic Circuits	3	1	0	4	4
EC 403	Digital Electronic And Circuits	2	2	0	4	3
EC 404	Analog Communication	3	0	0	3	3
PH(ECE) 491	Physics II Lab	0	0	3	3	2
EC 492	Analog Electronic Circuits Lab	0	0	3	3	2
EC 493	Digital Electronic And Circuits Lab	0	0	3	3	2
EC 494	Analog Communication Lab	0	0	3	3	2
HU 481	Technical Report Writing& Language Practice	0	0	2	2	1
Total						25

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilguni Road, Agarpara, Kol-109

ELECTRONICS & COMMUNICATION ENGINEERING DEPARTMENT

Curriculum for 2016-20 Batch & 2017-21 Batch

Course Code	Course Title	Total Number of contact hours				Credits
		Lecture (L)	Tutorial (T)	Practical (P)	Total Hours	
Semester V						
HU 501	Environmental Science	2	0	0	2	2
EC 501	Digital Communication Systems	2	2	0	4	3
EC 502	Microprocessor & Micro Controller	3	0	0	3	3
EC 503	Digital Signal Processing	3	0	0	3	3
EC 504 A/B/C	Power Electronics /Electrical & Electronics Measurement / Telecommunication Systems	3	0	0	3	3
EC 591	Digital Communication Systems Lab	0	0	3	3	2
EC 592	Microprocessor & Micro Controller Lab	0	0	3	3	2
EC 593	Digital Signal Processing Lab	0	0	3	3	2
EC 581	Mini Project -I	0	0	4	4	2
MC 581	Group Discussion Practice	0	0	2	2	2 Units
Total						22
Semester VI						
EC 601	EM Wave Propagation & Antenna	2	2	0	4	3
EC 602	Information Theory & Coding	2	2	0	4	3
EC 603	Control System	3	0	0	3	3
EC 604 A/B/C	Object Oriented Programming / Advanced Microcontroller & Embedded System / Optical Fiber Communication	3	0	0	3	3
EC 605 A/B/C	Engineering System Design & Analysis / Material Science & Engineering / Computer Communication & Networks	3	0	0	3	3
EC 691	EM Wave Propagation & Antenna Lab	0	0	3	3	2
EC 693	Control System Engineering Lab	0	0	3	3	2

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

EC 694 A/B/C	Object Oriented Programming Lab / Advanced Microcontroller & Embedded System Lab / Optical Fiber Communication Lab	0	0	3	3	2
EC 681	Mini Project -II	0	0	12	12	6
EC 682	Industrial Training (4 Weeks)	0	0	0	0	1
Total						28

ELECTRONICS & COMMUNICATION ENGINEERING DEPARTMENT

Curriculum for 2016-20 Batch & 2017-21 Batch

Course Code	Course Title	Total Number of contact hours				Credits
		Lecture (L)	Tutorial (T)	Practical (P)	Total Hours	
Semester VII						
HU 705	Principles of Management	2	1	0	3	2
EC 701	RF & Microwave Engineering	3	0	0	3	3
EC 702	VLSI & Microelectronics	3	1	0	4	4
EC 703 A/B/C	Digital Image Processing / Computer Organization & Architecture / Data Base Management Systems	3	0	0	3	3
EC 704 A/B/C	Artificial Intelligence & Robotics / Biomedical Electronics & Imaging / Renewable Source & Applications	3	0	0	3	3
EC 791	RF & Microwave Engineering Lab	0	0	0	3	2
EC 792	VLSI & Microelectronics Lab	0	0	0	3	2
EC 793 A/B/C	Digital Image Processing Lab / Computer Organization & Architecture Lab / Data Base Management Systems Lab	0	0	0	3	2
EC 781	Project I	0	0		6	3
MC 782	Technical Seminar Presentation	0	0	3	3	3 Units
Total						24
Semester VIII						
HU 801	Economics for Engineers	2	1	0	3	2
EC 801	Advanced Communication Systems	3	0	0	3	3
EC 802 A/B/C	Advanced Semiconductor Devices / EMI & EMC / Mobile Communication and Network	3	0	0	3	3

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81, Nilgunj Road, Agarpara, Kol-10

EC 803 A/B/C	Software Engineering / Physical Design, Verification & Testing / Soft Computing	3	1	0	4	4
EC 891	Advanced Communication Lab	0	0	3	3	2
EC881	Project II	0	0	12	12	6
EC882	Grand Viva	0	0	0	0	2
Total						22
Total						198

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Narula Institute of Technology

Department of Computer Science and Engineering

Curriculum & Syllabus for

B.TECH (CSE)

Curricular Regulation 2018 (R18)

under Maulana Abul Kalam Azad

University of Technology,

West Bengal, India

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Department of Computer Science and Engineering
Revised Curriculum Structure (to be effective from 2018-19 Admission Batch

Curriculum for B.Tech
Under Autonomy (GR A: ECE, EE, EIE, BME; GR B: CSE, IT, ME, CE, FT)

1st Semester								
Sl No	**Course Code**	**Paper Code**	**Theory**	**Contact Hours /Week**				**Credit Points**
				L	**T**	**P**	**Total**	
A. THEORY								
1	BS	M 101	Mathematics -I	3	1	0	4	4
2	BS	CH 101/ PH 101	Chemistry (Gr. A) / Physics- I (Gr. B)	3	0	0	3	3
3	ES	EE 101/ EC 101	Basic Electrical Engineering (Gr. A) / Basic Electronics Engineering (Gr. B)	3	0	0	3	3
4	HS	HU 101	English	2	0	0	2	2
Total of Theory							**12**	**12**
B. PRACTICAL								
5	BS	CH 191/ PH191	Chemistry Lab (Gr. A) / Physics- I Lab (Gr. B)	0	0	3	3	1.5
6	ES	EE 191/ EC 191	Basic Electrical Engineering Lab (Gr. A) / Basic Electronics Engineering Lab (Gr. B)	0	0	3	3	1.5
7	ES	ME 191/ ME 192	Engineering Graphics & Design (Gr A) / Workshop/Manufacturing Practices (Gr-B)	0	0	3	3	1.5
8	PROJ	PR 191	Project-IA	0	0	1	1	**0.5**
9	PROJ	PR 192	Project-IB	0	0	1	1	**0.5**
C. MANDATORY ACTIVITIES / COURSES								
10	MC	MC 181	Induction Program	0	0	0	0	
Total of Theory, Practical & Mandatory Activities/Courses							**23**	**17.5**

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81, Nilgunj Road, Agarpara, Kol-109

2nd Semester

Sl No	Course Code	Paper Code	Theory	Credit Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	M 201	Mathematics -II	3	1	0	4	4
2	BS	CH 201/ PH 201	Chemistry - (Gr. B) / Physics – I (Gr. A)	3	0	0	3	3
3	ES	EE 201/ EC 201	Basic Electrical Engineering (Gr. B) / Basic Electronics Engineering (Gr. A)	3	0	0	3	3
4	ES	CS 201	Programming for Problem Solving	3	0	0	3	3
5	ES	ME 201	Engineering Mechanics	3	0	0	3	3
Total of Theory							**16**	**16**
B. PRACTICAL								
6	ES	CS291	Programming for Problem Solving Lab	0	0	3	3	1.5
7	BS	CH 291/ PH 291	Chemistry Lab (Gr. B) / Physics - I Lab (Gr. A)	0	0	3	3	1.5
8	ES	EE 291/ EC 291	Basic Electrical Engineering Lab (Gr. B) / Basic Electronics Engineering Lab (Gr. A)	0	0	3	3	1.5
9	ES	ME 291/ ME 292	Engineering Graphics & Design (Gr B) / Workshop/Manufacturing Practice (Gr-A)	0	0	3	3	1.5
10	HS	HU 291	Language Lab	0	0	2	2	1
11	PROJ	PR 291	Project-II	0	0	1	1	0.5
12	PROJ*	PR 292	Innovative activities-I	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
13	MC	MC 281	NSS/ Physical Activities/Meditation & Yoga/Photography/ Nature Club	0	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							**34**	**24.0**

* Inter/ Intra Institutional Activities viz; Training with higher Institutions; Soft skill training organized by Training and Placement Cell of the respective institutions; contribution at incubation/ innovation /entrepreneurship cell of the institute; participation in conferences/ workshops/ competitions etc.;

Learning at Departmental Lab/ Tinkering Lab/ Institutional workshop; Working in all the activities of Institute's Innovation Council for eg: IPR workshop/Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc. (evaluation by Programme Head through certification)

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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81, Nilgunj Road, Agarpara, Kol-109

3rd Semester								
SL No	Type	Code	THEORY	Contact Hours/Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	M(CSE)301	Mathematics-III	3	1	0	4	4
2	BS	PH301	Physics-II	3	0	0	3	3
3	PC	CS301	Digital Electronics and Computer Organization	3	0	0	3	3
4	PC	CS302	Data Structures	3	0	0	3	3
5	ES	CS 303	Circuit Theory and Network	2	0	0	2	2
Total of Theory							15	15
B. PRACTICAL								
6	BS	PH391	Physics-II Lab	0	0	3	3	1.5
7	PC	CS391	Digital Electronics and Computer Organization Lab	0	0	3	3	1.5
8	PC	CS392	Data Structures Lab	0	0	3	3	1.5
9	PC	CS393	Programming with C++	1	0	2	3	1.5
10	PROJ	PR 391	Project-III	0	0	2	2	1
11	PROJ*	PR 392	Innovative activities-II	0	0	0	1	0.5
C. MANDATORY ACTIVITIES / COURSES								
12	MC	MC 381	Behavioural and Interpersonal Skills	0	0	3	3	
Total of Theory, Practical & Mandatory Activities/Courses							33	22.5

*Students may choose either to work on participation in all the activities of Institute's Innovation Council for eg: IPR workshop/ Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc.

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

Principal
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81, Nilgunj Road, Agarpara, Kol-109

4th Semester								
Sl No	**Course Code**	**Paper Code**	**Theory**	**Contact Hours /Week**				**Credit Points**
				L	**T**	**P**	**Total**	
A. THEORY								
1	ES	M(CSE)401	Numerical Methods and Statistics	3	0	0	3	3
2	HS	HU 402	Economics for Engineers	2	0	0	2	2
3	PC	CS401	Computer Architecture	3	0	0	3	3
4	PC	CS402	Design and Analysis of Algorithms	3	0	0	3	3
5	PC	CS403	Formal Language and Automata Theory	3	0	0	3	3
Total of Theory							**14**	**14**
B. PRACTICAL								
6	ES	M(CSE)491	Numerical Methods and Statistics Lab	0	0	3	3	1.5
7	PC	CS491	Computer Architecture Lab	0	0	3	3	1.5
8	PC	CS492	Algorithms Lab	0	0	3	3	1.5
9	PROJ	PR 491	Project-IV	0	0	2	2	1
10	PROJ*	PR 492	Innovative activities-III	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
11	MC	MC401	Constitution of India	3	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							**28**	**20**

*Students may choose either to work on participation in all the activities of Institute's Innovation Council for eg: IPR workshop/ Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc.

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

Principal
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81, Nilguni Road, Agarpara, Kol-109

5th Semester								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PC	CS501	Computer Graphics	3	0	0	3	3
2	PC	CS502	Operating System	3	0	0	3	3
3	PC	CS503	Data Base Management System	3	0	0	3	3
4	OE	CS504	A. Object Oriented Programming using Java B. Multimedia Technology C. Communication Engineering	3	0	0	3	3
5	PE	CS505	A. Operations Research B. Computational Geometry C. Distributed Algorithms	3	0	0	3	3
Total of Theory							15	15
B. PRACTICAL								
6	PC	CS591	Computer Graphics Lab	0	0	3	3	1.5
7	PC	CS592	Operating System Lab	0	0	3	3	1.5
8	PC	CS 593	Data Base Management System Lab	0	0	3	3	1.5
9	OE	CS594	A. Object Oriented Programming Lab B. Multimedia Technology Lab C. Communication Engineering Lab	0	0	3	3	1.5
10	PROJ	PR 591	Project-V	0	0	2	2	1
11	PROJ*	PR 592	Innovative activities-IV	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
12	MC	MC 501	Environmental Science	3	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							**32**	**22.5**

* Students may choose either to work on participation in Hackathons etc. Development of new product/ Business Plan/ registration of start-up.

Students may choose to undergo Internship / Innovation / Entrepreneurship related activities. Students may choose either to work on innovation or entrepreneurial activities resulting in start-up or undergo internship with industry/ NGO's/ Government organizations/ Micro/ Small/ Medium enterprises to make themselves ready for the industry/ Long Term goals under rural Internship. (Duration 4-6 weeks)

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

Principal
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81, Nilgunj Road, Agarpara, Kol-109

6th Semester

Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PC	CS601	Computer Network	3	0	0	3	3
2	PC	CS602	Microprocessors and Microcontrollers	2	1	0	3	3
3	PC	CS603	Software Engineering	3	0	0	3	3
4	PE	CS604	A. Compiler Design B. Computer Vision C. Simulation and modelling	3	0	0	3	3
5	OE	CS605	A. Pattern Recognition B. Distributed Operating System C. Distributed Database	3	0	0	3	3
6	OE	CS606	A. Data Warehousing and Data Mining B. Digital Image Processing C. E-commerce and ERP	3	0	0	3	3
	Total of Theory						**18**	**18**
B. PRACTICAL								
7	PC	CS691	Computer Network Lab	0	0	3	3	1.5
8	PC	CS692	Microprocessors and Microcontrollers Lab	0	0	3	3	1.5
9	PC	CS693	Software Engineering Lab	0	0	3	3	1.5
10	PROJ	PR 691	Project-VI	0	0	2	2	1
11	PROJ*	PR 692	Innovative activities-V	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
12	MC	MC 681	Technical Lecture Presentation & Group Discussion-I	0	0	3	3	
Total of Theory, Practical & Mandatory Activities/Courses							**32**	**24.0**

*Students may choose either to work on participation in all the activities of Institute's Innovation Council for eg: IPR workshop/ Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc.

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

Principal
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81, Nilgunj Road, Agarpara, Kol-109

7th Semester								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	HS	HU701	Values & Ethics in Profession	2	0	0	2	2
2	OE	CS701	A. Artificial Intelligence B. Robotics C. Data Analytics	3	0	0	3	3
3	PE	CS702	A. Soft Computing B. Natural Language Processing C. Web Technology	3	0	0	3	3
4	PE	CS703	A. Cloud Computing B. Sensor Network and IOT C. Cryptography and Network Security	3	0	0	3	3
Total of Theory							**11**	**11**
B. PRACTICAL								
5	OE	CS791	A. Artificial Intelligence Lab B. Robotics Lab C. Data Analytics Lab	0	0	3	3	1.5
6	PE	CS792	A. Soft Computing Lab B. Natural Language Processing Lab C. Web Technology Lab	0	0	3	3	1.5
8	PROJ	PR 791	Project-VII	0	0	0	6	3
9	PROJ*	PR 792	Innovative activities-VI	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
10	MC	MC 781	Social Awareness	0	0	3	3	
Total of Theory, Practical & Mandatory Activities/Courses							**26**	**17.5**

*Students may choose either to work on participation in Hackathons etc. Development of new product/ Business Plan/ registration of start-up.

Students may choose to undergo Internship / Innovation / Entrepreneurship related activities. Students may choose either to work on innovation or entrepreneurial activities resulting in start-up or undergo internship with industry/ NGO's/ Government organizations/ Micro/ Small/ Medium enterprises to make themselves ready for the industry/ Long Term goals under rural Internship. (Duration 4-6 weeks)

Innovative activities to be evaluated by the Programme Head / Event Coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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8th Semester								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	HS	HU804	Principles of Management	2	0	0	2	2
2	PE	CS801	A. Mobile Computing B. Bio-informatics C. Cyber Law and Security Policy D. VLSI Design	3	0	0	3	3
3	PE	CS802	A. Parallel Computing B. Machine Learning C. Real Time Embedded System D. Advanced Computer Architecture	3	0	0	3	3
Total of Theory							**8**	**8**
B. PRACTICAL								
4	PC	CS891	Design lab	0	0	2	2	1
5	PROJ	PR 891	Project-VIII	0	0	0	6	3
C. MANDATORY ACTIVITIES / COURSES								
6	MC	MC 801	Essence of Indian Knowledge Tradition	3	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							**19**	**12**

Mandatory Credit Point=160

For Honors additional 20 Credit Point is to be earned (1st Sem to 8th Sem) through MOOCs courses. All the Certificates received by the students across all semester for MOOCs Courses from approved organization (Appendix A) is to be submitted to CoE office prior to 8th Semester Examination.

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Narula Institute of Technology

Department of Computer Science and Engineering

Curriculum & Syllabus for

B.TECH (CSE)

Curricular Regulation 2016 (R16)

under Maulana Abul Kalam Azad University of Technology, West Bengal, India

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Curriculum for BTech in Computer Science and Engineering

Under Autonomy

1st Semester							
Sl No	Paper Code	Theory	Contact Hours /Week				Credit Points
			L	T	P	Total	
1	M 101	Mathematics -I	3	1	0	4	4
2	CH 101/ PH 101	Chemistry (Gr. A) / Physics - I(Gr. B)	3	1	0	4	4
3	EE 101/ EC 101	Basic Electrical Engineering (Gr. A) / Basic Electronics Engineering (Gr. B)	3	1	0	4	4
4	HU 101	Communicative English	2	0	0	2	2
5	ME 101	Engineering Mechanics	3	1	0	4	4
Total of Theory						18	18
A. PRACTICAL							
6	HU191	Lang. Lab. and Seminar Presentation	0	0	2	2	1
7	CH 191/ PH191	Chemistry Lab (Gr. A) / Physics -I Lab(Gr. B)	0	0	3	3	2
8	EE 191/ EC 191	Basic Electrical Engineering Lab (Gr. A) /Basic Electronics Engineering Lab(Gr. B)	0	0	3	3	2
9	ME 191/ ME 192	Engg Drawing & Graphics(Gr A)/ Workshop Practice (Gr-B)	0	0	3	3	2
B. SESSIONAL							
10	XC181	Extra Curricular Activity (NSS/ NCC)	0	0	2	2	1
Total of Practical &Sessional						13	08

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81, Nilgunj Road, Agarpara, Kol-109

2nd Semester							
Sl No	Paper Code	Theory	Contact Hours /Week				Credit Points
			L	T	P	Total	
1	M 201	Mathematics -II	3	1	0	4	4
2	CH 201/ PH 201	Chemistry (Gr. B) / Physics - I(Gr. A)	3	1	0	4	4
3	EE 201/ EC 201	Basic Electrical Engineering (Gr. B) / Basic Electronics Engineering (Gr. A)	3	1	0	4	4
4	CS 201	Computer Fundamentals & Principle of Computer Programming	3	1	0	4	4
5	ME 201	Engineering Thermodynamics & Fluid Mechanics	3	1	0	4	4
Total of Theory						20	20
B. PRACTICAL							
6	CS291	Computer Fundamentals & Principle of Computer Programming Lab	0	0	3	3	2
7	CH 291/ PH291	Chemistry Lab (Gr. B) / Physics -I Lab(Gr. A)	0	0	3	3	2
8	EE 291/ EC 291	Basic Electrical Engineering Lab (Gr. B) /Basic Electronics Engineering Lab(Gr. A)	0	0	3	3	2
9	ME 291/ ME 292	Engg Drawing & Graphics(Gr B)/ Workshop Practice (Gr-A)	0	0	3	3	2
Total of Practical						12	08
C.SESSIONAL							
10	MC 281	Soft Skill Development	0	0	2	2	0

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81, Nilgunj Road, Agarpara, Kol-109

			3rd Semester					
				Contact hours				Cr. Points
SL No	Type	Code	A. THEORY	L	T	P	Total	
1	BS	M(CSE)301	Mathematics-III	3	1	0	4	4
2	BS	PH301	Physics-II	3	0	0	3	3
3	ES	EE(CSE) 301	Circuit Theory and Network	3	0	0	3	3
4	PC	CS301	Data Structures	3	0	0	3	3
5	PC	CS302	Digital Electronics and Computer Organization	3	0	0	3	3
			Total Theory				16	16
			B. PRACTICAL					
6	BS	PH391	Physics-II Lab	0	0	3	3	2
7	ES	EE(CSE)391	Circuit Theory and Network Lab	0	0	3	3	2
8	PC	CS391	Data Structures Lab	0	0	3	3	2
9	PC	CS392	Digital Electronics and Computer Organization Lab	0	0	3	3	2
			Total Practical				12	8
C. SESSIONAL								
10	HU	HU381	Technical Report writing and Language Practice Lab	0	0	2	2	1
Total							30	25

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81, Nilgunj Road, Agarpara, Kol-109

			4th Semester					
				Contact hours				Cr. Points
SL No	Type	Code	A. THEORY	L	T	P	Total	
1	BS	M(CSE)401	Numerical Methodsand Statistics	3	0	0	3	3
2	HS	HU401	Environmental science	2	0	0	2	2
3	PC	CS401	Computer Architecture	3	0	0	3	3
4	PC	CS402	Design and Analysis of Algorithms	3	0	0	3	3
5	PC	CS 403	Formal Language And Automata Theory	3	0	0	3	3
Total Theory							14	14
			B. PRACTICAL					
6	BS	M(CSE)491	Numerical Methods and Statistics Lab	0	0	3	3	2
7	PC	CS491	Computer Architecture Lab	0	0	3	3	2
8	PC	CS492	Algorithms Lab	0	0	3	3	2
9	PC	CS493	Programming with C++ Lab	1	0	2	3	2
Total Practical							12	8
			C. MANDATORY COURSES					
10	MC	MC 481	Technical Communication & Soft Skills	0	0	3	3	2 Unit
Total							29	22

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81, Nilguni Road, Agarpara, Kol-109

SL No			5th Semester					
				Contact hours				Cr. Points
	Type	Code	A. THEORY	L	T	P	Total	
1	PC	CS501	Computer Graphics	3	0	0	3	3
2	PC	CS502	Operating System	3	0	0	3	3
3	HS	HU 503	Economics for Engineers	2	0	0	2	2
4	PC	CS503	Data Base Management System	3	0	0	3	3
5	FE	CS(IT)504A	Object Oriented Programming using Java					
		CS(IT)504B	Multimedia Technology					
		CS(ECE)504C	Communication Engineering	3	0	0	3	3
6	PE	CS505A	Operations Research					
		CS505A	Computational Geometry					
		CS505A	Digital Signal Processing	3	0	0	3	3
Total Theory							17	17
			B. PRACTICAL					
7	PC	CS591	Computer Graphics Lab	0	0	3	3	2
8	PC	CS592	Operating System Lab	0	0	3	3	2
9	PC	CS 593	Data Base Management System Lab	0	0	3	3	2
10	FE	CS(IT)594A	Object Oriented Programming Lab					
		CS(IT)594B	Multimedia Technology Lab					
		CS(ECE)594C	Communication Engineering Lab	0	0	3	3	2
Total Practical							12	8
			C. MANDATORY COURSES					
11	MC	MC581	General Aptitude /Foreign Language	0	0	3	3	2 Unit
Total							32	25

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

			6TH SEMESTER					
				Contact hours				Cr. Points
SL No	Type	Code	A. THEORY	L	T	P	Total	
1	PC	CS601	Computer Network	3	0	0	3	3
2	PC	CS602	Microprocessor and Microcontroller	3	0	0	3	3
3	PC	CS603	Software Engineering	3	0	0	3	3
4	PE	CS604A	Compiler Design					
		CS604B	Robotics					
		CS604C	Simulation and modeling	3	0	0	3	3
5	FE	IT(CSE)605A	Pattern Recognition					
		IT(CSE)605B	Distributed Operating System					
		IT(CSE)605C	Distributed Database					
		IT(CSE)605D	Computer Vision	3	0	0	3	3
6	FE	IT(CSE)606A	Data Warehousing and Data Mining					
		IT(CSE)606B	Digital Image Processing					
		IT(CSE)606C	E-commerce and ERP	3	0	0	3	3
Total Theory							18	18
			B. PRACTICAL					
7	PC	CS691	Computer Network Lab	0	0	3	3	2
8	PC	CS692	Microprocessor and Microcontroller Lab	0	0	3	3	2
9	PC	CS693	Software Engineering Lab	0	0	3	3	2
10		CS682	Mini Project	0	0	3	3	2
Total Practical							12	8
			C. SESSIONAL					
10		CS681	Group Discussion and Seminar	0	0	3	3	2
Total							33	28

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

			7TH SEMESTER					
				Contact hours				Cr. Points
SL No	Type	Code	A. THEORY	L	T	P	Total	
1	PC	CS701	Artificial Intelligence	3	0	0	3	3
2	HS	HU702	Values & Ethics in Profession	2	0	0	2	2
3	PE	CS702A	Soft Computing	3	0	0	3	3
		CS702B	Natural Language Processing					
		CS702C	Web technology					
4	PE	CS703A	Cloud Computing	3	0	0	3	3
		CS703B	Data Analytics					
		CS703C	Sensor Network and IOT					
5	PE	CS704A	Distributed Algorithms	3	0	0	3	3
		CS704B	Bio-informatics					
		CS704C	Cryptography and Network Security					
Total Theory							14	14
			B. PRACTICAL					
6	PC	CS791	Artificial Intelligence Lab	0	0	3	3	2
7	PE	CS792A	Soft Computing Lab	0	0	3	3	2
		CS792B	Natural Language Processing Lab					
		CS792C	Web Technology Lab					
8		CS795	Project-1	0	0	3	3	2
Total Practical							9	6
			C. SESSIONAL					
9		CS781	Industrial Training	0	0	0	0	2
Total Sessional								
			D. MANDATORY COURSES					
10	MC	MC781	Technical Skill Development	0	0	3	3	2Unit
Total							26	22

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81, Nilgunj Road, Agarpara, Kol-109

			8TH SEMESTER					
				Contact hours				Cr. Points
			8th Semester	L	T	P	Total	
SL No	Type	Code	A. THEORY					
1	HS	HU804	Principles of Management	2	0	0	2	2
2	PE	CS801A	Mobile Computing	3	0	0	3	3
		CS801B	Human computer Interaction					
		CS801C	Cyber Law and Security Policy					
		CS801D	VLSI Design					
3	PE	CS802A	Parallel Computing	3	0	0	3	3
		CS802B	Machine Learning					
		CS802C	Real Time Operating System and Embedded System					
		CS802D	Advanced Computer Architecture					
Total Theory							8	8
			B. PRACTICAL					
4	PC	CS891	Design lab	0	0	3	3	2
5		CS892	Project 2	0	0	12	9	6
6		CS893	Seminar Presentation	0	0	3	3	2
Total Practical							15	10
			C. SESSIONAL					
7		CS881	Grand Viva	0	0	0	0	4
Total							26	22
Grand Total								198

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Narula Institute of Technology

Department of Computer Science and Engineering

Curriculum & Syllabus for

B.TECH (CSE)

Curricular Regulation 2015 (R15)

under Maulana Abul Kalam Azad University of Technology, West Bengal, India

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Curriculum

First Year First Semester

Sl. No.	Field	Theory	Contact Hours/Week				Credit Points
			L	T	P	Total	
A. THEORY							
1	HU101	ENGLISH LANGUAGE &TECHNICALCOMMUNICATION	2	0	0	2	2
2	PH101 / CH101	Chemistry -1 (Gr-B) / Physics – 1 (Gr-A)	3	1	0	4	4
3	M101	Mathematics-1	3	1	0	4	4
4	ES101	Basic Electrical & Electronic Engineering – 1 (GrA+GrB)	3	1	0	4	4
5	ME101	Engg. Mechanics	3	1	0	4	4
Total of Theory						18	18
B. PRACTICAL							
6	PH191/ CH191	Chemistry -1 (Gr-B)/ Physics – 1 (Gr-A)	0	0	3	3	2
7	ES191	Basic Electrical & Electronic Engineering -1	0	0	3	3	2
8	ME191 /192	Engg Drawing & Computer Graphics(Gr-B) / Workshop Practice (Gr-A)	1	0	3	4	3
Total of Practical						10	7
C. SESSIONAL							
9	HU181	Language Laboratory	0	0	2	2	1
10	XC181	Extra CurricularActivities(NSS/NCC/NSO etc)	0	0	2	2	1
Total of Sessional						4	2
Total of Semester						32	27

Physics based branches divided in to Gr-A & Gr-B, Gr-A= Phys in sem-I , Gr-B = Phys in sem-II; Chemistry based branches Physics in sem-1.

Group division:

Group-A: Chemistry based subjects: [Bio-Technology, Food Technology, Leather Technology, Textile Technology, Ceramic Technology, Chemical Engineering and any other Engineering that chooses to be Chemistry based] + Physics based subjects: [Mechanical Engineering, Production Engineering, Civil Engineering, Automobile Engineering, Marine Engineering, Apparel Production Engineering, Computer Science & Engineering, Information Technology.]

Group-B: All Physics based subjects which are also Electrical & Electronics based [Electrical Engineering, Electronics & Communication Engineering, Applied Electronics & Instrumentation Engineering, Power Engineering, Electrical & Electronics Engineering, Bio-Medical Engineering, Instrumentation &ControlEngineering]

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

First Year Second Semester

Sl. No.	Field	Theory	Contact Hours/Week				Credit Points
			L	T	P	Total	
A. THEORY							
1	**CS201**	Basic Computation & Principles of Computer Programming	3	1	0	4	**4**
2	**PH201/ CH201**	Physics - 1(Gr-B)/ Chemistry-1(Gr-A)	3	1	0	4	**4**
3	**M201**	Mathematics-2	3	1	0	4	**4**
4	**ES201**	Basic Electrical & Electronic Engineering-II	3	1	0	4	**4**
5	**ME201**	Engineering Thermodynamics & Fluid Mechanics	3	1	0	4	4
		Total of Theory				**20**	**20**
B. PRACTICAL							
7	**CS291**	Basic Computation & Principles of Computer Programming	0	0	3	3	**2**
8	**PH291/ CH291**	Physics – 1 (Gr-B) /Chemistry-1 (Gr-A)	0	0	3	3	**2**
9	**ES291**	Basic Electrical & Electronic Engineering- II	0	0	3	3	**2**
10	**ME291/ 292**	Workshop Practice (Gr-B) / Basic Engg Drawing & Computer Graphics (Gr-A)	1	0	3	4	**3**
		Total of Practical				**13**	**9**
		Total of Semester				**32**	**29**

	Group A	Group B
1st Sem	**Physics-I Workshop Practice**	**Chemistry –1; Engg Drawing & Computer Graphics**
2nd Sem	**Chemistry –1; Engg Drawing & Computer Graphics**	**Physics-I Workshop Practice**

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81, Nilgunj Road, Agarpara, Kol-109

Second Year - Third Semester

A. Theory							
SL No.	Field	Theory	Contact Hour / Week				Credit Point
			L	T	P	Total	
1	HU301	Values & Ethics in Profession	3	0	0	3	3
2	PH301	Physics-2	3	1	0	4	4
3	CH301	Basic Environmental Engineering & Elementary Biology;	3	0	0	3	3
4	CS301	Analog & Digital Electronics	3	0	0	3	3
5	CS302	Data Structure & Algorithm	3	1	0	4	4
6	CS303	Computer Organisation	3	1	0	4	4

B. Practical

7	PH391	Physics-2	0	0	3	3	2
8	CS391	Analog & Digital Electronics	0	0	3	3	2
9	CS392	Data Structure & Algorithm	3	3	2	3	2
10	CS393	Computer Organisation	0	0	3	3	2
Total ofPractical						**12**	**8**
Total ofSemester						**33**	**29**

Second Year - Fourth Semester

A. THEORY							
Sl.No.	Field	Theory	Contact Hours/Week				Cr. Points
			L	T	P	Total	
1	(CS401	Numerical Methods	2	1	0	3	2
2	M401	Mathematics-3	3	1	0	4	4
3	CS401	Communication Engg&CodingTheory	2 1	0	0	3	3
4	CS402	Formal Language & Automata Theory	3	1	0	4	4
5	CS403	Computer Architecture	3	1	0	4	4
Total of Theory						**18**	**17**
B. PRACTICAL							

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81, Nilgunj Road, Agarpara, Kol-109

6 7	**HU481** **M(CS)491**	Technical Report Writing & Language Lab Practice	0 0	0 0	3 2	3 2	2 1
8	**CS491.**	Communication Engg& Coding Theory	0	0	3	3	2
9 10	**CS492** **CS493**	Software Tools Computer Architectur	0 0	0 0	3 3	3 3	2 2
		Total of Practical				**14**	**9**
		Total of Semester				**32**	**26**

Third Year - Fifth Semester

A. THEORY							
Sl. No	**Field**	**Theory**	**Contact Hours/Week**				**Cr. Pts**
			L	**T**	**P**	**Total**	
1	**HU501**	Economics for Engineers	3	0	0	3	3
2	CS501	Design & Analysis of Algorithm	3	**1**	0	4	4
3	CS502	Microprocessors & Microcontrollers	3	**1**	0	4	4
4	CS503	Discrete Mathematics	3	0	0	3	3
5	**Free Elective CS504A** **CS504B CS504C** **CS504D**	Circuit Theory & Network (ECE) Data Communication (ECE) Digital Signal Processing (ECE Object Oriented Programming (IT)	3	**0/1**	0	3/4	3/4
Total of Theory						**17/18**	**17-18**
B. PRACTICAL							
6 7	**CS591** **CS592**	Design & Analysis of Algorithm Microprocessors &Microcontrollers	0 0	0 0	3 3	3 3	2 2
8 9	**CS593 F.E.** **CS594ACS594B CS594C** **CS594D**	Programming Practices using C++ Circuit Theory & Network (ECE) Data Communicat ion (ECE) Digital Signal Processing (ECE)	1 0	0 0	2 3	3 3	2 2

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

		Object Oriented Programming (IT)					
Total of Practical						**12**	**8**
Total of Semester						**29/30**	**25-26**

Third Year - SixthSemester

A. THEORY							
Sl. No.	**Field**	**Theory**	**Contact Hours/Week**				**Cr. Pts**
			L	**T**	**P**	**Total**	
1	**HU601**	Principles of Management	2	0	0	2	2
2	**CS601**	Data Base Management System	3	0	0	3	3
3	**CS602**	Computer Networks	3	0	0	3	3
4	**CS603**	Operating System	3	0	0	3	3
5	**P.E** **CS604A** **CS604B** **CS604C**	Information Theory & Coding Computer Graphics ERP	3	0	0	3	3
6	**F. E.** **CS605A** **CS605B** **CS605C**	Operation Research (M) Human Resource Management (HSS) Multimedia Technology (IT)	3/3	0/1	0/0	3/4	3/4
Total of Theory						**17/18**	**17-18**
B. PRACTICAL							
7	**CS691**	Data Base Management SystemLab	0	0	3	3	2
8	**CS692**	Network Lab	0	0	3	3	2
9..	**CS693**	Operating SystemLab	0	0	3	3	2
10	**CS681**	**Seminar**	**0**	**0**	**3**	**3**	**2**
Total of Practical						**12**	**8**
Total of Semester						**29-30**	**25-26**

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81, Nilgunj Road, Agarpara, Kol-109

Fourth Year - Seventh Semester

Sl. No.	Field	Theory	Contact Hours/Week				Cr. Pts
			L	T	P	Total	
A. THEORY							
1	CS701	Software Engg.	3	0	0	3	3
2	CS702	Compiler Design	3	0	0	3	3
3	CS703	A. PatternRecognition B. SoftComputing C. ArtificialIntelligence D. ImageProcessing	3	0	0	3	3
4	CS704	A. Distributed OperatingSystem B. CloudComputing C. Data Warehousing and DataMining D. SensorNetworks E. MobileComputing	3	0	0	3	3
5	CS705	A. Internet Technology(IT) B. Microelectronics & VLSI Design(ECE) C. Control System(EE) D. Modelling & Simulation(M)	3	0	0	3	3
Total of Theory						**15**	**15**
B. PRACTICAL							
6	HU781	Group Discussion	0	0	3	3	2
7	CS791	Software Engg. Lab	0	0	3	3	2
8	CS793	A. PatternRecognition B. SoftComputing C. ArtificialIntelligence D. ImageProcessing	0	0	3	3	2
9	CS795	A. Internet Technology(IT) B. Microelectronics & VLSI Design(ECE) C. Control System(EE) D. Modelling & Simulation(M)	0	0	3	3	2
10	CS792	Industrial training	4 wks during 6th - 7th Sem-break				2
11	CS794	Project-1				3	2
Total of Practical						**15**	**12**
Total of Semester						**30**	**27**

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81, Nilgunj Road, Agarpara, Kol-109

Fourth Year - Eighth Semester

Sl. No.	Field	Theory	Contact Hours/Week				Cr. Pts
			L	T	P	Total	
A. THEORY							
1	HU801A HU801B	A. OrganisationalBehaviour B. ProjectManagement	2	0	0	2	2
2	CS801	A. Advanced ComputerArchitecture B. ParallelComputing C. Natural Language Processing D. Cryptography &NetworkSecurity E. BusinessAnalytics	3	0	0	3	3
3	CS802	A. Technology Management(HSS) B. Cyber Law & Security Policy(HSS) C. Optical Networking(ECE) D. Low Power Circuits & Systems(ECE) E. E-Commerce(IT) F. Robotics(EE &ME)	3	0	0	3	3
Total of Theory						8	8
B. PRACTICAL							
4	CS891	Design Lab / Industrial problem related practical training (Workshop needed)	0	0	6	6	4
5	CS892	Project-2	0	0	12	12	6
6	CS893	Grand Viva					3
Total of Practical						**18**	**13**
Total of Semester						**26**	**21**

Principal
NARULA INSTITUTE OF TECHNOLOGY
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Narula Institute of Technology

Curriculum for

All B.TECH 1st year

Curricular Regulation 2015 (R15)

under Maulana Abul Kalam Azad

University of Technology,

West Bengal, India

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Revised Syllabus to be implemented from the Academic Year 2010
(for the new batch only)
First Year First Semester

Sl. No.	Field	Theory	Contact Hours/Week				Credit Points
			L	T	P	Total	
A.	**THEORY**						
1	**HU101**	ENGLISH LANGUAGE & TECHNICAL COMMUNICATION	2	0	0	**2**	2
2	**PH101/ CH101**	Chemistry -1 (Gr-B) / Physics – 1 (Gr-A)	3	1	0	4	4
3	**M101**	Mathematics-1	3	1	0	4	4
4	**ES101**	Basic Electrical & Electronic Engineering – 1 (GrA+GrB)	3	1	0	4	4
5	**ME101**	Engg. Mechanics	3	1	0	4	4
		Total of Theory				**18**	**18**
B.	**PRACTICAL**						
6	**PH191/ CH191**	Chemistry -1 (Gr-B)/ Physics – 1 (Gr-A)	0	0	3	3	**2**
7	**ES191**	Basic Electrical & Electronic Engineering -1	0	0	3	3	**2**
8	**ME191 /192**	Engg Drawing & Computer Graphics (Gr-B) / Workshop Practice (Gr-A)	1	0	3	4	**3**
		Total of Practical				**10**	**7**
C.	**SESSIONAL**						
9	**HU181**	Language Laboratory	0	0	2	2	**1**
10	**XC181**	Extra Curricular Activities(NSS/NCC/NSO etc)	0	0	2	2	**1**
		Total of Sessional				**4**	**2**
		Total of Semester				**32**	**27**

Physics based branches divided in to Gr-A & Gr-B, Gr-A= Phys in sem-I , Gr-B = Phys in sem-II; Chemistry based branches Physics in sem-1.

Group division:

Group-A: Chemistry based subjects: [Bio-Technology, Food Technology, Leather Technology, Textile Technology, Ceramic Technology, Chemical Engineering and any other Engineering that chooses to be Chemistry based] + Physics based subjects: [Mechanical Engineering, Production Engineering, Civil Engineering, Automobile Engineering, Marine Engineering, Apparel Production Engineering, Computer Science & Engineering, Information Technology.]

Group-B: All Physics based subjects which are also Electrical & Electronics based [Electrical Engineering, Electronics & Communication Engineering, Applied Electronics & Instrumentation Engineering, Power Engineering, Electrical & Electronics Engineering, Bio-Medical Engineering, Instrumentation & Control Engineering]

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

First Year Second Semester

Sl. No.	Field	Theory	Contact Hours/Week				Credit Points
			L	T	P	Total	
A. THEORY							
1	**CS201**	Basic Computation & Principles of Computer Programming	3	1	0	4	**4**
2	**PH201/ CH201**	Physics - 1(Gr-B) / Chemistry-1(Gr-A)	3	1	0	4	**4**
3	**M201**	Mathematics-2	3	1	0	4	**4**
4	**ES201**	Basic Electrical & Electronic Engineering-II	3	1	0	4	**4**
5	**ME201**	Engineering Thermodynamics & Fluid Mechanics	3	1	0	4	4
		Total of Theory				**20**	**20**
B. PRACTICAL							
7	**CS291**	Basic Computation & Principles of Computer Programming	0	0	3	3	**2**
8	**PH291/ CH291**	Physics – 1 (Gr-B) /Chemistry-1 (Gr-A)	0	0	3	3	**2**
9	**ES291**	Basic Electrical & Electronic Engineering- II	0	0	3	3	**2**
10	**ME291/ 292**	Workshop Practice (Gr-B) / Basic Engg Drawing & Computer Graphics (Gr-A)	1	0	3	4	**3**
		Total of Practical				**13**	**9**
		Total of Semester				**32**	**29**

	Group-A	Group-B
1st Sem	Physics-I; Workshop Practice	Chemistry –1; Engg Drawing & Computer Graphics
2nd Sem	Chemistry –1; Engg Drawing & Computer Graphics	Physics-I; Workshop Practice

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Narula Institute of Technology

Curriculum for

All B.TECH 1st year

Curricular Regulation 2016 (R16)

under Maulana Abul Kalam Azad University of Technology,

West Bengal, India

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

First Year First Semester
Group A: ECE, EE, EIE
Group B: CSE, IT, ME, CE

Curriculum:

THEORY							
l No	Paper Code	Theory	Contact Hours /Week				Credit Points
			L	T	P	Total	
1	M 101	Mathematics -I	3	1	0	4	4
2	CH 101/ PH 101	Chemistry (Gr. A) / Physics - I(Gr. B)	3	1	0	4	4
3	EE 101/ EC 101	Basic Electrical Engineering (Gr. A) / Basic Electronics Engineering (Gr. B)	3	1	0	4	4
4	HU 101	Communicative English	2	0	0	2	2
5	ME 101	Engineering Mechanics	3	1	0	4	4
Total no. of Theory						18	18
PRACTICAL							
6	HU191	Language Lab and Seminar Presentation	0	0	2	2	1
7	CH 191/ PH191	Chemistry Lab (Gr. A) / Physics -I Lab(Gr. B)	0	0	3	3	2
8	EE 191/ EC 191	Basic Electrical Engineering Lab (Gr. A) /Basic Electronics Engineering Lab(Gr. B)	0	0	3	3	2
9	ME 191/ME192	Engineering Drawing & Graphics(Gr A)/ Workshop Practice (Gr-B)	0	0	3	3	2
C. SESSIONAL							
10	XC181	Extra Curricular Activity (NSS/ NCC)	0	0	2	2	1
Total no. of Practical & Sessional						13	08

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilguni Road, Agarpara, Kol-10

First Year Second Semester

Group A: ECE, EE, EIE

Group B: CSE, IT, ME, CE

Curriculum

THEORY							
Sl No	Paper Code	Theory	Contact Hours /Week				Credit Points
			L	T	P	Total	
1	M 201	Mathematics -II	3	1	0	4	4
2	CH 201/ PH 201	Chemistry (Gr. B) / Physics - I(Gr. A)	3	1	0	4	4
3	EE 201/ EC 201	Basic Electrical Engineering (Gr. B) / Basic Electronics Engineering (Gr. A)	3	1	0	4	4
4	CS 201	Computer Fundamentals & Principle of Computer Programming	3	1	0	4	4
5	ME 201	Engineering Thermodynamics & Fluid Mechanics	3	1	0	4	4
Total of Theory						20	20
PRACTICAL							
6	CS291	Computer Fundamentals & Principle of Computer Programming Lab	0	0	3	3	2
7	CH 291/ PH291	Chemistry Lab (Gr. B) / Physics -I Lab(Gr. A)	0	0	3	3	2
8	EE 291/ EC 291	Basic Electrical Engineering Lab (Gr. B) /Basic Electronics Engineering Lab(Gr. A)	0	0	3	3	2
9	ME 291/ME 292	Engg Drawing & Graphics(Gr B)/ Workshop Practice (Gr-A)	0	0	3	3	2
Total of Practical						12	08
C.SESSIONAL							
10	MC 281	Soft Skill Development	0	0	2	2	0

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Narula Institute of Technology

Curriculum for

All B.TECH 1st year

Curricular Regulation 2018 (R18)

under Maulana Abul Kalam Azad

University of Technology,

West Bengal, India

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-10

Revised Curriculum Structure
(to be effective from 2018-19 admission batch)

Curriculum for B.Tech

Under Autonomy (**GR A:** ECE, EE, EIE, BME; **GR B:** CSE, IT, ME, CE, FT)

1st Semester							
Sl No	Paper Code	Theory	Contact Hours /Week				Credit Points
			L	T	P	Total	
A. THEORY							
1	M 101	Mathematics -I	3	1	0	4	4
2	CH 101/ PH 101	Chemistry-I (Gr. A) / Physics - I(Gr. B)	3	0	0	3	3
3	EE 101/ EC 101	Basic Electrical Engineering (Gr. A) / Basic Electronics Engineering (Gr. B)	3	0	0	3	3
4	HU 101	English	2	0	0	2	2
Total of Theory						**12**	**12**
B. PRACTICAL							
5	CH 191/ PH191	Chemistry-I Lab (Gr. A) / Physics-I Lab(Gr. B)	0	0	3	3	1.5
6	EE 191/ EC 191	Basic Electrical Engineering Lab (Gr. A) /Basic Electronics Engineering Lab(Gr. B)	0	0	3	3	1.5
7	ME 191/ ME 192	Engineering Graphics & Design (Gr A) / Workshop/Manufacturing Practices (Gr-B)	0	0	3	3	1.5
C. SESSIONAL							
8	XC181	Extra Curricular Activity	0	0	0	0	2 units
Total of Theory, Practical & Sessional						**21**	**16.5**

Total Credit in Semester I: 16.5

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81, Nilgunj Road, Agarpara, Kol-109

2nd Semester							
Sl No	Paper Code	Theory	Contact Hours /Week				Credit Points
			L	T	P	Total	
A. THEORY							
1	M 201	Mathematics -II	3	1	0	4	4
2	CH 201/ PH 201	Chemistry-I(Gr. B) / Physics - I(Gr. A)	3	0	0	3	3
3	EE 201/ EC 201	Basic Electrical Engineering (Gr. B) / Basic Electronics Engineering (Gr. A)	3	0	0	3	3
4	CS 201	Programming for Problem Solving	3	0	0	3	3
5	ME 201	Engineering Mechanics	3	0	0	3	3
Total of Theory						**16**	**16**
B. PRACTICAL							
6	CS291	Programming for Problem Solving Lab	0	0	3	3	1.5
7	CH 291/ PH291	Chemistry I Lab (Gr. B) / Physics -I Lab (Gr. A)	0	0	3	3	1.5
8	EE 291/ EC 291	Basic Electrical Engineering Lab (Gr. A) /Basic Electronics Engineering Lab(Gr. B)	0	0	3	3	1.5
9	ME 191/ ME 192	Engineering Graphics & Design (Gr B) /Workshop/Manufacturing Practice (Gr-A)	0	0	3	3	1.5
10	HU 291	Language Lab and Seminar Presentation	0	0	2	2	1
C.SESSIONAL							
11	XC281	Extra Curricular Activity	0	0	0	0	2 Units
Total of Theory, Practical & Sessional						**30**	**23**

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Narula Institute of Technology

Department of Civil Engineering

Curriculum for

M.TECH (Structural Engineering)

Curricular Regulation 2018 (R18)
under Maulana Abul Kalam Azad
University of Technology,

West Bengal, India

Principal
NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Course Structure & Curriculum
For
M. Tech Course
in
STRUCTURAL ENGINEERING
CURRICULUM STRUCTURE

FIRST SEMESTER

A. THEORY

Sl. No.	Code	Subjects	Contacts (Period / Week)				Credits
			L	T	P	Total	
1.	SE (CE) 101	Advanced Engineering Mathematics	3	1	0	4	4
2.	SE102	Industrial Management	4	0	0	4	4
3.	SE103	Advanced Structural Analysis	4	0	0	4	4
4.	SE104	Soil Structure Interaction	4	0	0	4	4
5.	SE105	Elective - I	4	0	0	4	4
Total of Theory						20	20

B. LABORATORY / PRACTICAL

Sl. No.	Code	Subjects	Contacts (Period / Week)				Credits
			L	T	P	Total	
6.	SE191	Structural Laboratory I	0	0	3	3	2
7.	SE192	CAD LAB	0	0	3	3	2
8.	SE181	Seminar - I	0	2	0	2	1
		Total of Practical/Laboratory				8	5
		Total of Semester				28	25

Elective – I: **One subject to be chosen from the following subjects.**

Code	Subjects
SE105A	Bridge Engineering
SE105B	Structural Optimisation
SE105C	Repair & Rehabilitation of Structure

SECOND SEMESTER

A. THEORY

Sl. No.	Code	Subjects	Contacts (Period / Week)				Credits
			L	T	P	Total	
1.	SE201	Advanced Structural Design	4	0	0	4	4
2.	SE202	Structural Dynamics & Earthquake Engineering	4	0	0	4	4
3.	SE203	Theory of Elasticity & Plasticity	4	0	0	4	4
4.	SE204	Elective – II	4	0	0	4	4
5.	SE205	Elective – III	4	0	0	4	4
Total of Theory						20	20

B. LABORATORY / PRACTICAL

Sl. No.	Code	Subjects	Contacts (Period / Week)				Credits
			L	T	P	Total	
1.	SE281	Seminar - II	0	2	0	2	1
2.	SE292	Structural Laboratory II	0	0	3	3	2
		Total of Practical/Laboratory				5	3
		Total of Semester				25	23

Elective – II: **One subject to be chosen from the following subjects.**

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Code	Subjects
SE204A	Advanced Foundation Engineering
SE204B	Theory of Plates and Shells
SE204C	Composite Material & Structures

Elective – III: One subject to be chosen from the following subjects.

Code	Subjects
SE205A	Environmental Impact Assessment
SE205B	Advanced Concrete Technology
SE205C	Construction Technology & Management
SE 205D	Theory of Elastic Stability and Behaviour of Metal Structure

THIRD SEMESTER

A. THEORY

Sl. No.	Code	Subjects	Contacts (Period / Week)				Credits
			L	T	P	Total	
1.	SE381	Pre-submission Defense of Dissertation	0	0	0	0	4
2.	SE382	Dissertation (Progress)	0	0	0	24	18
		Total of Semester				24	22

FOURTH SEMESTER

B. THEORY

Sl. No.	Code	Subjects	Contacts (Period / Week)				Credits
			L	T	P	Total	
1.	SE481	Dissertation (Completion)	0	0	0	24	18
2.	SE482	Post-submission Defense of Dissertation	0	0	0	0	6
	SE282	Comprehensive Exam (Viva-Voce)	0	0	0		4
		Total of Semester				24	28

Total Credit Point: 98

ADVANCED ENGINEERING MATHEMATICS
(CODE: SE (CE) 101)

TOTAL CONTACT HOURS	: 52	INTERNAL ASSESSMENT	30
LECTURE	: 39	EXAMINATION	70

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Narula Institute of Technology

Department of Computer Science and Engineering

Curriculum for M.TECH (CSE)

Curricular Regulation 2016 (R16)
under Maulana Abul Kalam Azad
University of Technology,

West Bengal, India

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Curriculum Structure for M TECH in CSE *Programme under Autonomy*

REGULATION-2016

Total Credit- 88

Semester-I

Subject Type	Subject Code	Subject Name	Credits/Subject Th:T:P	Total Credits	Contact Hours/Week
THEORY:					
HS	CSEM101	Teaching & Research Methodologies	4:0:0	4	4
ES	CSEM102	Discrete Structure	3:1:0	4	4
ES	CSEM103	Design and Analysis of Algorithm	3:1:0	4	4
ES	CSEM104	Database and Data Mining	3:1:0	4	4
ES	CSEM105	Software Engineering and Case Tools	3:1:0	4	4
ELECTIVE:					
OE	CSEM106A	Web Technology	3:0:0	3	3
OE	CSEM106B	Theory of Computation	3:0:0	3	3
OE	CSEM106C	Parallel Computing	3:0:0	3	3
OE	CSEM106D	Embedded Systems	3:0:0	3	3
OE	CSEM106E	Modeling and simulation	3:0:0	3	3
OE	CSEM106F	Soft Computing	3:0:0	3	3
OE	CSEM106G	Computational Geometry	3:0:0	3	3
PRACTICAL:					
BS	CSEM193	Algorithm Lab	0:0:3	3	3
ES	CSEM194	Database Lab	0:0:3	3	3
	CSEM181	Seminar (Based of Literature Survey of project to be carried out from III Semester)	0:0:0	2	
MANDATORY:					
		TOTAL: NINE+ONE	**19:4:6**	**31**	**29**

Semester II:

Subject Type	Subject Code	Subject Name	Credits/Subject Th:T:P	Total Credits	Contact Hours/Week
THEORY:					
BS	CSEM201	Probability and Statistic for Engineer	3:1:0	4	4
BS	CSEM202	Advanced Computer Architecture	3:1:0	4	4
BS	CSEM203	Advanced Operating System	3:1:0	4	4
BS	CSEM204	Advanced Computer Network & Security	3:1:0	4	4
ELECTIVE:					
	CSEM205A	Distributed Systems	3:0:0	3	3
	CSEM205B	Cryptography & Network Security	3:0:0	3	3
	CSEM205C	Advanced Compiler Design	3:0:0	3	3
	CSEM205D	Artificial Intelligence	3:0:0	3	3
	CSEM205E	VLSI Design	3:0:0	3	3
	CSEM205F	Pattern Recognition	3:0:0	3	3

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	CSEM206A	Bioinformatics	3:0:0	3	3
	CSEM206B	Machine Learning	3:0:0	3	3
	CSEM206C	Natural Language Processing	3:0:0	3	3
	CSEM206D	Mobile Computing	3:0:0	3	3
	CSEM206E	Multimedia and Graphics	3:0:0	3	3
	CSEM206F	Cluster, Grid and Cloud Computing	3:0:0	3	3
PRACTICAL:					
PC	CSEM293	Advanced Operating System Lab	0:0:3	3	3
PC	CSEM294	Advanced Computer Network Lab	0:0:3	3	3
PC	CSEM281	Seminar (Based on problem formulation of project to be carried out from III Semester)	0:0:3	3	3
MANDATORY:					
		TOTAL: TEN+ONE	**18:4:9**	**28**	**28**

HS	Humanities and Social Sciences	PC	Professional –Core
BS	Basic Sciences	PE	Professional –Electives
ES	Engineering Sciences	OE	Open Electives
		MC	Mandatory Course

Semester III:

Subject Type	Subject Code	Subject Name	Credits/Subject Th:T:P	Total Credits	Contact Hours/Week
PRACTICAL:					
	CSEM381	Extra Curricular Activity (NSS/NCC/NSO	0 : 0 : 0	3	3
	CSEM391	Project Part-I	0 : 0 : 6	6	6
MANDATORY:					
		TOTAL: TEN+ONE	**0:0:6**	**9**	**9**

Semester IV:

Subject Type	Subject Code	Subject Name	Credits/Subject Th:T:P	Total Credits	Contact Hours/Week
PRACTICAL:					
	CSEM491	Comprehensive Viva Voce	0 : 0 : 0	8	3
	CSEM492	Project Part-II	0 : 0 : 12	12	6
MANDATORY:					
		TOTAL: TEN+ONE	**0:0:12**	**20**	**9**

HS	Humanities and Social Sciences	PC	Professional –Core
BS	Basic Sciences	PE	Professional –Electives

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Department of Computer Science and Engineering

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Department of Computer Science and Engineering

Curriculum Structure for M TECH in CSE *Programme under Autonomy*

Total Credit- 75

Semester-I

Subject Code	Subject Name	Credits/Subject Th:T:P	Total Credits	Contact Hours/Week
PROGRAM CORE				
CSM101	Mathematical foundations of Computer	4:0:0	4	4
CSM102	Advanced Data Structures	4:0:0	4	4
ELECTIVE I				
CSM103A	Machine Learning	4:0:0	4	4
CSM103B	Wireless Sensor Networks	4:0:0	4	4
CSM103C	Introduction to Intelligent Systems	4:0:0	4	4
CSM103D	Human and Computer Interaction	4:0:0	4	4
CSM103E	Image Processing	4:0:0	4	4
ELECTIVE II				
CSM104A	Information Theory & Coding	4:0:0	4	4
CSM104B	Data Preparation and Analysis	4:0:0	4	4
CSM104C	Cloud Computing	4:0:0	4	4
CSM104D	GPU Computing	4:0:0	4	4
CSM104E	Pattern Recognition	4:0:0	4	4
COMPULSORY				
CSM105	Research Methodology and IPR	4:0:0	4	4
CSM106	Operations Research	4:0:0	4	4
PRACTICAL:				
CSEM192	Advanced Data Structures Lab	0:0:3	3	3
CSM193A	Machine Learning	0:0:3	3	3
CSM193B	Wireless Sensor Networks	0:0:3	3	3
CSM193C	Introduction to Intelligent Systems	0:0:3	3	3
CSM193D	Human and Computer Interaction	0:0:3	3	3
CSM193E	Image Processing Lab	0:0:3	3	3
	TOTAL:	24:0:6	30	30

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Semester II:

Subject Code	Subject Name	Credits/Subject Th:T:P	Total Credits	Contact Hours/Week
PROGRAM CORE				
CSM201	Advanced Algorithms	4:0:0	4	4
CSM202	Soft Computing	4:0:0	4	4
ELECTIVE III				
CSM203A	Distributed Systems	4:0:0	4	4
CSM203B	Data Science	4:0:0	4	4
CSM203C	Advanced Wireless and Mobile Networks	4:0:0	4	4
CSM203D	Digital Forensics	4:0:0	4	4
ELECTIVE IV				
CSM204A	Security in Computing	4:0:0	4	4
CSM204B	Data Warehouse and Data Mining	4:0:0	4	4
CSM204C	Quantum Computing	4:0:0	4	4
CSM204D	Computer Vision	4:0:0	4	4
OPEN ELECTIVE				
CSM205A	Business Analytics	4:0:0	4	4
CSM205B	Industrial Safety	4:0:0	4	4
CSM205C	Optimization Techniques	4:0:0	4	4
CSM205D	Cost Management of Engineering	4:0:0	4	4
AUDIT COURSE				
CSM206	Audit Course I	2:0:0	0	2
PRACTICAL:				
CSM291	Advanced Algorithms Lab	0:0:3	3	3
CSM292	Soft Computing Lab	0:0:3	3	3
CSM281	Mini Project with Seminar	0:0:3	3	3
	TOTAL:	26:0:9	29	31

Semester III:

Subject Code	Subject Name	Credits/Subject Th:T:P	Total Credits	Contact Hours/Week
CSM301	Audit Course II	2:0:0	0	2
PRACTICAL:				
CSM391	Project Part-I	0:0:12	6	12

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	TOTAL:	2:0:12	6	14

Semester IV:

Subject Code	Subject Name	Credits/Subject Th:T:P	Total Credits	Contact Hours/Week
PRACTICAL:				
CSM491	Comprehensive Viva Voce	0:0:0	4	0
CSM492	Project Part-II	0:0:12	6	12
	TOTAL:	**0:0:12**	**10**	**12**

Audit course 1 & 2

1. English for Research Paper Writing
2. Disaster Management
3. Sanskrit for Technical Knowledge
4. Value Education
5. Constitution of India
6. Pedagogy Studies
7. Stress Management by Yoga
8. Personality Development through Life Enlightenment Skills.

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Narula Institute of Technology

Department of Electronics and Instumentation Engineering

Curriculum for B.TECH (EIE)

Curricular Regulation 2018 (R18)
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Revised Curriculum Structure (to be effective from 2018-19 admission batch)

Department: Applied Electronics & Instrumentation Engineering

Curriculum for B. Tech
Under Autonomy (GR A: ECE, EE, EIE, BME; **GR B:** CSE, IT, ME, CE, FT)

1st Semester								
Sl No	**Course Code**	**Paper Code**	**Theory**	**Contact Hours /Week**				**Credit Points**
				L	**T**	**P**	**Total**	
A. THEORY								
1	BS	M 101	Mathematics -I	3	1	0	4	4
2	BS	CH 101/ PH 101	Chemistry (Gr. A) / Physics- I (Gr. B)	3	0	0	3	3
3	ES	EE 101/ EC 101	Basic Electrical Engineering (Gr. A) / Basic Electronics Engineering (Gr. B)	3	0	0	3	3
4	HS	HU 101	English	2	0	0	2	2
Total of Theory							**12**	**12**
B. PRACTICAL								
5	BS	CH 191/ PH191	Chemistry Lab (Gr. A) / Physics- I Lab (Gr. B)	0	0	3	3	1.5
6	ES	EE 191/ EC 191	Basic Electrical Engineering Lab (Gr. A) / Basic Electronics Engineering Lab (Gr. B)	0	0	3	3	1.5
7	ES	ME 191/ ME 192	Engineering Graphics & Design (Gr A) / Workshop/Manufacturing Practices (Gr-B)	0	0	3	3	1.5
8	PROJ	PR 191	PROJECT-IA	0	0	1	1	0.5
9	PROJ	PR 192	PROJECT-IB	0	0	1	1	0.5
C. MANDATORY ACTIVITIES / COURSES								
10	MC	MC 181	Induction Program	0	0	0	0	
Total of Theory, Practical & Mandatory Activities/Courses							**23**	**17.5**

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2nd Semester								
Sl No	Course Code	Paper Code	Theory	Credit Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	M 201	Mathematics -II	3	1	0	4	4
2	BS	CH 201/ PH 201	Chemistry - (Gr. B) / Physics – I (Gr. A)	3	0	0	3	3
3	ES	EE 201/ EC 201	Basic Electrical Engineering (Gr. B) / Basic Electronics Engineering (Gr. A)	3	0	0	3	3
4	ES	CS 201	Programming for Problem Solving	3	0	0	3	3
5	ES	ME 201	Engineering Mechanics	3	0	0	3	3
Total of Theory							**16**	**16**
B. PRACTICAL								
6	ES	CS291	Programming for Problem Solving Lab	0	0	3	3	1.5
7	BS	CH 291/ PH 291	Chemistry Lab (Gr. B) / Physics - I Lab (Gr. A)	0	0	3	3	1.5
8	ES	EE 291/ EC 291	Basic Electrical Engineering Lab (Gr. B) / Basic Electronics Engineering Lab (Gr. A)	0	0	3	3	1.5
9	ES	ME 291/ ME 292	Engineering Graphics & Design (Gr B) / Workshop/Manufacturing Practice (Gr-A)	0	0	3	3	1.5
10	HS	HU 291	Language Lab	0	0	2	2	1
11	PROJ	PR 291	Project-II	0	0	1	1	0.5
12	PROJ*	PR 292	Innovative activities-I	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
13	MC	MC 281	NSS/ Physical Activities/Meditation & Yoga/Photography/ Nature Club	0	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							**34**	**24.0**

* Inter/ Intra Institutional Activities viz; Training with higher Institutions; Soft skill training organized by Training and Placement Cell of the respective institutions; contribution at incubation/ innovation /entrepreneurship cell of the institute; participation in conferences/ workshops/ competitions etc.; Learning at Departmental Lab/ Tinkering Lab/ Institutional workshop; Working in all the activities of Institute's Innovation Council for eg: IPR workshop/Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc. (evaluation by Programme Head through certification)

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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81, Nilgunj Road, Agarpara, Kol-109

3rd Semester								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	M 301	Mathematics – III	3	1	0	4	4
2	PC	EI 301	Analog Electronic Circuits	3	0	0	3	3
3	PC	EI 302	Digital Electronic Circuits	3	0	0	3	3
4	ES	EI 303	Circuit Theory and Networks	3	1	0	4	4
5	PC	EI 304	Electrical & Electronic Measurement & Instrumentation	3	0	0	3	3
Total of Theory							**17**	**17**
B. PRACTICAL								
6	PC	EI 391	Analog Electronic Circuits Lab	0	0	3	3	1.5
7	PC	EI 392	Digital Electronic Circuits Lab	0	0	3	3	1.5
8	ES	EI 393	Circuits Theory and Networks Lab	0	0	3	3	1.5
9	PC	EI394	Electrical & Electronic Measurement & Instrumentation Lab	0	0	3	3	1.5
10	PROJ	PR 391	Project-III	0	0	2	2	1
11	PROJ*	PR 392	Innovative activities-II	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
12	MC 381	MC	Behavioral & Interpersonal skills	0	0	3	3	
Total of Theory, Practical & Mandatory Activities/Courses							**35**	**24.5**

*Students may choose either to work on participation in all the activities of Institute's Innovation Council for eg: IPR workshop/ Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc.

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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4 TH SEMESTER								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	BS	PH 401	Physics – II	3	0	0	3	3
2	PC	EI 401	Sensors and Transducers	3	0	0	3	3
3	PC	EI 402	Microprocessors and Microcontrollers	3	0	0	3	3
4	PC	EI403	Digital Signal Processing	3	0	0	3	3
5	PC	EI 404	Electromagnetic Theory and Transmission Line	3	0	0	3	3
Total of Theory							**15**	**15**
B. PRACTICAL								
6	BS	PH 491	Physics –II Lab	0	0	3	3	1.5
7	PC	EI 491	Sensors and Transducers Lab	0	0	3	3	1.5
8	PC	EI 492	Microprocessor and Microcontrollers Lab	0	0	3	3	1.5
9	PC	EI493	Digital Signal Processing Lab	0	0	3	3	1.5
10	PROJ	PR 491	Project-IV	0	0	2	2	1
11	PROJ*	PR 492	Innovative activities-III	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
10	MC	MC 401	Environmental Science	3	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							**32**	**22.5**

*Students may choose either to work on participation in all the activities of Institute's Innovation Council for eg: IPR workshop/ Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc.

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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5th Semester								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	HS	HU502	Economics for Engineers	2	0	0	2	2
2	PC	EI 501	Industrial Instrumentation	3	0	0	3	3
3	PC	EI 502	Analog & Digital Communication Theory	3	0	0	3	3
4	PC	EI 503	Control Engineering	3	1	0	4	4
5	PE	EI 504A	Optoelectronics & Fibre Optic Sensors	3	0	0	3	3
		EI 504B	Soft Computing					
		EI 504C	IoT based Instrumentation System					
Total of Theory							**15**	**15**
B. PRACTICAL								
6	PC	EI 591	Industrial Instrumentation Lab	0	0	3	3	1.5
7	PC	EI 592	Analog & Digital Communication Lab	0	0	3	3	1.5
8	PC	EI 593	Control Engineering Lab	0	0	3	3	1.5
9	PROJ	PR 591	Project-V	0	0	2	2	1
10	PROJ*	PR 592	Innovative activities-IV	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
10	MC	MC 501	Constitution of India	3	0	0	3	
Total of Theory, Practical & Mandatory Activities/Courses							**29**	**21**

* Students may choose either to work on participation in Hackathons etc. Development of new product/ Business Plan/ registration of start-up.

Students may choose to undergo Internship / Innovation / Entrepreneurship related activities. Students may choose either to work on innovation or entrepreneurial activities resulting in start-up or undergo internship with industry/ NGO's/ Government organizations/ Micro/ Small/ Medium enterprises to make themselves ready for the industry/ Long Term goals under rural Internship. (Duration 4-6 weeks)

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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6th Semester								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	PC	EI 601	Process Control-I	3	0	0	3	3
2	PE	EI 602	A. Bio Medical Instrumentation B. Advance Sensors C. Non Destructive Testing & Ultrasonic Instrumentation	3	0	0	3	3
3	PE	EI 603	A. Analytical Instrumentation B. Non-Conventional Energy Sources C. Artificial Intelligence	3	0	0	3	3
4	OE	EI 604	A. Power Electronics B. Industrial Drives C. Robotics Engineering	3	0	0	3	3
5	OE	EI 605	A. Data Structures & Algorithms B. Database Management System C. Software Engineering	3	0	0	3	3
	Total of Theory						**15**	**15**
B. PRACTICAL								
6	PC	EI 691	Process Control Lab	0	0	3	3	1.5
7	OE	EI 692	A. Power Electronics Lab B. Industrial Drives Lab C. Robotics Engineering Lab	0	0	3	3	1.5
8	OE	EI 693	A. Data Structures & Algorithms Lab B. Database Management System Lab C. Software Engineering Lab	0	0	3	3	1.5
10	PROJ	PR 691	Project-VI	0	0	2	2	1
11	PROJ*	PR 692	Innovative activities-V	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
12	MC	MC 681	Technical Presentation & Group Discussion-I	0	0	3	3	
Total of Theory, Practical & Mandatory Activities/Courses							**29**	**21**

*Students may choose either to work on participation in all the activities of Institute's Innovation Council for eg: IPR workshop/ Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc.

Innovative activities to be evaluated by the Programme Head/ Event coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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7th Semester								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	HS	HU701	Values & Ethics in Profession	2	0	0	2	2
2	PC	EI 701	Telemetry and Remote Control	3	0	0	3	3
3	PE	EI 702	A. Process Control-II B. Power Plant Instrumentation C. Plant Automation	3	0	0	3	3
4	OE	EI 703	A. Computer Networking B. Computer graphics and Multimedia C. Object Oriented Programming	3	0	0	3	3
Total of Theory							**11**	**11**
B. PRACTICAL								
5	PC	EI 791	Telemetry and Remote Control Lab	0	0	3	3	1.5
6	OE	EI 792	A. Computer Networking Lab B. Multimedia Lab C. Object Oriented Programming Lab	0	0	2	2	1
7	PROJ	PR 791	Project-VII	0	0	0	6	3
8	PROJ*	PR 792	Innovative activities-VI	0	0	0	0	0.5
C. MANDATORY ACTIVITIES / COURSES								
9	MC	MC 781	Technical Presentation & Group Discussion-II	0	0	3	3	
Total of Theory, Practical & Mandatory Activities/Courses							**25**	**17**

*Students may choose either to work on participation in Hackathons etc. Development of new product/ Business Plan/ registration of start-up.

Students may choose to undergo Internship / Innovation / Entrepreneurship related activities. Students may choose either to work on innovation or entrepreneurial activities resulting in start-up or undergo internship with industry/ NGO's/ Government organizations/ Micro/ Small/ Medium enterprises to make themselves ready for the industry/ Long Term goals under rural Internship. (Duration 4-6 weeks)

Innovative activities to be evaluated by the Programme Head / Event Coordinator based on the viva voce and submission of necessary certificates as evidence of activities.

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8th Semester								
Sl No	Course Code	Paper Code	Theory	Contact Hours /Week				Credit Points
				L	T	P	Total	
A. THEORY								
1	HU	HU 804	Principles of Management	2	0	0	2	2
2	PE	EI 801	A. Virtual Instrumentation B. Embedded System Design C. Mechatronics	3	0	0	3	3
3	OE	EI 802	A. Mobile Communication B. VLSI & Microelectronics C. Quantum Computing	3	0	0	3	3
Total of Theory							**8**	**8**
B. PRACTICAL								
4	PE	EI 891	A. Virtual Instrumentation Lab B. Embedded System Design Lab C. Mechatronics Lab	0	0	3	3	1.5
5	PROJ	PR 891	Project-VIII	0	0	0	6	3
C. MANDATORY ACTIVITIES / COURSES								
6	MC	MC 801	Essence of Indian Knowledge Tradition	3	0	0	3	0
Total of Theory, Practical & Mandatory Activities/Courses							**20**	**12.5**

Mandatory Credit Point=160

For Honors additional 20 Credit Point is to be earned (1st Sem to 8th Sem) through MOOCs courses. All the Certificates received by the students across all semester for MOOCs Courses from approved organization (Listed by AICTE / MAKAUT) is to be submitted to CoE office prior to 8th Semester Examination.

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Narula Institute of Technology

Department of Electronics and Instumentation Engineering

Curriculum for B.TECH (EIE)

Curricular Regulation 2016 (R16)
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2nd Year,3rd Sem

A.THEORY:

	Field	Code	Subjects	Contact hours/week				Credit points
				L	T	P	Total	
1	BS	M 301	Mathematics – III	3	1	0	4	4
2	BS	M(CS) 301	Numerical Methods	3	0	0	3	3
3	PC	EI 301	Analog Electronic Circuits	3	0	0	3	3
4	PC	EI 302	Digital Electronic Circuits	3	0	0	3	3
5	PC	EI 303	Circuit Theory and Networks	3	1	0	4	4
6	PC	EI 304	Electrical & Electronic Measurement & Instrumentation	3	1	0	4	4
Total Theory							21	21

B.PRACTICAL:

	Field	Code	Subjects	Contact hours/week				Credit Points
				L	T	P	Total	
1	BS	M(CS)391	Numerical Methods Lab	0	0	3	3	2
2	PC	EI 391	Analog Electronic Circuits Lab	0	0	3	3	2
3	PC	EI 392	Digital Electronic Circuits Lab	0	0	3	3	2
4	PC	EI 393	Circuits and Networks Lab	0	0	3	3	2
Sessional:								
5	MC	MC381						0
Total practical							14	8
Total 3rd Semester							35	29

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2nd Year: 4th SEMESTER

A: THEORY:

	Field	Code	Subjects	Contact hours/week				Credit points
				L	T	P	Total	
1	BS	PH401	Physics – II	3	0	0	3	3
2	PC	EI 401	Sensors and Transducers	3	1	0	4	4
3	PC	EI 402	Microprocessors and Microcontrollers	3	1	0	4	4
5	PC	EI403	Electromagnetic Theory and Transmission Line	3	0	0	3	3
6	PC	EI404	Signals & systems	3	0	0	3	3
Total Theory							17	17

B.PRACTICAL & SESSIONAL:

	Field	Code	Subjects	Contact hours/week				Credit points
				L	T	P	Total	
1	BS	PH 491	Physics –II Lab	0	0	3	3	2
2	PC	EI 491	Sensors and Transducers Lab	0	0	3	3	2
3	PC	EI 492	Microprocessor and Microcontrollers Lab	0	0	3	3	2
4	PC	EI493	Electrical & Electronic Measurement & Instrumentation Lab	0	0	3	3	2
Sessional :								
5	HU	HU 481	Technical report writing & language practice laboratory	0	0	2	2	1
Total practical							14	9
Total 4th semester							31	26

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(a)SWOT Parameters
(b)Organizational SWOT
(c) Case Study

Module 7: Presentation [2L+6P]
(a)Teaching Presentation as a Skill
(b)Speaking Strategies and Skills
(c)Media and Means of Presentation
(d)Extended Practice and Feedback

Module 8: Personal Interview [2L+3P]
(a)Preparing for the Interview: Interview Basics, Dressing and Grooming, Q & A
(b)Mock Interview sessions and feedback

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
CO.1	3	-	-	3	-	3	-	-	3	3	-	-
CO.2	2	3	2	3	-	3	-	-	2	3	-	1
CO.3	1	3	-	3	-	2	-	-	2	3	-	1

3rd Year,5th Sem

A.THEORY:

Sl. no.	Field	Code	Subjects	Contact hours/week				Credit points
				L	T	P	Total	
1	HS	HU501	Environmental Science	2	0	0	2	2
2	PC	EI 501	Industrial Instrumentation	3	0	0	3	3
3	PC	EI 502	Analog & Digital Communication Theory	3	0	0	3	3
4	PC	EI 503	Control Engineering	3	0	0	3	3

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5	PE	EI 504A / EI 504B/ EI 504C	Digital Signal Processing/ Microwave Engineering/ Antenna Theory & Propagation	3	0	0	3	3
Total Theory							14	14

B.PRACTICAL& SESSIONAL:

Sl. no	Field	Code	Subjects	Contact hours/week				Credit points
				L	T	P	Total	
1	PC	EI 591	Industrial Instrumentation Lab	0	0	3	3	2
2	PC	EI 592	Analog & Digital Communication Lab	0	0	3	3	2
3	PC	EI 593	Control Engineering Lab	0	0	3	3	2
4	PE	EI 594A / EI 594B / EI 594C	Digital Signal Processing Lab / Microwave Engineering Lab/ Antenna & Propagation Lab	0	0	3	3	2
Sessional :								
5	MC	MC581	Technical Skill development-II	2	0	0	2	0
Total practical							14	8
Total 5th Semester							28	22

ENVIRONMENTAL SCIENCE
CODE: HU 501
STREAMS: AEIE, ECE, EE
CREDITS: 2L
TOTAL CONTACT HOURS: 22

Pre-requisite: Basic knowledge of Chemistry & Mathematics

Course Objective:

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MC581 : 4	The students have ability to use processors & peripherals to design & build IoT hardware	3	3	2	3	3	2	1	1	1	1	1	1	2	2

3rd Year ,6th Semester

A: THEORY:

Sl.	Field	Code	Subjects	Contact hours/week				Credit
				L	T	P	Total	
1	PC	EI 601	Process Control-I	3	0	0	3	3
2	PC	EI 602	Bio Medical Instrumentation	3	0	0	3	3
3	PE	EI 603A / EI 603B/ EI 603C	Power Electronics / Industrial Drives/ Advanced Sensors	3	0	0	3	3
4	PE	EI604A / EI 604B	Optoelectronics & Fibre Optic Sensors/ Soft Computing	3	0	0	3	3
5	OE	CS(EI)615A / CS(EI)615B/ CS(EI)615C	Data Structures & Algorithms / Database Management System / Software Engineering	3	0	0	3	3
Total Theory							15	15

B.PRACTICAL:

Sl.	Field	Code	Subjects	Contact hours/week				Credit
				L	T	P	Total	
1	PC	EI 691	Process Control Lab	0	0	3	3	2
2	PE	EI 693A / EI 693B/ EI 693C	Power Electronics Lab / Industrial Drives Lab/ Advanced Sensors Lab	0	0	3	3	2
3	OE	CS(EI)685A / CS(EI)685B/ CS(EI)685C	Data Structures & Algorithms Lab /Database Management System Lab / Software Engineering Lab	0	0	3	3	2
Sessional :								

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4	PW	EI 681	GD & Seminar	0	0	3	3	3
5	PW	EI 682	Mini Project	0	0	3	3	3
Total practical							15	12
Total 6th semester							30	27

PROCESS CONTROL-1
CODE: EI601
CONTACT: 3L
CREDITS: 3
TOTAL CONTACT HOURS: 33

Prerequisite: Knowledge of Control Theory
Course Objective:

This course helps the student
1. To have a knowledge on basic process control loop & characteristics
2. To understand the different controller modes
3. To know about methods of tuning of controllers
4. To have a knowledge of final control element & different actuators
5. To apply the knowledge of Cascade, Ratio, Feed forward control to control a complex process
6. To provide knowledge levels needed for PLC programming and functioning.

Course Outcome:
Upon successful completion of the course students will be able to:
EI 601.1: Design a controller by applying the knowledge of different control action
EI 601.2: Calculate controller parameters by applying different tuning methods
EI 601.3: Describe different advanced control strategy
EI 601.4 State the operation and use of final control element
EI 601.5 Develop ladder logic programs and understand basics of DCS

Module I: [10]
General Review of Process, Process Control and Automation. Servo and Regulatory Control, Basic process Control loop block diagram. Characteristic parameters of a process – Process Quantity, Process Potential, Process Resistance, Process Capacitance, Process Lag, Self Regulation Characteristics and functions of

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CS(EI)685C.1	3	3	3	1	3	-	-	-	-	-	-	1
CS(EI)685C.2	3	2	3	-	-	-	-	-	-	-	-	1
CS(EI)685C.3	3	2	2	3	2	-	-	-	-	-	-	-
CS(EI)685C.4	3	2	-	-	-	-	-	-	-	-	-	-
CS(EI)685C.5	3	2	-	-	-	-	-	-	-	-	-	2

4th Year,7th Semester

A.THEORY:

Sl. no.	Field	Code	Subjects	Contact hours/week				Credit points
				L	T	P	Total	
1	HS	HU702	Values & Ethics in Profession	2	0	0	2	2
2	PC	EI 701	Telemetry and Remote Control	3	0	0	3	3
3	PC	EI 702	Process Control-II	3	0	0	3	3
4	PE	EI703A/ EI703B/ EI703C	Digital Image Processing/ Non-Conventional Energy Sources/ Analytical Instrumentation	3	0	0	3	3
5	OE	CS(EI)714A / CS(EI)714B /CS(EI)714C	Computer Networking/ Computer graphics and Multimedia /Object Oriented Programming	3	0	0	3	3
Total Theory							14	14

B. PRACTICAL & SESSIONAL:

Sl. no.	Field	Code	Subjects	Contact hours/week				Credit points
				L	T	P	Total	
1	PC	EI 791	Telemetry and Remote Control Lab	0	0	3	3	2
2	OE	CS(EI)784A / CS(EI)784B / CS(EI)784C	Computer Networking Lab/ Computer graphics and Multimedia Lab / Object Oriented Programming Lab	0	0	3	3	2
3	PW	EI 793	Project-1	0	0	6	6	2
Sessional								
4	PW	EI 781	Industrial Training Evaluation	4 wks during 6th -7th Sem-break				2
5	MC	MC781	Foreign Language	2	0	0	2	0

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Autonomy Curriculum and Syllabus of B.Tech Programme
Implemented from the Academic Year 2016
EIE Department
4th Year: 8th Semester

THEORY:

Sl. no.	Field	Code	Subjects	Contact hours/week				Credit points
				L	T	P	Total	
1	HS	HU804	Industrial &Financial Management	2	0	0	2	2
2	PE	EI801A/ EI801B/	Plant Automation/ Embedded System Design/	3	0	0	3	3
3	PE	EC(EI) 802A/ EC(EI)802B/	Mobile Communication/ VLSI & Microelectronics/	3	0	0	3	3
Total Theory							8	8

PRACTICAL & SESSIONAL:

Sl.	Field	Code	Subjects	Contact hours/week				Credit points
				L	T	P	Total	
1	PC	EI 891	Instrumentation & Control Lab	0	0	3	3	2
2	PW	EI 892	Project-2	0	0	12	12	6
3	PW	EI893	General Viva-voce					4
Total sessional							15	12
Total 8th semester							23	20

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Syllabus for B.Tech(APPLIED ELECTRONICS AND INSTRUMENTATION ENGINEERING) Up to Fourth Year

Revised Syllabus of B.Tech AEIE (for the students who were admitted in Academic Session 2010-2011)

COURSE STRUCTURE IN

Third Semester

Sl. No.	Code	Paper	Contact Hours/Week				Credit Points
			L	T	P	Total	
A. Theory							
1	M(CS) 301	Numerical Methods	2	1	0	3	2
2	M 302	Mathematics – III	3	1	0	4	4
3	EC(EI) 301	Digital Electronic Circuits	3	0	0	3	3
4	EC(EI) 302	Analog Electronic Circuits	3	0	0	3	3
5	EE(EI) 301	Circuit Theory and Networks	3	1	0	4	4
6	EI 301	Electrical Measurement & Instrumentation	3	1	0	4	4
Total Theory						**21**	**20**
B. Practical							
7	M(CS) 391	Numerical Methods Lab	0	0	2	2	1
8	EC(EI) 391	Digital Electronic Circuits Lab	0	0	3	3	2
9	EC(EI) 392	Analog Electronic Circuits Lab	0	0	3	3	2
10	EE(EI) 391	Circuits and Networks Lab	0	0	3	3	2
Total Practical						**11**	7
Total of Semester						**32**	**27**

Fourth Semester

Sl. No.	Code	Paper	Contact Hours/Week				Credit Points
			L	T	P	Total	
A. Theory							
1	HU 401	Values & Ethics in Profession	3	0	0	3	3
2	PH(EE) 401	Physics – II	3	1	0	4	4
3	CH 401	Basic Environmental Engineering & Elementary Biology	3	0	0	3	3
4	EI 401	Sensors and Transducers	3	1	0	4	4
5	EI 402	Microprocessors and Computer Architecture	3	1	0	4	4
6	EE 402(EI)	Field theory	3	0	0	3	3
Total Theory						**20**	**21**
B. Practical							
7	HU 481	Technical report writing & language laboratory practice	0	0	3	3	2
8	PH(EE) 491	Physics –II Lab	0	0	3	3	2
9	EI 491	Electrical Measurement & Instrumentation Lab	0	0	3	3	2
10	EI 492	Microprocessor Lab	0	0	3	3	2
Total Practical						**12**	**8**
Total of Semester						**32**	**29**
Total of Year							**56**

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Syllabus for B.Tech(APPLIED ELECTRONICS AND INSTRUMENTATION ENGINEERING) Up to Fourth Year

Revised Syllabus of B.Tech AEIE (for the students who were admitted in Academic Session 2010-2011)

Fifth Semester

Sl. No.	Field	Code	Paper	Contact Hours/Week L	T	P	Total	Credit Points
	A. Theory							
1	HU	HU 501	Economics for Engineers	3	0	0	3	3
2	PC	EI 501	Industrial Instrumentation	3	1	0	4	4
3	PC	EI 502	Control Theory	3	1	0	4	4
4	PE	EI 503A / EI 503B	Optoelectronics & Fibre Optics/ Advanced Sensors/	3	0	0	3	3
5	FE	EI 504A/ EI 504B/ EI 504C	Data Structures & Algorithms(CS)/ Data Base Management System(CS)/ Software Engineering(IT)	3	0	0	3	3
			Total Theory				**17**	**17**
	B. Practical							
6	PC	EI 591	Industrial Instrumentation Lab	0	0	3	3	2
7	PC	EI 592	Sensors and Transducers Lab	0	0	3	3	2
8	PC	EI 593(EE)	Control Engineering Lab	0	0	3	3	2
9	FE	EI 594A / EI 594B / EI 594C	Data Structures & Algorithms Lab(CS)/ DBMS Lab(CS)/ Software Engineering Lab(IT)	0	0	3	3	2
			Total Practical				**12**	**8**
			Total of Semester				**29**	**25**

Sixth Semester

Sl. No.	Field	Code	Paper	Contact Hours/Week L	T	P	Total	Credit Points
	A. Theory							
1	HU	HU 601	Principles of Management	2	0	0	2	2
2	PC	EI 601	Process Control-I	3	1	0	4	4
3	PC	EI 602	Electronic Instrumentation and Measurement	3	1	0	4	4
4	PC	EI 603	Advanced Microprocessors & Microcontrollers	3	1	0	4	4
5	PE	EI 604A / EI 604B / EI 604C	Bio Medical Instrumentation/ Soft Computing/ Non Destructive Testing & Ultrasonic Instrumentation	3	0	0	3	3
6	FE	EI 605A / EI 605B/ EI 605C/ EI605D	Digital Signal Processing(EC)/ Microwave Engineering(EC)/ Antenna Theory & Propagation(EC) Non Conventional Energy Sources	3	0	0	3	3
			Total Theory				**20**	**20**
	B. Practical							
7	PC	EI 691	Process Control Lab	0	0	3	3	2
8	PC	EI 692	Electronic Instrumentation and Measurement Lab	0	0	3	3	2
9	PC	EI 693	Advanced Microprocessors & Microcontrollers Lab	0	0	3	3	2
10		EI 681	Seminar	0	0	3	3	2
			Total Practical				**12**	**8**
			Total of Semester				**32**	**28**

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NARULA INSTITUTE OF TECHNOLOGY
81, Nilgunj Road, Agarpara, Kol-109

Syllabus for B.Tech(APPLIED ELECTRONICS AND INSTRUMENTATION ENGINEERING) Up to Fourth Year

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Seventh Semester

Sl. No.	Field	Code	Paper	Contact Hours/Week				Credit Points
				L	T	P	Total	
A.	**Theory**							
1	PC	EI 701	Telemetry and Remote Control	3	1	0	4	4
2	PC	EI 702	Analytical Instrumentation	3	1	0	4	4
3	PC	EI 703	Process Control-II	3	1	0	4	4
4	PE	EI 704A / EI 704B / EI 704C	Communication Theory/ Microelectronics & VLSI Technology/ FPGA & Reconfigurable Computing	3	0	0	3	3
5	FE	EI 705A(CS) / EI 705B(IT) / EI 705C(IT)	Computer Networking/ Multimedia/ Internet Technology	3	0	0	3	3
Total Theory							**18**	**18**
B.	**Practical**							
6	PC	EI 791	Telemetry and Remote Control Lab	0	0	3	3	2
7	PE	EI 794A / EI 794B / EI 794C	Communication Lab/ Microelectronics & VLSI Technology Lab/ FPGA & Reconfigurable Computing Lab	0	0	3	3	2
8	FE	EI 795A(CS) / EI795B(IT) / EI 795C(IT)	Computer Networking Lab/ Multimedia Lab/ Internet Technology Lab	0	0	3	3	2
9		EI 781	Industrial Training Evaluation	**4 wks during 6th -7th Sem-break**				2
10		EI 792	Project-1	0	0	6	6	2
Total Practical							**15**	**10**
Total of Semester							**33**	**28**

Eighth Semester

Sl. No.	Field	Code	Paper	Contact Hours/Week				Credit Points
				L	T	P	Total	
A.	**Theory**							
1	HSS	HU 801A	Organisational Behavior	2	0	0	2	2
2	PE	EI 801A / EI 801B / EI 801C	Power Electronics/ Industrial Drives/ Power Plant Instrumentation	3	0	0	3	3
3	FE	EI 802A(EC) / EI 802B(EC) / EI 802C(EC)/ EI 802D(CH)	Mobile Communication/ Embedded Systems/ Digital Image Processing/ Plant Automation	3	0	0	3	3
Total Theory							**8**	**8**
B.	**Practical**							
4	PE	EI 891A(EE) / EI 891B(EE) / EI 891C(EE)	Power Electronics Lab/ Industrial Drives Lab/ Power Plant Instrumentation Lab	0	0	3	3	2
5		EI 892	Instrumentation and Control Design Lab	0	0	6	6	4
6		EI 893	Project - 2	0	0	12	12	6
7		EI 894	**Grand Viva**					3
Total Practical							**21**	**15**
Total of Semester							**29**	**23**

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