सीनेट की उन्नीसवीं बैठक का कार्यवृत्त

MINUTES OF THE 19TH MEETING OF THE SENATE

18TH JUNE 2007

भारतीय प्रौद्योगिकी संस्थान रूड़की
रूड़की - २४७ ६६७ (भारत)
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE
ROORKEE – 247 667 (INDIA)

MEETING SECTION
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE
ROORKEE – 247 667

No.IITR/MS/19th Senate (06/2007)/1372 Dated 3rd July 2007

ALL MEMBERS OF THE SENATE
Indian Institute of Technology Roorkee

Subject: Minutes of the 19th Meeting of the Senate held on 18th June 2007 in the Senate Hall of the Institute.

Enclosed herewith please find a copy of the Minutes of the 19th Meeting of the Senate of this Institute held on 18th June 2007 at 03.00 P.M. in the Senate Hall, for your perusal. Your comments, if any, on the minutes may please be sent within 15 days.

(A.K. Srivastava)
Lt. Col. (Retd.)
Registrar

Encl: as above

INDIAN INSTITUTE OF TECHNOLOGY, ROORKEE
ROORKEE-247 667 (INDIA)

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Minutes of the 19th Meeting of the Senate held on 18th June 2007 in the Senate Hall of the Institute.

The following were present: -

1.	Prof. S.C. Saxema, Director	- Chairman
2.	Prof. H.K. Verma, Dy. Director	
3.	Prof. B.M.J. Periera	(Biotechnology)
4.	Prof. I.M. Mishra	(Chemical Engg.)
5.	Prof. Bikash Mohanty	(Chemical Engg.)
6.	Prof. Shri Chand	(Chemical Engg.)
7.	Prof. I.D. Mall	(Chemical Engg.)
8.	Prof. G. Bhattacharjee	(Chemistry)
9.	Prof. Ravi Bhushan	(Chemistry)
10.	Prof. V.K. Gupta	(Chemistry)
11.	Prof. Anil Kumar	(Chemistry)
12.	Prof. (Mrs) Mala Nath	(Chemistry)
13.	Prof. S.M. Sondhi	(Chemistry)
14.	Prof. G.L. Asawa	(Civil Engineering)
15.	Prof. N.M. Bhandari	(Civil Engineering)
16.	Prof. V.K. Gupta	(Civil Engineering)
17.	Prof. S.S. Jain	(Civil Engineering)
18.	Prof. (Mrs) Renu Bhargava	(Civil Engineering)
19.	Prof. P.K. Garg	(Civil Engineering)
20.	Prof. Pradeep Bhargava	(Civil Engineering)
21.	Prof. G.I. Prajapati	(Earthquake Engg.)
22.	Prof. Ashwani Kumar	(Earthquake Engg.)
23.	Prof. H. Sinvhal	(Earth Sciences)
24.	Prof. R.P. Gupta	(Earth Sciences)
25.	Prof. V.N. Singh	(Earth Sciences)
26.	Prof. A.K. Pachauri	(Earth Sciences)
27.	Prof. D.C. Srivastava	(Earth Sciences)
28.	Prof. A.K. Saraf	(Earth Sciences)
29.	Prof. Rathina Anbalagan	(Earth Sciences)
30.	Prof. R.G.S. Sastry	(Earth Sciences)
31.	Prof. H.O. Gupta	(Electrical Engg.)
32.	Prof. Vinod Kumar	(Electrical Engg.
33.	Prof. Pramod Agarwal	(Electrical Engg.)
34.	Prof. D.K. Mehra	(E. & C. Engg.)
35.	Prof. S.N. Sinha	(E. & C. Engg.)
36.	Prof. D.K. Srivastava	(Hydrology)
37.	Prof. Ranvir Singh	(Hydrology)
38.	Prof. Pashupati Jha	(Hum. & Soc. Sc.)
39.	Prof. A.K. Ray	(Paper Technology)
40.	Prof. A.K. Singh	(Paper Technology)
41.	Prof. J.S. Upadhyay	(Paper Technology)
42.	Prof. G.S. Srivastava	(Mathematics)
43.	Prof. (Mrs.) R.R. Bhargava	(Mathematics)
44.	Prof. S.P. Sharma	(Mathematics)

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45. Prof. T.R. Gulati (Mathematics)
46. Prof. R.C. Mittal (Mathematics)
47. Prof. V.K. Katiyar (Mathematics)
48. Prof. Y.K. Gupta (Mathematics)
49. Prof. Dinesh Kumar (Mech. & Indl Engg.)
50. Prof. P. K. Jain (Mech. & Indl Engg.)
51. Prof. P.S. Mishra (Met. & Mat. Engg.)
52. Prof. Satya Prakash (Met. & Mat. Engg.)
53. Prof. S. Ray (Met. & Mat. Engg.)
54. Prof. Vijaya Agarwala (Met. & Mat. Engg.)
55. Prof. S.K. Nath [Met. & Mat. Engg.)
56. Prof. G.S. Singh (Physics)
57. Prof. Devadutta Das (W.R.D. & M.)
58. Prof. S.K. Tripathi (W.R.D. & M.)
59. Mr. Arun Kumar, Head, AHEC
60. Mr. Yogendra Singh, Librarian
61. Dr. R.P. Maheshwari, Assoc. Professor, Electrical Engg.
62. Dr. Rashmi Gaur, Assoc. Professor, Humanities & Social Sciences
63. Dr. M.R. Maurya, Assoc. Professor, Chemistry
64. Dr. Manoj Arora, Assoc. Professor, Civil Engineering
65. Lt.Col. (Retd.) A.K. Srivastava, Registrar - Secretary

The Chairman welcomed the members to the 19th Meeting of the Senate.

Communication was received from the following members of the Senate for not attending the meeting:

1. Prof. H.C. Gupta, Dy. Director (Administration), IIT Delhi
2. Prof. R.P. Singh, Department of Biotechnology.
3. Prof. B.D. Indu, Department of Physics
4. Dr. Ajay Gairola, Department of Civil Engineering
5. Prof. D.K. Paul, Department of Earthquake Engineering
6. Prof. S. Mukherjee, Department of Electrical Engineering

The agenda was then taken up.

Item No.19.1.1 To confirm the minutes of the 18th Meeting held on 10th /12th/18th April 2007.

The Senate confirmed the minutes of the 18th Meeting held on 10th / 12th / 18th April 2007 with the following observations:

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Item No. 18.2.4: New elective course for PG and Pre-Ph.D. level and revision of Inorganic Chemistry Syllabi for existing M.Sc. programme:

The syllabus of one of the new elective courses, CY-681 as given at Appendix 'A' be replaced with the enclosed **Appendix 'A'**.

The replacement of page No. 157 of Appendix 'Y' of item No. 18.2.30 is enclosed at **Appendix 'B'.**

The observations of Prof. & Head, Department of Electronics & Computer Engineering in respect of item No. 18.2.28, circulated vide letter No. IITR/MS/18th Senate/ 1345 dated 14.6.2007, are reproduced below:

EC-101A	Computer Systems & Programming	E&C Department will not provide any teacher for this course.
EC-101B	Fundamentals of Object Oriented Programming	E&C Deptt. will provide a teacher during one semester and Maths Deptt. (MCA) will provide a teacher in the other semester.
EC-102	Fundamentals of Electronics	Electrical Engineering Deptt. will provide one teacher in each semester.

Item No.19.1.2 To receive a report on the actions taken to implement the decisions taken by the Senate in its 18th Meeting held on 10th /12th/18th April 2007.

The Senate noted that the actions have been taken on the decisions taken by the Senate in its 18th Meeting held on 10th /12th/18th April 2007 with the following observations:

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Item No. 18.2.2: Revised syllabus of EE-501 (On – line Computer Application Techniques) for M.Tech. (Electrical).

The revised syllabus of EE-501 (On–line Computer Application Techniques) for M.Tech. (Electrical) as approved by the Director (Chairman, Senate) be circulated to all members of the Senate.

Item No. 18.2.20: Amendment in the "Instruction for penalty for use of unfair-means".

The amendment in the "Instruction for penalty for use of unfair-means" be included in the UG & PG Booklet to be issued to new students.

Item No. 18.2.28: The corrected Appendix 'W' of Item No. 18.2.28 is enclosed at **Appendix 'C'.**

Item No. 19.3: To consider the review of format of transcript.

As considered and recommended in the joint meeting of the Boards, UGS & PGS&R, the Senate decided that the format of transcript to be used by the Institute as given at **Appendix 'D'** be approved.

The Senate FURTHER decided that the water mark paper and facsimile stamp be used for issuing the transcript. The Dean, UGS will explore what other Institutions are doing for affixing digital signatures.

Item No. 19.4: To report the proposed intake of students to be admitted through JEE-2007 to various UG/IDD/5 Yr. M.Sc./M.Tech (Sci) programs in the session 2007-2008.

Noted. Further, 5 year Integrated M.Tech. Applied Geology and Applied Geophysics course as given at Sl. No. 19 and 20 of the Appendix 'A' be read as Geological Technology and Geophysical Technology respectively.

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Item No. 19.5: **To report about the starting of New five years Integrated Dual Degree programs in B.Tech. (Electrical Engineering) + M.Tech. (Power Electronics) from the session 2007-08 with intake of 10 instead of 8 already approved by the Senate.**

Noted.

Item No. 19.6: **To consider the request of IDD 5th year students for fees structure of the 5th year of the IDD Courses.**

The Senate decided that the same Institute fee will be charged from the 5th year students of the 5 year Integrated Dual Degree Programmes and Integrated Postgraduate Programmes as is being charged from the final year PG students of the respective departments.

Item No. 19.7: **To consider the following:**

(a) **To consider the new names in the panel of eminent personalities outside Roorkee for screening and evaluating Alumni Awards for the year 2006-07 and onwards.**

(b) **Institution of Distinguished Service Award (DSA) to alumni for their contributions in running various Chapters, getting donations and representing the Institute in various forums of PAN IIT and others.**

(a) The under-mentioned panel of eminent personalities outside IIT Roorkee be identified for Distinguished Alumni Awards for the period of two years:

1. Mr. Ashoka Soota
2. Mr. B.K. Agnihotri
3. Prof. S.K. Khanna
4. Prof. Sanjay Dhande
5. Dr. R.P. Singh
6. Mr. Pradeep Baijal
7. Prof. V.K. Gaur

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8. Prof. S.K. Joshi
9. Mr. R.K. Singh

(a) The Senate decided that the under-mentioned Committee be constituted to frame the guidelines for the award of Distinguished Service Award (DSA):

1. Dy. Director — Convener
2. Prof. H.O. Gupta
3. Prof. H. Sinvhal
4. Secretary, Alumni Association

Item No. 19.8: To report the renaming of two new five year Master of Technology Integrated Courses in the Department of Earth Sciences.

The Senate noted that the two new five Year Master of Technology Integrated Courses, to be started in the Department of Earth Sciences with effect from the session 2007-08, have been renamed as under since certain M.Sc./ M.Tech. Programmes in Geology and Geophysics in the IIT Systems carry the same names:

	For	**Read**
(a)	Applied Geology	Geological Technology
(b)	Applied Geophysics	Geophysical Technology

Item No.19.9: To consider new elective courses in the Centre of Nanotechnology:

The issue be withdrawn. Further, the under-mentioned Committee be constituted to examine the courses of Nanotechnology:

1. Prof. S. Ray
2. Prof. H.O. Gupta
3. Prof. G.S. Srivastava
4. Prof. Anil Kumar

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Item No.19.10: Recommendations of the Committee held on 8.6.2007 to review the M.Tech./ Diploma/ Training to Sponsored Candidate in the Institute.

After discussion, the Senate decided that a sponsored candidate admitted either for structured training or for M.Tech./ P.G. Diploma can not be transferred from one programme to other programme. If the candidates do not meet the Institute requirement to continue the programmes after first semester, they would be required to leave the programme and therefore the Institute.

Any Department suggesting changes in M.Tech./ P.G. Diploma programme considering specific requirement of the department, may approach the Senate for its approval.

The total number of admissions for training, M.Tech./ P.G. Diploma programmes shall be limited to the sanctioned strength of the department.

The Senate further decided that the training programmes should be structured and be evaluated/ assessed. Such training programmes be brought to the Senate for its approval.

Item No. 19.11: To consider the curriculum structure of B.Tech./ B.Arch./ Five Year Integrated M.Sc. M.Tech/ IDD Courses.

As considered and recommended by the Board, UGS, the Senate decided as under:

(a) The Credits and Curricular Structure for B.Tech. and IDD Programme of Department of Electronics & Computer Engineering as given at **Appendix 'E'** be approved.

(b) The Curricular Components for B.Tech. (Pulp & Paper) as given at **Appendix 'F'** be approved.

(c) The proposed Teaching Scheme of B.Tech. (Chemical) be re-examined by the Department of Chemical Engineering.

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(d) The Credits and Curricular Structure of B.Tech. (Electrical Engineering) and IDD B.Tech. (Electrical Engineering) and M.Tech. (Power Electronics) as given at **Appendix 'G'** be approved.

(e) The under-mentioned Committee be constituted to examine the Curricular Structure for B.Tech. in Metallurgical Engineering:

(a)	Prof. S.K. Nath	Convenor
(b)	Dr. D.K. Dwivedi	

(f) The credits and proposed curricular structure for B.Tech. I & II year in Mechanical Engineering be approved. The remaining curricular structure be referred back to the Department of Mechanical & Industrial Engineering to re-examine as per suggestions given by the Senators on the floor.

(g) The credits and proposed curricular structure for five year Integrated M.Sc. in Physics. I & II year be approved. The remaining curricular structure be referred back to the Department of Physics to re-examine as per suggestions given by the Senators on the floor.

(h) The under-mentioned Committee be constituted to review the contents of the course structure of Physics I, Physics II and Material Sciences (MT-201):

(a)	Prof. S. Ray	Convener
(b)	Prof. Jagdish Rai	
(c)	Prof. I.M. Mishra	
(d)	Prof. S.N. Sinha	
(e)	Prof. G.S. Singh	

(i) The credit allotments over five years Integrated M.Sc. in Chemistry upto II year be approved. Remaining course structure be referred back to the Department of Chemistry to reexamine as per suggestions given by the Senators on the floor.

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(j) The credit allotments over five years Integrated M.Sc. in Applied Mathematics upto II year be approved. Remaining course structure be referred back to the Department of Mathematics to reexamine as per suggestions given by the Senators on the floor.

(k) The courses of 5 year Integrated M.Tech. Courses in Geophysical Technology and Geological Technology be referred back to the Department of Earth Sciences for incorporation the suggestions given by the Senate.

(l) The Curricular Components for 5 year Integrated M.Tech. (Polymer Science & Technology) Program be referred back to the Department of Paper Technology to re-examine as per the suggestions given by the Senators on the floor.

(m) The curricular components for IDD B.Tech. (Process Engineering) with MBA be referred back to the Department to re-examine as per suggestions given by the Senators on the floor.

(n) The credits and curricular structure of B.Tech. (Civil Engineering) as given at **Appendix 'H'** be approved.

(o) The Academic Curricular for B.Tech. (Biotechnology) be referred back to the Department of Biotechnology for re-examination as per suggestions given by the Senators on the floor.

The Senate further decided that

(i) Not more than 7 theory subjects be kept upto 2nd year and not more than 6 theory subjects be kept from 3rd year onwards in any course.

(ii) 1 Course + 1 Dissertation + 1 Seminar be kept in the X Semester of Integrated M.Sc./ M.Tech. courses.

(iii) 3 courses + Project be kept in the 8th Semester of B.Tech programmes.

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The Senate still further decided that the under-mentioned Senate Sub-Committee be constituted to re-examine all the programmes:

(a)	Dean, PGS&R	Convenor
(b)	Dean, UGS	
(c)	Associate Dean, UGS	
(d)	Prof. S. Ray	
(e)	Prof. I.M. Mishra	
(f)	Prof. S.N. Sinha	

The meeting ended with a vote of thanks to the Chair.

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Appendix 'A'
Item No. Senate./19.1.1

1. Subject: C Y-681 Course Title: Chemical Applications of Nanoscale Materials

2. Contact Hours: L-3; T-1; P-0

3. Examination Duration (Hrs): Theory: 03

4. Relative weightage: CWS 25 PRS MTE 25 ETE 50

5. Credits: 04 6. Semester: Spring

7. Pre-requisite: Nil

8. Subject Area: **Chemistry advance level course for Pre Ph.D. students.**

9. Objective of the Course:

The present course will introduce various aspects of chemical applications of nanoparticles, including nanoscale metal oxides. The course will help understanding the size-dependent changes in chemical properties of nanoscale materials that present enormous opportunities for the advances in science and technology.

10. Details of Course:

S. No.	Particulars	Contact Hours
1	**Overview of nanomaterials and nanoscale metal Oxides.**	2
2	**Reactivity and Characteristics of Nanoparticles:** Increased reactivity of nanoscale materials, reasons for high reactivity, effect of size and shape of nanocrystals on reactivity, comparison of nanocrystalline versus macro-crystalline materials in terms of reactivity.	5
3	**Metal Oxide Nanoparticles:** Aerogel method to produce materials with very high surface area, textural studies, determination of size, defects in nanocrystalline metal oxides, comparison of nanoscale metal oxides with other porous materials such as zeolites, clays etc. Typical reactions used for testing reactivity; SO_2 and CO_2 adsorption, H_2S adsorption, CCl_4 adsorption, adsorption of stimulant molecules of chemical warfare agents.	9
4	**Chemical Modification of Nano Metal Oxides:** Prevention of agglomeration, impregnation / incorporation of suitable chemical agents on the surface of nanoparticles, increasing dispersibility in solution.	5

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5	**Applications of Nano Metal Oxides and Modified Nano Metal Oxides as Adsorbents:** Adsorbents based on nanostructured materials, destructive adsorption, decontamination of toxic chemicals, detoxification of surrogates of chemical warfare agents, air purification, desulfurization, destruction of chlorinated compounds. Mixed metal oxides, Lewis acid incorporated nanocrystalline metal oxides, model reactivity studies using modified nanocrystalline metal oxides.	13
6	**Biocidal Applications:** Killing bacteria, spores and other harmful germs using halogenated nanoparticles, mechanism of biocidal action, advantages of using biocides based on nanoparticles.	4
7	**Toxicology:** Concerns in using nanoparticles, inhalation toxicity, oral toxicity, governmental regulations, case studies on toxicology, precautions.	4

Recommended Books:

A few relevant text books (some are listed below) and a few monographs will be used. The references will be provided during the lectures.

S.No	Recommended Books	Year of Publication
1.	Klabunde (KJ) Ed., Nanoscale Materials in Chemistry, Wiley-Interscience, NY.	2001
2.	Schmid (G) Ed., Nanoparticles: From Theory to Application, Wiley-VCH, Weinheim.	2004
3.	Rodriguez (JA) and Fernandez-Garcia (M) Ed., Synthesis, Properites and Applications of Oxide Nanomaterials, John Wiley, New York.	2006
4.	Rao (CNR), Mueller (A), Cheetham (A.K), The Chemistry of Nanomaterials: Synthesis, Properties and Applications, (Volumes 1 and 2), Wiley-VCH Verlag, Weinheim.	2004

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Appendix 'B'
Item No. Senate./19.1.1

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NAME OF DEPARTMENT: Electronics & Communication

1. **Subject Code:** EC-101A **Course Title:** Computer Systems & Programming
2. **Contact Hours:** **L:** 3 **T:** 0 **P:** 2
3. **Examination Duration (Hrs.): Theory** 0 3 **Practical** 0 0
4. **Relative Weightage:** CWS 15 PRS 15 MTE 30 ETE 40 PRE 00
5. **Credits:** 0 4 6. **Semester:** Autumn [ ] Spring [ ] Both [√]
7. **Pre-requisite:** NIL
8. **Subject Area:** ESC
9. **Objective of the Course:**

10. **Details of the Course:**

S.No.	Particulars	Contact Hours
1.	**Basic Computer Fundamentals:** Introduction to computer systems ; number system integer,m signed integer, fixed and floating point representations . IEEE standards integer and floating point arithmetic ; CPU organization ALU, registers, memory, the idea of program execution at micro level.	7
2.	**Basic Programming elements in C++:** Input/Output : Constants, variables expressions and operations : Naming conventions and styles : Conditions and selection statements ; Looping and control structures ; File I/O header files, string processing ; Pre-processor directives such as include, #define, #ifdef, #ifndef, Compiling and linking.	8
3.	**Programming through functional decomposition:** Functions (void and value returning) parameters, scope and lifetime of variables, passing by value, passing by reference passing by constant reference : Design of functions and their interfaces (concept of functional decomposition), recursive functions, function overloading and default arguments ; Library functions	8
4.	**Aggregate data-types:** Arrays and pointers : Structures : Dynamic data and pointers, dynamics arrays ; Introductiion to data structures, use of pointers in linked structures.	7
5.	**Object Oriented Programming Concepts:** Data hiding, abstract data types, classes, access control : Class implementation – default constructor, constructors, copy constructor, destructor, operator overloading, friend functions ; Object oriented design, inheritance and composition : Dynamic binding and virtual functions ; Polymorphism ; Dynamic data in classes.	12
	Total	42

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11. Suggested Books:

S.No.	Name of Books/Authors/Publisher	Year of Publication
1.	Dietel H.M. & Dietel P.J. , "C ++ How to Program " Prentice Hall Publications.	
2.	Nell Date, Chip Weems, Mark Headington, Programming and Problem Solving with C++ CBS Publishers and Distribution New Delhi, 2000.	
3.	Cohoon J.P. & Davidson, J.W., "C++ Program Design Tata McGraw Hill.	

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Appendix 'C'
Item No. Senate/19.1.2

Credits and Curricular Components of Institute Elective for B.Tech., B.Arch., IDD (B.Tech. +M.Tech) and IDD (B.Tech.+MBA) Programme

Curricular Components	Credits		
	B.Tech./B.Arch.	B.Tech.+M.Tech.	B.Tech.+MBA
(i) Humanities, Social Sciences and Management (HSSMEC)	6	3-6	9-12
(ii) Basic and General Sciences (BGSEC)	6	6-9	6-9
(iii) Engineering Sciences (ESEC)	8-12	4-8	6-9
Total	**20-24**	**17-23**	**24-30**

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Appendix 'D'
Item No. Senate/19.3

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

OFFICIAL TRANSCRIPT

(Statement of Earned Credits & Grades)

ENROLMENT NO. OF THE STUDENT: _____ **NAME:** _____

PROGRAMME: _____

SESSION 2003-04 **SEMESTER** Autumn

SUBJECT CODE	SUBJECT TITLE	GRADE	CREDIT
MA-101	MATHEMATICS-I	B	4
HS-101	ENGLISH (BASIC\ADVANCE)	B	4
BT-101	FUNDAMENTALS OF BIOTECHNOLOGY	B+	2
MI-101	BASIC MANUFACTURING PROCESSES	B	3
CE-101	ENGINEERING GRAPHICS-I	B+	3
PH-101	PHYSICS-I	B+	5
CY-101	CHEMISTRY	B+	5

EARNED CREDITS 26 **SGPA** 7.58
REG. CREDITS 26 **TOTAL EARNED CREDITS** 26 **CGPA** 7.58

SESSION 2003-04 **SEMESTER** Spring

SUBJECT CODE	SUBJECT TITLE	GRADE	CREDIT
EE-101	ELECTRICAL SCIENCE	B	4
PH-102	PHYSICS-II	C+	5
IC-102	COMPUTER SYSTEMS & PROGRAMMING	B+	4
MI-106	ENGINEERING GRAPHICS -II	C+	3
EC-102	ELECTRONICS	C	4
MA-102	MATHEMATICS-II	C	4
PR-102	BADMINTON	A	2
PR-501	N.C.C.	D	2
DISP	DISCIPLINE	A+	2

EARNED CREDITS 30 **SGPA** 6.47
REG. CREDITS 30 **TOTAL EARNED CREDITS** 56 **CGPA** 6.99

SESSION 2004-05 **SEMESTER** Autumn

SUBJECT CODE	SUBJECT TITLE	GRADE	CREDIT
MI-261	MACHINE DRAWING	C	5
MI-265	THEORY OF MACHINES	C	4
MI-231	MANUFACTURING TECHNOLOGY -I	C+	4
MI-203	FLUID MECHANICS & MACHINERY	B	4
IC-203A	SCIENCE OF STRUCTURAL MATERIAL	C+	4
MA-201	MATHEMATICS III	C+	4

EARNED CREDITS 25 **SGPA** 5.80
REG. CREDITS 25 **TOTAL EARNED CREDITS** 81 **CGPA** 6.62

SESSION 2004-05 **SEMESTER** Spring

SUBJECT CODE	SUBJECT TITLE	GRADE	CREDIT
IC-201	NUMERICAL METHODS	B	4
HS-201	TECHNICAL COMMUNICATION	B	4
MI-206	THERMODYNAMICS AND HEAT TRANSFER	B	4
MI-232	MANUFACTURING TECHNOLOGY-II	C+	2
MI-208	ENERGY RESOURCES & MANAGEMENT	B+	4
MI-234	ENGINEERING ECONOMY	B+	4
IC-204	SOLID MECHANICS	B	4
PR-208	WEB DESIGNING AND DEVELOPMENT	B	2
DISP	DISCIPLINE	A+	2

EARNED CREDITS 30 **SGPA** 7.40
REG. CREDITS 30 **TOTAL EARNED CREDITS** 111 **CGPA** 6.83

SESSION 2005-06 **SEMESTER** Autumn

SUBJECT CODE	SUBJECT TITLE	GRADE	CREDIT
EE-313	ELECTRICAL TECHNOLOGY	B	3
MI-391	GROUP DISCUSSION	A	2
MI-333	PRODUCTION PLANNING AND CONTROL	B	4
MI-335	THEORY OF PRODUCTION PROCESSES-I	B+	4
MI-361	MECHANICS OF MATERIALS	B	4
HS-301	ECONOMICS	B	4
IEQ-01	INTRODUCTION TO EARTHQUAKE ENGINEERING	B+	4

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

OFFICIAL TRANSCRIPT

(Statement of Earned Credits & Grades)

ENROLMENT NO. OF THE STUDENT: _____ NAME: _____

PROGRAMME: _____

EARNED CREDITS	25			SGPA	7.48
REG. CREDITS	25	TOTAL EARNED CREDITS	136	CGPA	6.95

SESSION 2005-06 SEMESTER Spring

SUBJECT CODE	SUBJECT TITLE	GRADE	CREDIT
MI-366	MACHINE DESIGN	B	5
MI-362	MEASUREMENT & INSTRUMENTATION	B	4
BM-301	MANAGEMENT CONCEPTS AND PRACTICE	B+	4
MI-336	THEORY OF PRODUCTION PROCESSES-II	B+	4
MI-334	QUALITY CONTROL	B	4
IMA-15	FUZZY SETS AND FUZZY SYSTEMS	B	4
PR-208	WEB DESIGNING AND DEVELOPMENT	C+	0
DISP	DISCIPLINE	A+	2

EARNED CREDITS	27			SGPA	7.52
REG. CREDITS	27	TOTAL EARNED CREDITS	163	CGPA	7.04

STUDENT HAS NOT YET COMPLETED THE PROGRAMME

Evaluation and Grading: The student is graded for his/her academic performance on a ten point scale in the following manner:

A+(10) - Outstanding, A(9) - Excellent, B+(8) - Very Good, B(7) - Good, C+(6) - Average, C(5) - Below Average, D(4) - Marginal, E(2) - Poor, F(0) - Very Poor, AP - Audit Pass, AF - Audit Fail, I - Incomplete Course, X - Incomplete Project/Dissertation, S - Satisfactory Progress in Dissertation, U - Unsatisfactory Progress in Dissertation, W - Withdrawal, Z - Non-completion of course requirement and/or training.

Note:-

(i) The medium of Instruction at this Institute is English.

(ii) The Institute does not issue rank certificates.

(iii) The Institute does not prescribe any formula of conversion of grades into percentage of marks and vice-versa.

Minimum CGPA for awarding _____ Degree = _____

Roorkee

Dated:

Authorised Signatory

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Appendix 'E'
Item No. Senate/19.11

Department of Electronics & Computer Engineering
Indian Institute of Technology, Roorkee

Proposed Credits and Curricular Structure for B.Tech. Programme

Curricular Components	Credits (B.Tech.)
(a) Institute Core (IC) Courses	
I. Humanities, Social Sciences and Management (HSSMC)	10
II. Basic Sciences (BSC)	
III. General Sciences (GSC)	21
IV. Engineering Sciences (ESC)	06
	28
Total	**65**
(b) Department Core Courses (DCC)	
I Class Contact Core Courses	62-65
II. Communication Skills	02
III. Major Project	08
IV. Minor Project/Practical Work/ Case Studies	02
V. Practical Field Training	02
Total	**76-79**
(c) Departmental Elective Courses (DEC)	**15-18**
(d) Institute Elective Courses (IEC)	**20-24**
(e) Extra-Curricular Activities (ECA)	
I. Discipline (2 Credits/year for 3 years)	06
II. NCC/NSS (First Year)	02
III. NSO/Proficiency (Second year to Fourth Year)	03
Total	**11**
Grand Total	**187-193**

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DEPARTMENT OF ELECTRONICS AND COMPUTER ENGINEERING, IIT ROORKEE

Curricular Structure

B.Tech. (Computer Science & Engineering)

Teaching Scheme					Contact Hours/Week			Exam Duration (hrs.)		Relative Weightage (%)				
S.No.	Subject Code	COURSE TITLE	Subject Area	Credits	L	T	P/D	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1th Semester														
1	MA-101	Mathematics-I	BSC	4	3	1	0	3	-	25	-	25	50	-
2	CY-101	Chemistry	BSC	5	3	1	2	3	3	15	15	15	40	15
3	EC-102	Fundamentals of Electronics	ESC	4	3	1	2/2	3	-	15	15	30	40	-
4	CE-101	Engineering Graphics	ESC	4	2	0	4	3	-	-	25	25	50	-
5	MI-101	Thermodynamics	ESC	3	2	1	0	2		25	-	25	50	
6	CE-102	Environmental Studies	GSC	2	2	0	0	2	-	15	-	35	50	-
7	HS-102	Behavioral Science	HSSMC	2	2	0	0	2	-	15	-	35	50	-
TOTAL =				**24**	**17**	**4**	**7**							
2nd Semester														
1	MA-102	Mathematics-II	BSC	4	3	1	0	3	-	25	-	25	50	-
2	PH-101	Physics-I	BSC	5	3	1	2	3	3	15	15	15	40	15
3	EE-101	Electrical Science	ESC	4	3	1	2/2	3		15	15	30	40	-
4	EC-101A	Computer Systems and Programming	ESC	4	3	0	2	3	-	15	15	30	40	-
	EC-101B	Fundamentals of Object Oriented Programming		4	3	0	2	3		15	15	30	40	-
5	MI-102	Manufacturing Techniques	ESC	3	2	0	2	2	-	15	15	30	40	-
6	BT-101	Fundamentals of Biotechnology	GSC	2	2	0	0	2	-	15	-	35	50	-
7	HS-101	Technical Communication	HSSMC	2	1	0	2	2	-	25	-	25	50	-
TOTAL =				**24**	**17**	**3**	**9**							

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3rd Semester														
1	EC-203	Digital Electronics	DCC	4	3	1	0	3	-	25	-	25	50	-
2	EC-251	Data Structures	DCC	5	3	1	2	3	-	15	15	30	40	
3	EC-253	System Software	DCC	3	2	1	0	2	-	25	-	25	50	-
4	PH-201	Physics II	BSC	3	3	0	0	3	-	15	-	35	50	-
5	CE-201	Computer Aided Graphics	ESC	2	1	0	2	2	-	-	25	25	50	-
6	BM-201	Management Concepts and Practices	HSSMC	3	2	1	0	2	-	25	-	25	50	-
7	MT-201A	Material Science	ESC	4	3	1	0	3	-	25	-	25	50	-
TOTAL =				**24**	**17**	**5**	**4**							
4th Semester														
1	EC-202	Signals and Systems	DCC	4	3	1	0	3	-	25	-	25	50	-
2	EC-252	Computer Architecture and Microprocessors	DCC	4	3	1	0	3	-	25	-	25	50	-
3	EC-254	Discrete Structures	DCC	4	3	1	0			25		25	50	
4	EC-262	Digital Hardware Lab	DCC	2	0	0	3	-	2	-	50		-	50
5	HS-201	Economics	HSSMC	3	2	1	0	2	-	25	-	25	50	-
6	CH-201	Energy Resources and Conservation	GSC	2	2	0	0	2	-	15	-	35	50	-
7		Institute Elective-I	BGSEC	3	2	1	0	2	-	25	-	25	50	-
TOTAL =				**22**	**15**	**5**	**3**							
5th Semester														
1	EC-311	Principles of Digital Communication	DCC	4	3	1	0	3	-	25	-	25	50	-
2	EC-351	Design and Analysis of Algorithms	DCC	4	3	1	0	3	-	25	-	25	50	-
3	EC-353	Operating Systems	DCC	5	3	1	2	3		15	25	20	40	-
4	EC-355	Theory of Computation	DCC	4	3	1	0	3	-	25	-	25	50	-
5	EC-357	Software Engineering	DCC	3	3	0	0			15		35	50	
6		Institute Elective-II	BGSEC	3	2	1	0	2	-	25	-	25	50	-
TOTAL =				**23**	**17**	**5**	**2**							

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6th Semester														
1	EC-352	Principles of Programming Languages	DCC	3	3	0	0	3	-	15		35	50	
2	EC-354	Compiler Design	DCC	4	3	1	0	3	-	25	-	25	50	-
3	EC-356	Computer Networks	DCC	3	3	0	0	3	-	15	-	35	50	-
4	EC-372	Compiler Lab	DCC	2	0	0	3	-	-	-	100	-	-	-
5	EC-302	Communication Skills	DCC	2	0	2	0		-	-	100	-	-	-
6		Department Elective-I	DEC	3	3	0	0	3		15	-	35	50	
7		Institute Elective-III	HSSMEC	3	2	1	0	2	-	25	-	25	50	-
TOTAL =				**20**	**14**	**4**	**3**							
7th Semester														
1	EC-451	Database Management Systems	DCC	4	3	1	0	3	-	25	-	25	50	-
2	EC-473	Computer Networks Lab	DCC	2	0	0	3	-	-	-	100	-	-	-
3	EC-491	Field Training	DCC	2	0	2	0	-	-	-	100		-	-
4	EC-492	Major Project	DCC	0	0	0	3	-						
5		Department Elective-II	DEC	3	3	0	0	3		15	-	35	50	
6		Department Elective-III	DEC	3	3	0	0	3		15	-	35	50	
7		Institute Elective-IV	HSSMEC	3	2	1	0	2	-	25	-	25	50	-
8		Institute Elective-V	ESEC	4	3	1	0	3	-	25	-	25	50	-
TOTAL =				**21**	**14**	**5**	**6**							
8th Semester														
1	EC-492	Major Project	DCC	8	0	0	12	-			40			60
5		Department Elective-IV	DEC	3	3	0	0	3		15		35	50	
2		Department Elective–V	DEC	3	3	0	0			15		35	50	
3		Institute Elective-VI	ESEC	4	3	1	0	3	-	25	-	25	50	-
TOTAL =				**18**	**9**	**1**	**12**							

DCC = 76 Cr.
DEC = 15 Cr.
IE = 20 Cr.
IC = 65 Cr.
ECA = 11 Cr.

Total = 187 Cr.

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3rd Semester														
1	EC-201	Linear Circuits	DCC	3	2	1	0	2	-	25	-	25	50	-
2	EC-203	Digital Electronics	DCC	4	3	1	0	3	-	25	-	25	50	-
3	EC-251	Data Structures	DCC	5	3	1	2	3	-	15	15	30	40	
4	PH-201	Physics II	BSC	3	3	0	0	3		15	-	35	50	-
5	CE-201	Computer Aided Graphics	ESC	2	1	0	2	2		-	25	25	50	-
6	BM-201	Management Concepts and Practices	HSSMC	3	2	1	0	2		25		25	50	
7	MT-201A	Material Science	ESC	4	3	1	0	3		25	-	25	50	-
TOTAL =				**24**	**17**	**5**	**4**							
4th Semester														
1	EC-202	Signals and Systems	DCC	4	3	1	0	3	-	25	-	25	50	-
2	EC-242	Semiconductor Devices and Technology	DCC	4	3	1	2/2	3		15	15	30	40	
3	EC-252	Computer Architecture and Microprocessors	DCC	4	3	1	0	3	-	25	-	25	50	-
4	EC262	Digital Hardware Lab	DCC	2	0	0	3	-	2	-	50		-	50
5	HS-201	Economics	HSSMC	3	2	1	0	2		25	-	25	50	-
6	CH-201	Energy Resources and Conservation	GSC	2	2	0	0	2	-	15	-	35	50	-
7		Institute Elective - I	BGSEC	3	2	1	0	2	-	25	-	25	50	-
TOTAL =				**22**	**15**	**5**	**4**							

5th Semester														
1	EC-301	Analog Electronics	DCC	3	3	0	0	3		15		35	50	
2	EC-311	Principles of Digital Communication	DCC	4	3	1	0	3	-	25	-	25	50	-
3	EC-321	Automatic Control Systems	DCC	4	3	1	0	3	-	25	-	25	50	-
4	EC-331	Engineering Electromagnetics	DCC	4	3	1	0	3	-	25	-	25	50	-
5	EC-361	Linear IC Applications Lab	DCC	2	0	0	3	-	3	-	50		-	50
6	EC-363	Control Systems Lab.	DCC	2	0	0	3	-	3	-	50		-	50
7		Institute Elective- II	BGSEC	3	2	1	0	2	-	25	-	25	50	-
TOTAL =				**22**	**14**	**4**	**6**							

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DEPARTMENT OF ELECTRONICS AND COMPUTER ENGINEERING, IIT ROORKEE

Curricular Structure

B.Tech. (Electronics & Communication Engineering)

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weightage(%)				
S.No.	Subject Code	COURSE TITLE	Subject Area	Credits	L	T	P/D	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1th Semester														
1	MA-101	Mathematics-I	BSC	4	3	1	0	3	-	25	-	25	50	-
2	CY-101	Chemistry	BSC	5	3	1	2	3	3	15	15	15	40	15
3	EC-102	Fundamentals of Electronics	ESC	4	3	1	2/2	3	-	15	15	30	40	-
4	CE-101	Engineering Graphics	ESC	4	2	0	4	3	-	-	25	25	50	-
5	MI-101	Thermodynamics	ESC	3	2	1	0	2		25	-	25	50	
6	CE-102	Environmental Studies	GSC	2	2	0	0	2	-	15	-	35	50	-
7	HS-102	Behavioral Science	HSSMC	2	2	0	0	2	-	15	-	35	50	-
TOTAL =				**24**	**17**	**4**	**7**							
2nd Semester														
1	MA-102	Mathematics-II	BSC	4	3	1	0	3	-	25	-	25	50	-
2	PH-101	Physics-I	BSC	5	3	1	2	3	3	15	15	15	40	15
3	EE-101	Electrical Science	ESC	4	3	1	2/2	3		15	15	30	40	-
4	EC-101A	Computer Systems and Programming	ESC	4	3	0	2	3	-	15	15	30	40	-
	EC-101B	Fundamentals of Object Oriented Programming		4	3	0	2	3		15	15	30	40	-
5	MI-102	Manufacturing Techniques	ESC	3	2	0	2	2	-	15	15	30	40	-
6	BT-101	Fundamentals of Biotechnology	GSC	2	2	0	0	2	-	15	-	35	50	-
7	HS-101	Technical Communication	HSSMC	2	1	0	2	2		25	-	25	50	-
TOTAL =				**24**	**17**	**3**	**9**							

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6th Semester														
1	EC-312	Communication Systems & Techniques	DCC	4	3	1	0	3		25		25	50	
2	EC-332	Microwave Techniques	DCC	3	3	0	0	3		15		35	50	
3	EC-334	Antenna and Wave Propagation	DCC	3	3	0	0	3		15		35	50	
4	EC-362	Communication Lab.	DCC	2	0	0	3	-	-	-	50		-	50
5	EC-364	VLSI Lab	DCC	2	0	0	3				50			50
6	EC-302	Communication Skills	DCC	2	0	2	0	-		100				
7		Departmental Elective-I	DEC	3	3	0	0	3	-	15	-	35	50	-
8		Institute Elective-III	HSSMEC	3	2	1	0	2	-	25	-	25	50	-
TOTAL		=		**22**	**14**	**4**	**6**							
7th Semester														
1	EC-411	Digital Signal Processing	DCC	3	3	0	0	3	-	15	-	35	50	-
2	EC-461	Microwave Lab.	DCC	2	0	0	3	-	3	-	50		-	50
3	EC-491	Field Training	DCC	2	0	2	0	-	-	100	-	-	-	-
4	EC-492	Major Project	DCC	0	0	0	3							
5		Department Elective – II	DEC	3	3	0	0	3		15		35	50	
6		Department Elective-III	DEC	3	3	0	0	3		15		35	50	
7		Institute Elective-IV	ESEC	4	3	1	0	3	-	25	-	25	50	-
8		Institute Elective-V	HSSMEC	3	2	1	0	2	-	25	-	25	50	-
TOTAL		=		**20**	**14**	**4**	**6**							
8th Semester														
1	EC-492	Major Project	DCC	8	0	0	12				40			60
2		Department Elective-IV	DEC	3	3	0	0	3		15		35	50	
3		Department Elective – V	DEC	3	3	0	0			15		35	50	
4		Institute Elective -VI	ESEC	4	3	1	0	3	-	25	-	25	50	-
TOTAL		=		**18**	**9**	**1**	**12**							

DCC = 76
DEC = 15
IE = 20
IC = 65
ECA = 11

Total = 187

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DEPARTMENT OF ELECTRONICS AND COMPUTER ENGINEERING, IIT ROORKEE

Curricular Structure for IDD Programme
B.Tech. (Electronics & Communication) and M.Tech.(Wireless Communication)

Teaching Scheme					Contact Hours/Week			Exam Duration (hrs.)		Relative Weightage (%)				
S.No.	Subject Code	COURSE TITLE	Subject Area	Credits	L	T	P/D	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1th Semester														
1	MA-101	Mathematics-I	BSC	4	3	1	0	3	-	25	-	25	50	-
2	CY-101	Chemistry	BSC	5	3	1	2	3	3	15	15	15	40	15
3	EC-102	Fundamentals of Electronics	ESC	4	3	1	2/2	3	-	15	15	30	40	-
4	CE-101	Engineering Graphics	ESC	4	2	0	4	3	-	-	25	25	50	-
5	MI-101	Thermodynamics	ESC	3	2	1	0	2		25	-	25	50	
6	CE-102	Environmental Studies	GSC	2	2	0	0	2	-	15	-	35	50	-
7	HS-102	Behavioral Science	HSSMC	2	2	0	0	2	-	15	-	35	50	-
TOTAL =				**24**	**17**	**4**	**7**							
2nd Semester														
1	MA-102	Mathematics-II	BSC	4	3	1	0	3	-	25	-	25	50	-
2	PH-101	Physics-I	BSC	5	3	1	2	3	3	15	15	15	40	15
3	EE-101	Electrical Science	ESC	4	3	1	2/2	3		15	15	30	40	-
4	EC-101A	Computer Systems and Programming	ESC	4	3	0	2	3	-	15	15	30	40	-
	EC-101B	Fundamentals of Object Oriented Programming		4	3	0	2	3		15	15	30	40	-
5	MI-102	Manufacturing Techniques	ESC	3	2	0	2	2	-	15	15	30	40	-
6	BT-101	Fundamentals of Biotechnology	GSC	2	2	0	0	2	-	15	-	35	50	-
7	HS-101	Technical Communication	HSSMC	2	1	0	2	2	-	25	-	25	50	-
TOTAL =				**24**	**17**	**3**	**9**							

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3rd Semester														
1	EC-201	Linear Circuits	DCC	3	2	1	0	2	-	25	-	25	50	-
2	EC-203	Digital Electronics	DCC	4	3	1	0	3	-	25	-	25	50	-
3	EC-251	Data Structures	DCC	5	3	1	2	3	-	15	15	30	40	
4	PH-201	Physics II	BSC	3	3	0	0	3		15	-	35	50	-
5	CE-201	Computer Aided Graphics	ESC	2	1	0	2	2		-	25	25	50	-
6	BM-201	Management Concepts and Practices	HSSMC	3	2	1	0	2		25		25	50	
7	MT-201A	Material Science	ESC	4	3	1	0	3		25	-	25	50	-
TOTAL =				**24**	**17**	**5**	**4**							
4th Semester														
1	EC-202	Signals and Systems	DCC	4	3	1	0	3	-	25	-	25	50	-
2	EC-242	Semiconductor Devices and Technology	DCC	4	3	1	2/2	3		15	15	30	40	
3	EC-252	Computer Architecture and Microprocessors	DCC	4	3	1	0	3	-	25	-	25	50	-
4	EC262	Digital Hardware Lab	DCC	2	0	0	3	-	2	-	50		-	50
5	HS-201	Economics	HSSMC	3	2	1	0	2		25	-	25	50	-
6	CH-201	Energy Resources and Conservation	GSC	2	2	0	0	2	-	15	-	35	50	-
7		Institute Elective - I	BGSEC	3	2	1	0	2	-	25	-	25	50	-
TOTAL =				**22**	**15**	**5**	**7**							
5th Semester														
1	EC-301	Analog Electronics	DCC	3	3	0	0	3		15		35	50	
2	EC-311	Principles of Digital Communication	DCC	4	3	1	0	3	-	25	-	25	50	-
3	EC-321	Automatic Control Systems	DCC	4	3	1	0	3	-	25	-	25	50	-
4	EC-331	Engineering Electromagnetics	DCC	4	3	1	0	3	-	25	-	25	50	-
5	EC-361	Linear IC Applications Lab	DCC	2	0	0	3	-	3	-	50		-	50
6	EC-363	Control Systems Lab.	DCC	2	0	0	3	-	3	-	50		-	50
7		Institute Elective- II	BGSEC	3	2	1	0	2	-	25	-	25	50	-
TOTAL =				**22**	**14**	**4**	**6**							

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Department of Electronics & Computer Engineering
Indian Institute of Technology, Roorkee

Curricular Structure for Integrated Dual Degree Programme

Curricular Components	Credits (B.Tech.)
(a) Institute Core (IC) Courses	
I. Humanities, Social Sciences and Management (HSSMC)	10
II. Basic Sciences (BSC)	21
III. General Sciences (GSC)	06
IV. Engineering Sciences (ESC)	28
Total	**65**
(b) Department Core Courses (DCC)	
I Class Contact Core Courses including Modeling and Simulation	62-65
II. Communication Skills	02
III. Field Training & Seminar	02
Total	**66-69**
(c) Departmental Elective Courses (DEC)	**12**
(d) Institute Elective Courses (IEC)	**15-18**
(e) M.Tech. Specialization Courses (MSC)	**18-21**
(f) Research Project (RP)	**04**
(g) Seminar	**02**
(h) Dissertation	**20-24**
(e) Extra-Curricular Activities (ECA)	
I. Discipline (2 Credits/year for 3 years)	06
II. NCC/NSS (First Year)	02
III. NSO/Proficiency (Second year to Fourth Year)	03
Total	**11**
Grand Total	**213-219**

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6th Semester														
1	EC-312	Communication Systems & Techniques	DCC	4	3	1	0	3		25		25	50	
2	EC-332	Microwave Techniques	DCC	3	3	0	0	3		15		35	50	
3	EC-334	Antenna and Wave Propagation	DCC	3	3	0	0	3		15		35	50	
4	EC-362	Communication Lab.	DCC	2	0	0	3	-	-	-	50		-	50
5	EC-364	VLSI Lab	DCC	2	0	0	3				50			50
6	EC-302	Communication Skills	DCC	2	0	2	0	-		100				
7		Departmental Elective-I	DEC	3	3	0	0	3	-	15	-	35	50	-
8		Institute Elective-III	ESEC	4	3	1	0	2	-	25	-	25	50	-
**TOTAL = **				**23**	**15**	**4**	**6**							
7th Semester														
1	EC-411	Digital Signal Processing	DCC	3	3	0	0	3	-	15	-	35	50	-
2	EC-631	RF Receiver Design for Wireless Applications	MSC	3	3	0	0	3	-	15	-	35	50	-
3		Programme Elective-I	MSC	3	3	0	0	3	-	15	-	35	50	
4		Department Elective-II	DEC	3	3	0	0	3	-	15	-	35	50	
5		Department Elective-III	DEC	3	3	0	0	3		15	-	35	50	
6	EC-491	Training & Seminar	DCC	2	0	2	0	-	-	-	100	-	-	-
7	EC-461	Microwave Lab.	DCC	2	0	0	3	-	3	-	50	-	-	50
8		Institute Elective-IV	ESEC	4	3	1	0	3	-	25	-	25	50	-
**TOTAL = **				**23**	**18**	**3**	**3**							

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8th Semester														
1	EC-	Programme Elective-II	MSC	3	3	0	0	3	-	15	-	35	50	-
2	EC-	Programme Elective-III	MSC	3	3	0	0	3	-	15	-	35	50	-
3	EC-	Programme Elective-IV	MSC	3	3	0	0	3	-	15	-	35	50	
4	EC-	Programme Elective-V	MSC	3	3	0	0	3	-	15	-	35	50	
5		Department Elective-IV	DEC	3	3	0	0	3	-	15	-	35	50	-
6	EC-562	Wireless Communication Lab	MSC	2	0	0	3	-	3	-	50	-	-	50
7		Institute Elective-V	HSSMEC	3	2	1	0	2	-	25		25	50	
TOTAL =				**20**	**17**	**1**	**3**							
9th Semester														
1		Seminar	DCC	2	-	-	-	-	-	-	-	-	-	-
2		Research Project	RP	4	-	-	-	-	-	-	-	-	-	-
3		Dissertation(to be continued to the next semester but evaluated in this semester also)	DCC	-	-	-	-	-	-	-	-	-	-	-
TOTAL =				**6**	-	-	-							
10th Semester														
1		Dissertation(continued from the 9th semester)	DCC	20	-	-	-	-	-	-	-	-	-	-
TOTAL =				**20**	-	-	-							

Summary

DCC	-	64
DEC	-	12
MSC	-	20
IEC		17
CS	-	2
FT	-	2
RP	-	4
Sem	-	2
Diss	-	20
IC	-	65
ECA	-	11
Total	-	219

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DEPARTMENT OF ELECTRONICS AND COMPUTER ENGINEERING, IIT ROORKEE

Curricular Structure

I.D.D. [B.Tech.(CSE) and M.Tech (Information Technology)] 4th Year

Teaching Scheme					Contact Hours/Week			Exam Duration (hrs.)		Relative Weightage (%)				
S.No.	Subject Code	COURSE TITLE	Subject Area	Credits	L	T	P/D	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1th Semester														
1	MA-101	Mathematics-I	BSC	4	3	1	0	3	-	25	-	25	50	-
2	CY-101	Chemistry	BSC	5	3	1	2	3	3	15	15	15	40	15
3	EC-102	Fundamentals of Electronics	ESC	4	3	1	2/2	3	-	15	15	30	40	-
4	CE-101	Engineering Graphics	ESC	4	2	0	4	3	-	-	25	25	50	-
5	MI-101	Thermodynamics	ESC	3	2	1	0	2		25	-	25	50	
6	CE-102	Environmental Studies	GSC	2	2	0	0	2	-	15	-	35	50	-
7	HS-102	Behavioral Science	HSSMC	2	2	0	0	2	-	15	-	35	50	-
TOTAL =				**24**	**17**	**4**	**7**							
2nd Semester														
1	MA-102	Mathematics-II	BSC	4	3	1	0	3	-	25	-	25	50	-
2	PH-101	Physics-I	BSC	5	3	1	2	3	3	15	15	15	40	15
3	EE-101	Electrical Science	ESC	4	3	1	2/2	3		15	15	30	40	-
4	EC-101A	Computer Systems and Programming	ESC	4	3	0	2	3	-	15	15	30	40	-
	EC-101B	Fundamentals of Object Oriented Programming		4	3	0	2	3		15	15	30	40	-
5	MI-102	Manufacturing Techniques	ESC	3	2	0	2	2	-	15	15	30	40	-
6	BT-101	Fundamentals of Biotechnology	GSC	2	2	0	0	2	-	15	-	35	50	-
7	HS-101	Technical Communication	HSSMC	2	1	0	2	2	-	25	-	25	50	-
TOTAL =				**24**	**17**	**3**	**9**							

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3rd Semester														
1	EC-203	Digital Electronics	DCC	4	3	1	0	3	-	25	-	25	50	-
2	EC-251	Data Structures	DCC	5	3	1	2	3	-	15	15	30	40	
3	EC-253	System Software	DCC	3	2	1	0	2	-	25	-	25	50	-
4	PH-201	Physics II	BSC	3	3	0	0	3	-	15	-	35	50	-
5	CE-201	Computer Aided Graphics	ESC	2	1	0	2	2	-	-	25	25	50	-
6	BM-201	Management Concepts and Practices	HSSMC	3	2	1	0	2	-	25	-	25	50	-
7	MT-201A	Material Science	ESC	4	3	1	0	3	-	25	-	25	50	-
TOTAL =				**24**	**17**	**5**	**4**							
4th Semester														
1	EC-202	Signals and Systems	DCC	4	3	1	0	3	-	25	-	25	50	-
2	EC-252	Computer Architecture and Microprocessors	DCC	4	3	1	0	3	-	25	-	25	50	-
3	EC-254	Discrete Structures	DCC	4	3	1	0			25		25	50	
4	EC-262	Digital Hardware Lab	DCC	2	0	0	3	-	2	-	50		-	50
5	HS-201	Economics	HSSMC	3	2	1	0	2	-	25	-	25	50	-
6	CH-201	Energy Resources and Conservation	GSC	2	2	0	0	2	-	15	-	35	50	-
7		Institute Elective-I	BGSEC	3	2	1	0	2	-	25	-	25	50	-
TOTAL =				**22**	**15**	**5**	**3**							
5th Semester														
1	EC-311	Principles of Digital Communication	DCC	4	3	1	0	3	-	25	-	25	50	-
2	EC-351	Design and Analysis of Algorithms	DCC	4	3	1	0	3	-	25	-	25	50	-
3	EC-353	Operating Systems	DCC	5	3	1	2	3		15	25	20	40	-
4	EC-355	Theory of Computation	DCC	4	3	1	0	3	-	25	-	25	50	-
5	EC-357	Software Engineering	DCC	3	3	0	0			15		35	50	
6		Institute Elective-II	BGSEC	3	2	1	0	2	-	25	-	25	50	-
TOTAL =				**23**	**17**	**5**	**2**							

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6th Semester														
1	EC-352	Principles of Programming Languages	DCC	3	3	0	0	3	-	15		35	50	
2	EC-354	Compiler Design	DCC	4	3	1	0	3	-	25	-	25	50	-
3	EC-356	Computer Networks	DCC	3	3	0	0	3	-	15	-	35	50	-
4	EC-372	Compiler Lab	DCC	2	0	0	3	-	-	-	100	-	-	-
5	EC-302	Communication Skills	DCC	2	0	2	0		-	-	100	-	-	-
6		Department Elective-I	DEC	3	3	0	0	3		15	-	35	50	
7		Institute Elective-III	HSSMEC	3	2	1	0	2	-	25	-	25	50	-
8		Institute Elective-IV	ESEC	4	3	1	0	3	-	25	-	25	50	-
TOTAL =				**24**	**17**	**5**	**3**							
7th Semester														
1	EC-451	Database Management Systems	DCC	4	3	1	0	3	-	25	-	25	50	-
2	EC-473	Computer Networks Lab	DCC	2	0	0	3	-	-	-	100	-	-	-
3	EC-491	Field Training	DCC	2	0	2	0	-	-	-	100		-	-
4		Department Elective-II	DEC	3	3	0	0	3		15	-	35	50	
5		Department Elective-III	DEC	3	3	0	0	3		15	-	35	50	
6		Program Elective I	MSC	3	3	0	0	3		15	-	35	50	
7		Program Elective II	MSC	3	3	0	0	3		15	-	35	50	
8		Institute Elective – V	ESEC	4	3	1	-	3	-	25	-	25	50	-
TOTAL =				**24**	**18**	**4**	**3**							
8th Semester														
1		Department Elective-IV	DEC	3	3	0	0	3		15	-	35	50	
2		Program Elective III	MSC	3	3	0	0	3		15	-	35	50	
3		Program Elective IV	MSC	3	3	0	0	3		15	-	35	50	
4		Program Elective V	MSC	3	3	0	0	3		15	-	35	50	
5		Program Elective VI	MSC	3	3	0	-	3	-	15		35	50	-
TOTAL =				**15**	**15**	**0**	**0**							

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9th Semester														
1		Research Project	RP	4	-	-	6	-	-	-	-	-	-	100
2	EC-601	Seminar	DCC	2			2				25			75
3	EC-600	Dissertation (to be continued to next semester, but evaluated in this semester also)	DCC	0			8							
Total =				**6**	**0**	**0**	**16**							
10th Semester														
1	EC-600	Dissertation (continued from last semester)	DCC	20			20							100
Total =				**20**			**20**							

DC = 68 (including Training and Communication)
DE = 12
IE = 17
MSC = 18
IC = 65
ECA = 11
~~Thesis~~ = 20
Project + Seminar = 6

Total = 217

Dissertation

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Summary of Curricular Components for B.Tech (Pulp & Paper)

Curricular Components	Credits				
	I	**II**	**III**	**IV**	**Total**
a) Institute Core Course					
HSSMC	4	6	-	-	10 (10)
BSC	18	3	-	-	21 (21)
GSC	4	2	-	-	6 (6)
ESC	22	6	-	-	28 (28)
Total	**48**	**17**			**65 (65)**
b) Departmental Core					
Class Contact Core	-	21	30	13	64 (62-65)
Comm. Skills	-	2	-	-	2 (2)
Major Project	-	-	-	8	8 (8)
Minor Project/ Practical Work/ Case Studies	-	-	-	2	2 (2)
Practical/field Training	-	-	-	2	2 (2)
Total	**-**	**23**	**31**	**25**	**79 (76-79)**
c) DEC	**-**	**-**	**6**	**9**	**15 (15-18)**
d) IEC					
BGSEC	-	3	3	-	6 (6)
HSSMEC	-	3	-	3	6 (6)
ESEC	-	-	4	4	8 (8-12)
Total	**-**	**6**	**7**	**7**	**20 (20-24)**
e) Extra-Curricular Activities					
Discipline	-	2	2	2	6 (6)
NCC/NSS/NSO	2	-	-	-	2 (2)
NSO/Proficiency		1	1	1	3 (3)
Total	**2**	**3**	**3**	**3**	**11 (11)**
Grand Total					**189 (187-193)**

The figures in the brackets in the last column are as approved by the Senate in its meeting held on April 10, 2007.

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PROPOSED SCHEME OF TEACHING AND EXAMINATION FOR
B. TECH. (Pulp & Paper) FIRST YEAR

Structure-A

Teaching Scheme					Contact Hours/Week			Exam Duration (Hrs)		Relative Weightage (%)				
S.No	SUBJECT CODE	COURSE TITLE	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester I (Autumn)														
1	MA-101	Mathematics-I	BSC	4	3	1	0	3	-	25	-	25	50	-
2	PH-101	Physics-I	BSC	5	3	1	2	3	2	15	15	15	40	15
3	EE-101	Electrical Science	ESC	4	3	1	2/2	3	-	15	15	30	40	-
4	EC-101A	Computer Systems and Programming	ESC	4	3	0	2	3	-	15	15	30	40	-
	EC-101B	Fundamentals of Object Oriented programming		4	3	0	2	3	-	15	15	30	40	-
5	MI-102	Manufacturing Techniques	ESC	3	2	0	2	2	-	15	15	30	40	-
6	BT-101	Fundamentals of Biotechnology	GSC	2	2	0	0	2	-	15	-	35	50	-
7	HS-101	Technical Communication	HSSMC	2	1	0	2	2	-	25	-	25	50	-
		Total		24	17	3	9							
Semester II (Spring)														
1	MA-102	Mathematics-II	BSC	4	3	1	0	3	-	25	-	25	50	-
2	CY-101	Chemistry	BSC	5	3	1	2	3	2	15	15	15	40	15
3	EC-102	Fundamentals of Electronics	ESC	4	3	1	2/2	3	-	15	15	30	40	-
4	CE-101	Engineering Graphics	ESC	4	2	0	4	3	-	-	25	25	50	-
5	MI-101	Thermodynamics	ESC	3	2	1	0	2	-	25	-	25	50	-
6	CE-102	Environmental Studies	GSC	2	2	0	0	2	-	15	-	35	50	-
7	HS-102	Behavioral Science	HSSMC	2	2	0	0	2	-	15	-	35	50	-
		Total		24	17	4	7							

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B. TECH. (Pulp & Paper) FIRST YEAR

Structure-B

Teaching Scheme					Contact Hours/Week			Exam Duration (Hrs)		Relative Weightage (%)				
S.No	SUBJECT CODE	COURSE TITLE	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester I (Autumn)														
1	MA-101	Mathematics-I	BSC	4	3	1	0	3	-	25	-	25	50	-
2	CY-101	Chemistry	BSC	5	3	1	2	3	2	15	15	15	40	15
3	EC-102	Fundamentals of Electronics	ESC	4	3	1	2/2	3	-	15	15	30	40	-
4	CE-101	Engineering Graphics	ESC	4	2	0	4	3	-	-	25	25	50	-
5	MI-101	Thermodynamics	ESC	3	2	1	0	2	-	25	-	25	50	-
6	CE-102	Environmental Studies	GSC	2	2	0	0	2	-	15	-	35	50	-
7	HS-102	Behavioral Science	HSSMC	2	2	0	0	2	-	15	-	35	50	-
		Total		24	17	4	7							
Semester II (Spring)														
1	MA-102	Mathematics-II	BSC	4	3	1	0	3	-	25	-	25	50	-
2	PH-101	Physics-I	BSC	5	3	1	2	3	2	15	15	15	40	15
3	EE-101	Electrical Science	ESC	4	3	1	2/2	3	-	15	15	30	40	-
4	EC-101A	Computer Systems and Programming	ESC	4	3	0	2	3	-	15	15	30	40	-
	EC-101B	Fundamentals of Object Oriented programming		4	3	0	2	3	-	15	15	30	40	-
5	MI-102	Manufacturing Techniques	ESC	3	2	0	2	2	-	15	15	30	40	-
6	BT-101	Fundamentals of Biotechnology	GSC	2	2	0	0	2	-	15	-	35	50	-
7	HS-101	Technical Communication	HSSMC	2	1	0	2	2	-	25	-	25	50	-
		Total		24	17	3	9							

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B. TECH. (Pulp & Paper) **SECOND YEAR**

Structure A

Teaching Scheme					Contact Hours/Week			Exam Duration (Hrs)		Relative Weightage (%)				
S.No	SUBJECT CODE	COURSE TITLE	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester III (Autumn)														
1	PH-201	Physics-II	BSC	3	3	0	0	3	-	15	-	35	50	-
2	CE-201	Computer Aided Graphics	ESC	2	1	0	2	2	-	-	25	25	50	-
3	HS-201	Economics	HSSMC	3	2	1	0	2	-	25	-	25	50	-
4	MT-201B	Material Science	ESC	4	3	1	0	3	-	25	-	25	50	-
5	PP-211	Material and Energy Balance	DCC	4	3	1	0	3	-	25		25	50	-
6	PP-213	Fluid Mechanics	DCC	4	3	1	2/2	3	3	15	15	15	40	15
7	PP-201	Introduction to Pulp and Paper Manufacture	DCC	4	3	1	0	3	-	25	-	25	50	-
		Total		24	18	5	3							
Semester IV (Spring)														
1	BM-201	Management Concepts and Practices	HSSMC	3	2	1	0	2	-	25	-	25	50	-
2	CH-201	Energy Resources and Conservation	GSC	2	2	0	0	2	-	15	-	35	50	-
3	PP-212	Fluid Particle Mechanics	DCC	4	3	1	2/2	3	3	15	15	15	40	15
4	PP-214	Heat Transfer	DCC	4	3	1	2/2	3	3	15	15	15	40	15
5	PP-202	Pulping -I	DCC	4	3	1	2/2	3	-	25	-	25	50	-
6		Institute Elective-I	BGSEC	3	2	1	0	2	-	25	-	25	50	-
7		Institute Elective-II	HSSMEC	3	2	1	0	2	-	25	-	25	50	-
		Total		23	17	6	3							

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B. TECH. (Pulp & Paper) **SECOND YEAR**

Structure B

Teaching Scheme					Contact Hours/Week			Exam Duration (Hrs)		Relative Weightage (%)				
S.No	SUBJECT CODE	COURSE TITLE	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester III (Autumn)														
1	PH-201	Physics-II	BSC	3	3	0	0	3	-	15	-	35	50	-
2	CE-201	Computer Aided Graphics	ESC	2	1	0	2	2	-	-	25	25	50	-
3	BM-201	Management Concepts and Practices	HSSMC	3	2	1	0	2	-	25	-	25	50	-
4	MT-201B	Material Science	ESC	4	3	1	0	3	-	25	-	25	50	-
5	PP-211	Material and Energy Balance	DCC	4	3	1	0	3	-	25	-	25	50	-
6	PP-213	Fluid Mechanics	DCC	4	3	1	2/2	3	3	15	15	15	40	15
7	PP-201	Introduction to Pulp and Paper Manufacture	DCC	4	3	1	0	3	-	25	-	25	50	-
		Total		24	18	5	3							
Semester IV (Spring)														
1	HS-201	Economics	HSSMC	3	2	1	0	2	-	25	-	25	50	-
2	CH-201	Energy Resources and Conservation	GSC	2	2	0	0	2	-	15	-	35	50	-
3	PP-212	Fluid Particle Mechanics	DCC	4	3	1	2/2	3	3	15	15	15	40	15
4	PP-214	Heat Transfer	DCC	4	3	1	2/2	3	3	15	15	15	40	15
5	PP-202	Pulping -I	DCC	4	3	1	2/2	3	-	25	-	25	50	-
6		Institute Elective-I	BGSEC	3	2	1	0	2	-	25	-	25	50	-
7		Institute Elective-II	HSSMEC	3	2	1	0	2	-	25	-	25	50	-
		Total		23	17	6	3							

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B. TECH. (Pulp & Paper) **THIRD YEAR**

Teaching Scheme					Contact Hours/Week			Exam Duration (Hrs)		Relative Weightage (%)				
S.No	SUBJECT CODE	COURSE TITLE	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester V (Autumn)														
1	PP-311	Mass Transfer	DCC	4	3	1	2/2	3	3	15	15	15	40	15
2	PP-301	Pulping-II	DCC	4	3	1	2/2	3	3	15	15	15	40	15
3	PP-303	Paper Making-I	DCC	4	3	1	2/2	3	0	25	-	25	50	-
4	PP-305	Chemical Recovery -I	DCC	4	3	1	2/2	3	3	15	15	15	40	15
5		Institute Elective III	ESEC	4	3	1	0	3	-	25	-	25	50	-
6		Departmental Elective I	DEC	3	2	1	0	2	-	25	-	25	50	-
		Total		**23**	17	6	4							
Semester VI (Spring)														
1	PP-302	Paper Properties	DCC	3	2	1	0	2	-	25	-	25	50	-
2	PP-304	Minor Project/Practical/Case Studies	DCC	2	0	0	4	-	-	-	25	25	-	50
3	PP-306	Paper Making -II	DCC	4	3	1	2/2	3	3	15	15	15	40	15
4	PP-308	Chemical Recovery II	DCC	3	2	1	0	2	-	25	-	25	50	-
5	PP-320	Environmental Management	DCC	3	3	0	2/2	3	-	15	15	30	40	-
6	PP-322	Communication Skills	DCC	2	0	2	0	-	-	100	-	-	-	-
7		Departmental Elective II	DEC	3	2	1	0	2	-	25	-	25	50	-
8		Institute Elective-IV	BGSEC	3	2	1	0	2	-	25	-	25	50	-
		Total		23	14	7	6							

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B. TECH. (Pulp & Paper) **FOURTH YEAR**

Teaching Scheme					Contact Hours/Week			Exam Duration (Hrs)		Relative Weightage (%)				
S.No	SUBJECT CODE	COURSE TITLE	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester VII (Autumn)														
1	PP-403	Printing & Packaging Papers	DCC	3	3	0	0	3	-	15	-	35	50	-
2	PP-407	Process Automation	DCC	4	3	1	2/2	3	-	15	15	30	40	-
3	PP-417	Training & Seminar	DCC	2	0	2	0	-	-	100	-	-	-	-
4		Departmental Elective III	DEC	3	2	1	0	2	-	25	-	25	50	-
5		Departmental Elective IV	DEC	3	2	1	0	2	-	25	-	25	50	-
6		Institute Elective V	ESEC	4	3	1	0	3	-	25	-	25	50	-
7	PP-420	Major Project	DCC	0	0	0	3	-	-	-	-	-	-	-
8														
		Total		19	13	6	4							
Semester VIII (Spring)														
1	PP-414	Strategy of Process Engineering	DCC	4	3	1	0	3	-	25	-	25	50	-
2	PP-420	Major Project	DCC	8	0	0	12	-	-	-	25	25	-	50
3		Institute Elective VI	HSSMEC	3	2	1	0	2	-	25	-	25	50	-
4		Departmental Elective-V	DEC	3	2	0	2	2	-	-	25	25	50	-
					7	2	14							
		Total		18										

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List of Departmental Electives

DE-I

				Cr	L	T	P
1	PP-321	Secondary Fiber Processing	DEC	3	2	1	0
2	PP-323	Advances in Pulping & Bleaching	DEC	3	2	1	0
3	PP-325	Paper Making Chemistry	DEC	3	2	1	0

DE-II

				Cr	L	T	P
1	PP-332	Application Software WinGEMS	DEC	3	2	0	2
2	PP-334	Application Software MATLAB	DEC	3	2	0	2
3	PP-336	Application Software on Plant Design	DEC	3	2	0	2

DE-III

				Cr	L	T	P
1	PP-421	Air Pollution Abatement	DEC	3	2	1	0
2	PP-423	System Closure in Paper Industry	DEC	3	2	1	0
3	PP-425	Processes Integration in Paper Industry	DEC	3	2	1	0
4	PP-427	Energy Management	DEC	3	2	1	0

DE-IV

				Cr	L	T	P
1	PP-431	Application of Biotechnology in Paper Industry	DEC	3	3	0	0
2	PP-433	Modern Converting Operations	DEC	3	3	0	0
3	PP-435	Advances in Printing Technology	DEC	3	3	0	0
4	PP-437	Coating and Specialty Papers	DEC	3	3	0	0
5	PP-439	Paper Physics	DEC	3	3	0	0

DE-V

				Cr	L	T	P
1	PP-422	Pulp Mill Equipment Calculations	DEC	3	2	0	2
2	PP-424	Paper Mill Equipment Calculations	DEC	3	2	0	2
3	PP-426	Recovery Equipment Calculations	DEC	3	2	0	2

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List of Institute Electives under Engineering Science Elective Courses (ESEC)

Institute Elective III and IV

				Cr	L	T	P
1	IPP-341	Cogeneration	ESEC	4	3	1	0
2	IPP-342	Mechanics of Materials	ESEC	4	3	1	0
3	IPP-343	Corrosion & Wear Engineering	ESEC	4	3	1	0
4	IPP-344	Material Handling & Safety	ESEC	4	3	1	0
5	IPP-345	Process Equipment Design	ESEC	4	3	1	0
6	IPP-346	Industrial Piping	ESEC	4	3	1	0
7	IPP-347	Control System Engineering	ESEC	4	3	1	0
4	PP-313	Chemical Reaction Engineering	ESEC	4	3	1	0

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Appendix 'G'
Item No. Senate/19.11

Credits and Curricular Structure of B.Tech. (Electrical Engineering)

Curricular Components	Credits
(a) Institute core (IC) Courses	
I. Humanities, Social Sciences and Management (HSSMC)	10
II. Basic Sciences (BSC)	21
III. General Sciences (GSC)	06
IV. Engineering Sciences (ESC)	28
Total	**65**
(b) Department Core Courses (DCC)	
I. Class Contact-Core Courses	64
II. Communication Skills	02
III. Major Project	08
IV. Minor Project	02
V. Training & Seminar	02
Total	**78**
(c) Departmental Elective/Courses (DEC)	**15**
(d) Institute Elective Courses (IEC)	
I. Humanities, Social Sciences and Management (HSSMEC)	**6**
II. Basic and General Sciences (BGSEC)	**6**
III. Engineering Sciences (ESEC)	**12**
Total	**24**
(e) Extra-Curricular Activities (ECA)	
I. Discipline (2 Credits/year for 3 years)	**06**
II. NCC/NSS/NSO (First Year)	**02**
III. NSO/Proficiency (Second year to Fourth year)	**03**
Total	**11**
Grand Total	**193**

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Course Structure
B.Tech. (Electrical Engineering) 1st Year

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weightage (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester- I (Autumn)														
1.	MA-101	Mathematics-I	BSC	4	3	1	0	3	-	25	-	25	50	-
2.	CY-101	Chemistry	BSC	5	3	1	2	3	2	15	15	15	40	15
3.	EC-102	Fundamentals of Electronics	ESC	4	3	1	2/2	3	-	15	15	30	40	-
4.	CE-101	Engineering Graphics	ESC	4	2	0	4	3	-	-	25	25	50	-
5.	MI-101	Thermodynamics	ESC	3	2	1	0	2	-	25	-	25	50	-
6.	CE-102	Environmental Studies	GSC	2	2	0	0	2	-	15	-	35	50	-
7.	HS-102	Behavioral Science	HSSMC	2	2	0	0	2	-	15	-	35	50	-
		Total		24	17	4	7							
Semester-II (Spring)														
1.	MA-102	Mathematics-II	BSC	4	3	1	0	3	-	25	-	25	50	-
2.	PH-101	Physics-I	BSC	5	3	1	2	3	2	15	15	15	40	15
3.	EE-101	Electrical Science	ESC	4	3	1	2/2	3	-	15	15	30	40	-
4.	EC-101A	Computer Systems & Programming	ESC	4	3	0	2	3	-	15	15	30	40	-
	EC-101B	Fundamentals of Object Oriented Programming		4	3	0	2	3	-	15	15	30	40	-
5.	MI-102	Manufacturing Techniques	ESC	3	2	0	2	2	-	15	15	30	40	-
6.	BT-101	Fundamentals of Biotechnology	GSC	2	2	0	0	2	-	15	-	35	50	-
7.	HS-101	Technical Communication	HSSMC	2	1	0	2	2	-	25	-	25	50	-
		Total		24	17	3	9							

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Course Structure
B.Tech. (Electrical Engineering) 2nd Year

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weightage (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester- III (Autumn)														
1.	PH-201	Physics-II	BSC	3	3	0	0	3	-	15	-	35	50	-
2.	CE-201	Computer Aided Graphics	ESC	2	1	0	2	2	-	-	25	25	50	-
3.	BM-201	Management Concepts and Practices	HSSMC	3	2	1	0	2	-	25	-	25	50	-
4.	MT-201A	Material Science	ESC	4	3	1	0	3	-	25	-	25	50	-
5.	EE-201	Network Theory	DCC	4	3	1	0	3	-	25	-	25	50	-
6.	EE-203	Electrical Measurements and Measuring Instruments	DCC	4	3	0	2	3	2	15	15	15	40	15
7.		Institute Elective-I	BGSEC	3	2	1	0	2	-	25	-	25	50	-
		Total		23	17	4	4							
Semester-IV (Spring)														
1.	HS-201	Economics	HSSMC	3	2	1	0	2	-	25	-	25	50	-
2.	CH-201	Energy Resources and Conservation	GSC	2	2	0	0	2	-	15	-	35	50	-
3.	EE-202	Electrical Machines –I	DCC	5	3	1	2	3	3	15	15	15	40	15
4.	EE-204	Electromagnetic Field Theory	DCC	3	2	1	0	2	-	25	-	25	50	-
5.	EE-206	Power Electronics	DCC	4	3	1	2/2	3	2	15	15	15	40	15
6.	EE-208	Digital Electronic Circuits and Systems	DCC	4	3	1	2/2	3	3	15	15	15	40	15
7.		Institute Elective-II	BGSEC	3	2	1	0	2	-	25	-	25	50	-
		Total		24	17	6	4							

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Course Structure
B.Tech. (Electrical Engineering) 3rd Year

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weightage (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester- V (Autumn)														
1.	EE-301	Power System Engineering	DCC	4	3	1	2/2	3	-	15	15	30	40	-
2.	EE-303	Electrical Machines-II	DCC	5	3	1	2	3	3	15	15	15	40	15
3.	EE-305	System Engineering	DCC	3	2	1	0	2	-	25	-	25	50	-
4.	EE-307	Microprocessors & Peripheral Devices	DCC	5	3	1	2	3	3	15	15	15	40	15
5.	EE-309	Applied Instrumentation	DCC	3	2	1	2/2	2	-	15	15	30	40	-
6.		Institute Elective-III	HSSMEC	3	2	1	0	2	-	25	-	25	50	-
		Total		23	15	6	6							
Semester-VI (Spring)														
1.	EE-302	Power System Analysis and Control	DCC	4	3	1	2/2	3	-	15	15	30	40	-
2.	EE-304	Electric Drives	DCC	4	3	1	2/2	3	-	15	15	30	40	-
3.	EE-306	Control Systems	DCC	5	3	1	2	3	3	15	15	15	40	15
4.	EE-308	Electronic Instrumentation	DCC	3	2	1	2/2	2	-	15	15	30	40	-
5.	EE-310	Communication Skills	DCC	2	0	2	0	-	-	100	-	-	-	-
6.		Institute Elective-IV	ESEC	4	3	1	0	3	-	25	-	25	50	-
		Total		22	14	7	5							

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Course Structure
B.Tech. (Electrical Engineering) 4th Year

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weightage (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester- VII (Autumn)														
1.	EE-401	Power System Protection	DCC	4	3	0	2	3	3	15	15	15	40	15
2.		Departmental Elective-I	DEC	3	3	0	0	3	-	15	-	35	50	-
3.		Departmental Elective-II	DEC	4	3	1	0	3	-	25	-	25	50	-
4.	EE-403	Training & Seminar	DCC	2	0	2	0	-	-	100	-	-	-	-
5.	EE-405	Minor Project	DCC	2	0	0	2	-	-	100	-	-	-	-
6.		Institute Elective-V	HSSMEC	3	2	1	0	2	-	25	-	25	50	-
7.		Institute Elective-VI	ESEC	4	3	1	0	3	-	25	-	25	50	-
8.	EE-402	Major Project	DCC	0	0	0	3	-	-	-	-	-	-	-
		Total		22	14	5	7							
Semester-VIII (Spring)														
1.		Departmental Elective-III	DEC	4	3	1	0	3	-	25	-	25	50	-
2.		Departmental Elective-IV	DEC	4	3	1	0	3	-	25	-	25	50	-
3.	EE-402	Major Project	DCC	8	0	0	8	-	-	100	-	-	-	-
4.		Institute Elective-VII	ESEC	4	3	1	0	3	-	25	-	25	50	-
		Total		20	9	3	8							

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Credits and Curricular Structure of 5 year IDD
B.Tech. (Electrical Engg.) and M.Tech. (Power Electronics)

Curricular Components	Credits
(a) Institute core (IC) Courses	
I. Humanities, Social Sciences and Management (HSSMC)	10
II. Basic Sciences (BSC)	21
III. General Sciences (GSC)	06
IV. Engineering Sciences (ESC)	28
Total	**65**
(b) Department Core Courses (DCC)	
I. Class Contact-Core Courses including Modeling and Simulation	64
II. Communication Skills	02
III. Field Training	02
Total	**68**
(c) Departmental Elective/Courses (DEC)	**12**
(d) Institute Elective Courses (IEC)	
I. Humanities, Social Sciences and Management (HSSMEC)	**3**
II. Basic and General Sciences (BGSEC)	**6**
III. Engineering Sciences (ESEC)	**8**
Total	**17**
(e) M.Tech. Specialization Courses (MSC)	**20**
(f) Research Project (RP)	**04**
(g) Seminar	**02**
(h) Dissertation	**20**
(i) Extra-Curricular Activities (ECA)	
I. Discipline (2 Credits/year for 3 years)	**06**
II. NCC/NSS/NSO (First Year)	**02**
III. NSO/Proficiency (Second year to Fourth year)	**03**
Total	**11**
Grand Total	**219**

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Course Structure for IDD 1st Year

B.Tech. (Elect. Engg.) and M.Tech. (Power Electronics)

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weightage (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester- I (Autumn)														
1.	MA-101	Mathematics-I	BSC	4	3	1	0	3	-	25	-	25	50	-
2.	CY-101	Chemistry	BSC	5	3	1	2	3	2	15	15	15	40	15
3.	EC-102	Fundamentals of Electronics	ESC	4	3	1	2/2	3	-	15	15	30	40	-
4.	CE-101	Engineering Graphics	ESC	4	2	0	4	3	-	-	25	25	50	-
5.	MI-101	Thermodynamics	ESC	3	2	1	0	2	-	25	-	25	50	-
6.	CE-102	Environmental Studies	GSC	2	2	0	0	2	-	15	-	35	50	-
7.	HS-102	Behavioral Science	HSSMC	2	2	0	0	2	-	15	-	35	50	-
		Total		24	17	4	7							
Semester-II (Spring)														
1.	MA-102	Mathematics-II	BSC	4	3	1	0	3	-	25	-	25	50	-
2.	PH-101	Physics-I	BSC	5	3	1	2	3	2	15	15	15	40	15
3.	EE-101	Electrical Science	ESC	4	3	1	2/2	3	-	15	15	30	40	-
4.	EC-101A	Computer Systems & Programming	ESC	4	3	0	2	3	-	15	15	30	40	-
	EC-101B	Fundamentals of Object Oriented Programming		4	3	0	2	3	-	15	15	30	40	-
5.	MI-102	Manufacturing Techniques	ESC	3	2	0	2	2	-	15	15	30	40	-
6.	BT-101	Fundamentals of Biotechnology	GSC	2	2	0	0	2	-	15	-	35	50	-
7.	HS-101	Technical Communication	HSSMC	2	1	0	2	2	-	25	-	25	50	-
		Total		24	17	3	9							

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Course Structure for IDD 2nd Year
B.Tech. (Elect. Engg.) and M.Tech. (Power Electronics)

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weightage (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester- III (Autumn)														
1.	PH-201	Physics-II	BSC	3	3	0	0	3	-	15	-	35	50	-
2.	CE-201	Computer Aided Graphics	ESC	2	1	0	2	2	-	-	25	25	50	-
3.	BM-201	Management Concepts and Practices	HSSMC	3	2	1	0	2	-	25	-	25	50	-
4.	MT-201A	Material Science	ESC	4	3	1	0	3	-	25	-	25	50	-
5.	EE-201	Network Theory	DCC	4	3	1	0	3	-	25	-	25	50	-
6.	EE-203	Electrical Measurements and Measuring Instruments	DCC	4	3	0	2	3	2	15	15	15	40	15
7.		Institute Elective-I	BGSEC	3	2	1	0	2	-	25	-	25	50	-
		Total		23	17	4	4							
Semester-IV (Spring)														
1.	HS-201	Economics	HSSMC	3	2	1	0	2	-	25	-	25	50	-
2.	CH-201	Energy Resources and Conservation	GSC	2	2	0	0	2	-	15	-	35	50	-
3.	EE-202	Electrical Machines –I	DCC	5	3	1	2	3	3	15	15	15	40	15
4.	EE-204	Electromagnetic Field Theory	DCC	3	2	1	0	2	-	25	-	25	50	-
5.	EE-206	Power Electronics	DCC	4	3	1	2/2	3	2	15	15	15	40	15
6.	EE-208	Digital Electronic Circuits and Systems	DCC	4	3	1	2/2	3	3	15	15	15	40	15
7.		Institute Elective-II	BGSEC	3	2	1	0	2	-	25	-	25	50	-
		Total		24	17	6	4							

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Course Structure for IDD 3rd Year

B.Tech. (Elect. Engg.) and M.Tech. (Power Electronics)

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weightage (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester- V (Autumn)														
1.	EE-301	Power System Engineering	DCC	4	3	1	2/2	3	-	15	15	30	40	-
2.	EE-303	Electrical Machines-II	DCC	5	3	1	2	3	3	15	15	15	40	15
3.	EE-305	System Engineering	DCC	3	2	1	0	2	-	25	-	25	50	-
4.	EE-307	Microprocessors & Peripheral Devices	DCC	5	3	1	2	3	3	15	15	15	40	15
5.	EE-309	Applied Instrumentation	DCC	3	2	1	2/2	2	-	15	15	30	40	-
6.		Institute Elective-III	HSSMEC	3	2	1	0	2	-	25	-	25	50	-
		Total		23	15	6	6							
Semester-VI (Spring)														
1.	EE-302	Power System Analysis & Control	DCC	4	3	1	2/2	3	-	15	15	30	40	-
2.	EE-306	Control Systems	DCC	5	3	1	2	3	3	15	15	15	40	15
3.	EE-308	Electronic Instrumentation	DCC	3	2	1	2/2	2	-	15	15	30	40	-
4.	EE-567	HVDC Systems	MSC	4	3	1	0	3	-	25	-	25	50	-
5.	EE-310	Communication Skills	DCC	2	0	2	0	-	-	100	-	-	-	-
6.		Institute Elective-IV	ESEC	4	3	1	0	3	-	25	-	25	50	-
		Total		22	14	7	4							

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Course Structure
B.Tech. (Civil Engineering) 3rd Year

Teaching Scheme					Contact Hours/Week			Exam Duration (Hrs.)		Relative Weightage (%)				
S.No.	Subject Code	COURSE TITLE	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
AUTUMN SEMESTER (5th Semester)														
1	CE-311	Waste Management	DCC	4	3	1	0	3	-	25	-	25	50	-
2	CE-321	Geomatics Engineering**	DCC	4	3	0	3	3		10	30	20	40	-
3	CE-331	Soil Mechanics & Engg. Geology	DCC	5	3	1	2	3	2	15	15	15	40	15
4	CE-341	Hydrology	DCC	2	2	0	2/2	3	-	15	15	30	40	-
5	CE-351	Structural Analysis-II	DCC	4	3	1	0	-	-	15	15	30	40	-
6		Institute Elective-III	ESCE	4	3	1	0	2	-	25	-	25	50	-
		Total		**23**	17	4	6							
SPRING SEMESTER (6th Semester)														
1	CE-300	Communication Skills	DCC	2	0	2	0	-	-	100	-	-	-	-
2	CE-332	Foundation Engineering	DCC	4	3	1	2/2	3	-	15	15	30	40	-
3	CE-342	Water Resources Engineering	DCC	2	2	0	2/2	3	2	15	15	15	40	15
4	CE-352	Design of RC Elements	DCC	4	3	1	2/2	3	2	15	15	15	40	15
5	CE-354	Design of Steel Elements	DCC	3	2	1	0	3	-	25	-	25	50	-
6	CE-362	Transportation Engineering-I	DCC	4	3	1	2/2	3	2	15	15	15	40	15
7		Institute Elective-IV	ESEC	4	3	1	0	3	-	25	-	25	50	-
		Total		23	16	7	4							

**2 hours practical during semester and a field survey camp for 10 days during winter vacations. Includes 20% weightage for survey camp.

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Course Structure
B.Tech. (Civil Engineering) 4th Year

Teaching Scheme					Contact Hours/Week			Exam Duration (Hrs.)		Relative Weightage (%)				
S.No.	Subject Code	COURSE TITLE	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
AUTUMN SEMESTER (7th Semester)														
1	CE-402	Project*	DCC	-	-	-	3	-	-	-	-	-	-	-
2	CE-403	Training & Seminar	DCC	2	0	2	0	-	-	100	-	-	-	-
3	CE-405	Minor Project	DCC	2	0	0	3	-	-	100	-	-	-	-
4	CE-451	Design of Structures	DCC	3	2	1	2/2	3	-	15	15	30	40	-
5	CE-461	Transportation Engineering-II	DCC	4	3	1	0	3	-	25	-	25	50	-
6		Departmental Elective-I	DEC	4	-	-	-	-	-	-	-	-	-	-
7		Departmental Elective-II	DEC	4	-	-	-	-	-	-	-	-	-	-
8		Institute Elective-V	HSSMEC	3	2	1	0	2	-	25	-	25	50	-
		Total		**22**	7	5	7							
SPRING SEMESTER (8th Semester)														
1		Departmental Elective-III	DEC	4	-	-	-	-	-	-	-	-	-	-
2		Departmental Elective-IV	DEC	4										
3	CE-402	Project	DCC	8	-	-	0	-	-	-	-	-	-	-
4		Institute Elective-VI	HSSMEC	3	2	1	0	2	-	25	-	25	50	-
		Total		**19**	2	1	0							-

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Chairman

DEPARTMENTAL ELECTIVE COURSES

Teaching Scheme					Contact Hours/Week			Exam Duration (Hrs.)		Relative Weightage (%)				
S.No.	Subject Code	COURSE TITLE	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
AUTUMN SEMESTER (ANY TWO)														
1	CE-401	Construction Planning & Management	DEC	4	3	1	0	3	-	25	-	25	50	-
2	CE-411	Air & Water Polluation	DEC	4	3	1	0	3	-	25	-	25	50	-
3	CE-413	Solid & Hazardous Waste Management	DEC	4	3	1	0	3	-	25	-	25	50	-
4	CE-421	Project Surveys	DEC	4	3	0	2	3	-	25	-	25	50	-
5	CE-431	Ground Improvement Engineering	DEC	4	3	1	0	3	-	25	-	25	50	-
6	CE-441	Ground Water Engineering	DEC	4	3	1	0	3	-	25	-	25	50	-
7	CE-443	River Engineering	DEC	4	3	1	0	3	-	25	-	25	50	-
8	CE-453	Advance Structural Design	DEC	4	3	1	2/2	3	-	25	-	25	50	-
9	CE-463	Advanced Highway Engineering	DEC	4	3	1	2/2	3	-	15	15	30	40	-
SPRING SEMESTER (ANY TWO)														
1	CE-406	Systems Analysis	DEC	4	3	1	0	3	-	25	-	25	50	-
2	CE-408	F.E.M. Applications to Civil Engineering	DEC	4	3	1	2/2	3	-	25	-	25	50	-
3	CE-412	EIA & Risk Assessment	DEC	4	3	1	0	3	-	25	-	25	50	-
4	CE-414	Environmental Management & Sustainable Development	DEC	4	3	1	0	3	-	25	-	25	50	-
5	CE-422	Geographic Information Systems	DEC	4	3	0	2	3	-	25	-	25	50	-
6	CE-432	Rock Engineering	DEC	4	3	1	0	3	-	25	-	25	50	-
7	CE-442	Hydraulic Structures	DEC	4	3	1	0	3	-	25	-	25	50	-
8	CE-444	Hydropower Engineering	DEC	4	3	1	0	3	-	25	-	25	50	-
9	CE-452	Bridge Engineering	DEC	4	3	1	0	3	-	25	-	25	50	-
10	CE-462	Traffic Engineering & Management	DEC	4	3	1	0	3	-	25	-	25	50	-

07 JUL 2007

17/06/07

Chairman

INSTITUTE ELECTIVE COURSES OFFERED BY DEPTT. OF CIVIL ENGINEERING

Teaching Scheme					Contact Hours/Week			Exam Duration (Hrs.)		Relative Weightage (%)				
Subject Code	COURSE TITLE		Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
AUTUMN SEMESTER (ANY ONE)														
1	ICE-1	Mechanics of Laminated Composites	ESEC	4	3	1	0	3	-	25	-	25	50	-
2	ICE-3	GPS and its Applications	ESEC	4	3	0	2	3	-	-	25	25	50	-
SPRING SEMESTER (ANY ONE)														
1	ICE-2	Planning and Development of Hydropower	ESEC	4	3	1	0	3	-	25	-	25	50	-
2	ICE-4	Digital Image Processing	ESEC	4	3	0	2	3	-	-	25	25	50	-

04 JUL 2007

17/06/07

Offg. Chairman
DUKE.