Poornima Group of Colleges, Jaipur

Session: 2011-12 (ODD Sem.)

Name of College: Poornima College of engineering

Department of Electrical Engineering

Zero Lecture

Name of Faculty: AISHA RAFI. Branch: Electrical engineering

1). Name of Subject with Code: MATHEMATICS 3, 3EE6.1

2). Self-Introduction:

a). Name: *Aisha Rafi*
b). Qualification:, *M.Sc, B.ED and PhD**
c). Designation: *Asst. Prof.*
d). Research Area: *Mathematical Programming*
e). E-mail Id: *aisharafi@poornima.org*
Areas of proficiency/ expertise- Operation Research

Subject taught in previous year:-
ADVANED MATHEMATICS, MATHEMATICS 4,

3). Introduction of Students: 200

a). Academics Merit/Weak
b). Co-curricular Activities
c). Day Scholar/ Hosteller
d). Medium (Hindi/English)
e). Family Background (Urban/Rural)
f). Learning Style (Seeing/Hearing/Doing)

b*). Achievement of students in previous years*

Sr. No.	Year	Result At PCE	Univ. Result (In %)	Name of student scored highest marks with the scored marks.	Fail (no. of students)	Marks between 40%-60% (no. of students)	Marks 60% above (no. of students)
1	2008		37.93				
2	2009		94.29				
3	2010		82.86				

4). Instructional Language: - 65 %English; 35% Hindi (English not less than 60%)

5). Introduction to subject: - In second year we will study 6 theory papers. Out of 6 theory papers, there is 1 mathematics paper, which is Mathematics- III. It includes the units with (mentioned in Detailed Syllabus) their weight age in University exam.

a) Relevance to Branch

This subject has direct correlation with DBMS, Computer Networks and wherever the need of doing optimization. There are some subjects which fully dedicated to the use of mathematics like EMFT,Circuit Analysis.

b). **Relevance to Society**: -

The everyday use of arithmetic and the display of information by means of graphs are an everyday commonplace. These are the elementary aspects of mathematics. Mathematics III is widely used, but often in an unseen and unadvertised way.

(1) The mathematics of error-correcting codes is applied to CD players and to computers.
(2) Whenever it is said that advances are made with supercomputers, there has to be a mathematical theory which instructs the computer what is to be done, so allowing it to apply its capacity for speed and accuracy.
(3) The development of computers was initiated in this country by mathematicians and logicians, who continue to make important contributions to the theory of computer science.
(4) The physical sciences (chemistry, physics, oceanography, astronomy) require mathematics for the development of their theories.
(5) In ecology, mathematics is used when studying the laws of population change.
(6) Statistics provides the theory and methodology for the analysis of wide varieties of data.
(7) Statistics is also essential in medicine, for analyzing data on the causes of illness and on the utility of new drugs. .
(8) Travel by aero plane would not be possible without the mathematics of airflow and of control systems.
(9) Body scanners are the expression of subtle mathematics, discovered in the 19th century, which makes it possible to construct an image of the inside of an object from information on a number of single X-ray views of it. Thus mathematics is often involved in matters of life and death.

These applications have often developed from the study of general ideas for their own sake: *numbers, symmetry, area and volume, rate of change, shape, dimension, randomness* and many others. Mathematics makes an especial contribution to the study of these ideas, namely the methods of precise definitions; careful and rigorous argument; representation of ideas by many methods, including symbols and formulae, pictures and graphics; means of calculation; and the obtaining of precise solutions to clearly stated problems, or clear statements of the limits of knowledge.

These features allow mathematics to provide a solid foundation to many aspects of daily life, and to give a comprehension of the complexities inherent in apparently quite simple situations.

In modern times, the need to perform rapid mathematical calculations in war time, particularly in ballistics, and in decoding, was a strong stimulus to the development of the electronic computer. The existence of high speed computers has now helped mathematicians to calculate and to make situations visual as never before. Also this calculation has developed from *numerical calculation*, to *symbolic calculation*, and currently to *calculation with the mathematical structures* themselves. This last is very recent, and is likely to lead to a major transformation. These capacities change, not the nature of mathematics, but the power of the mathematician, which increases perhaps a million fold the possibility to comprehend, to argue, to explore.

There is also a reverse interaction.

The notion of computing would not have made sense without Mathematics, and it was the analysis of the methods of Mathematics by mathematicians, philosophers, logicians and engineers which led to the concept of a programmable computer

c). **Relevance to Self**: -

Mathematics equips with a uniquely powerful set of tools to understand and change the world. These tools include logical reasoning, problem-solving skills, and the ability to think in abstract ways. Mathematics is important in everyday life, many forms of employment, science and technology, medicine, the economy, the environment and development, and in public decision-making.

d). **Connection with previous year and next year: -**

Some of the topics of this subject has direct correlation in terms of getting analytical solution with the various subject taught in I and II Semester and different methods will be useful for subjects that will be taught in coming classes.

e). Relevance to lab: **-** Mathematic is universally used in various mathematical calculations in various fields.

6). Complete Syllabus as Per Rajasthan Technical University Scheme:

a)Index Terms/Key words-

1. LAPLACE TRANSFORM
2. COMPLEX FORM OF FOURIER TRANSFORM
3. HARMONIC ANALYSIS
4. FUNCTIONAL
5. ANALYTIC FUNCTIONS
6. COMPLEX FUNCTION

ENGINEERING MATHEMATICS- III (3EE6.1)
Class B. Tech. IIISemester

Schedule per week	**Lecture: 4**	**Tutorial: 1** there are 3 batches (1/3)
Examination time:	Three (3) hours	
Maximum marks=	100 [Mid-Term (20) & End- Term (80)]	

3EE6.1:- Mathematic 3

Unit-1 **Laplace Transform:** Laplace transform with its simple properties, applications to the solution of ordinary and partial differential equations having constant coefficients with special reference to wave and diffusion equations, digital transforms.
Unit-2 **Fourier Transform**: Discrete Fourier transform, Fast Fourier transform, Complex form of Fourier transform and its inverse applications, Fourier transform for the solution of partial differential equations having constant coefficients with special reference to heat equation and wave equation.
Unit-3 **Fourier series:** Expansion of simple functions in Fourier series, half range series, changes of interval, harmonic analysis.
Calculus of Variation: Functional, strong and weak variations, simple variation problems, Euler's equation
Unit-4 **Complex Variables:** Analytic functions, Cauchy–Riemann equations, Elementary conformal mapping with simple applications, Line integral in complex domain, Cauchy's theorem, Cauchy's integral formula.
Unit-5 **Complex Variables:** Taylor's series, Laurent's series, poles, Residues. Evaluations of simple definite real integrals using the theorem of residues. Simple contour integration.

c). ABC analysis (RGB method) of unit & topics
ABC analysis of Mathematics- Enclosed

7). Books/ Website/Journals & Handbooks/ Association & Institution:

a). Recommended Text & Reference Books and Websites:

S. No.	Title of Book	Authors	Publisher	Cost (Rs.)	No. of books in Library
Text Books					
T1	Mathematics III	Dr. K.C. Jain & Dr. M.L. Rawat	CBC	250	App.150
T2	Mathematics III	DC Gokhroo	JPH	360	15
T3	Mathematics III	Kantesh Gupta	AAASHIRWAD		App.150
Reference Books					
R1	Integral Transform	D C Gokhroo	JAICO	225	28
R2	Complex Analysis	Churchil	John wiley	750	3
R3	Advanced engineering Mathematics	Erwin kryzig	John wiley	650	25
Websites related to subject					
1	www.wikipedia.com				
2	www.iitb.org				
3	www.sciencedirect.com				
4	www.tifr.org				

b). Journals & Handbooks: -

1 International *Journals* of applied mathematics & computation

2 International *Journals* of applied mathematics & Mechanics

3 Asian *Journals* of mathematics & statics…

4. Pacific *Journals* of mathematics

c). Associations and Institutions: -

1 The Mathematical Association - Mathematics in School
www.m-a.org.ukZ

2. Mathematics Archives - Professional Societies
archives.math.utk.edu/societies.html

3. International Mathematical Union - Wikipedia, the free encyclopedia
en.wikipedia.org/wiki/International_Mathematical_Union

4. School of Electrical and Computer Engineering
www.ece.cornell.edu

5. Electrical and Computer Engineering Subject Portal
library.csuohio.edu/research/portals/eleeng-m.html

8). Syllabus Deployment: -

a). Total weeks available for academics (excluding exams/ holidays) as per PGC calendar-

Semester	I	**III**	V	VII
No. of Working days available(Approx.)	79	**76**	76	72
No. of Weeks (Approx.)	13	**12.5**	12.5	12

- Total weeks available for covering RTU syllabus- 10-11 weeks (Approx.)
- Total weeks available for special activities (as mentioned below)- 02 weeks (Approx.)

b). Special Activities (To be approved by HOD, Dean & Campus Director & must be mentioned in deployment):

- Open Book Test- Once in a semester
- Quiz (50% Technical & 50% Aptitude)- Once in a semester
- Special Lectures (SPL)- 10% of total no. of lectures including following
    i. One PPT by the faculty, who is teaching the subject
    ii. SPL by expert faculty at PGC level
    iii. SPL by expert from industry/academia (other institution)
- Revision classes:- 1 to 3 turn at the end of semester (Before II Mid Term Exam)
- Solving Important Question Bank- 1 Turn before I & II Mid Term Exam (each) - Total Two turn.

c). Lecture schedule per week

i). University scheme (L+T+P) = 3+1/0+0

ii). PGC scheme (L+T+P) = 4+1/0+0

Sr. No.	Name of Unit	No. of lectures	Broad Area	Degree of difficulty (High/Medium/Low)	No. of Question in RTU Exam.	Text/ Reference books
1.	Laplace Transform	10	Wave & heat equation and its application	HIGH	2/3	Integral Transform
2.	Fourier Transform	07	Half range series and Change of interval	MEDIUM	2	Mathematics III
3.	Fourier Series & Calculus of variation	07	Complex Fourier transform and its properties	LOW	1/2	Advanced engineering Mathematics
4.	Complex Variables	09	Complex numbers and analytical functions	MEDIUM	2	Complex Analysis
5.	Complex Variables	07	Evaluation of simple definite real integrals	MEDIUM	2	Complex Analysis

d). Introduction & Conclusion: Each subject, unit and topic shall start with introduction & close with conclusion. In case of the subject, it is Zero lecture.

e). Time Distribution in lecture class: - Time allotted: 60 min.

i. First 5 min. should be utilized for paying attention towards students who were absent for last lecture or continuously absent for many days + taking attendance by calling the names of the students and also sharing any new/relevant information.
ii. Actual lecture delivery should be of 50 min.
iii. Last 5 min. should be utilized by recapping/ conclusion of the topic. Providing brief introduction of the coming up lecture and suggesting portion to read.
iv. After completion of any Unit/Chapter a short quiz should be organized.
v. During lecture student should be encouraged to ask the question**.**

Note: Pl. ensure that each student is having Lecture Note Book. Pl. Write on the black board day and date, name of the teacher, name of sub. with code, unit and lecture no. and topics to be covered at the beginning of each lecture and ensure that students write in lecture note book. Ask students to leave 4/5 pages blank for copying the note from fellow students in case of their absenteeism.

9). Tutorial: - An essential component of Teaching- Learning process in Professional Education.

Objective: - To enhance the recall mechanism.
To promote logical reasoning and thinking of the students.
To interact personally to the students for improve numerical solving ability.

a). *Tutorial processing:* - Tutorial sheet shall be provided to each students

Ist Phase: - It is consisting of questions to be solved in the class assignment session in test mode on perforated sheet given in tutorial notebook and to be collected & kept by respective faculty for review & analysis (20 minutes).

IInd Phase: - Indicating/Initializing the weak issues/ drawback and Evaluating and providing the grade. Making a group with good student for assisting the weak students to explain/solve questions by every student on plain papers given in tutorial note book (20 minutes).

IIIrd Phase: - Solving/ explaining difficulties of lecture class and providing the new home assignment (20 minutes). To be done in tutorial note book.

b). *Home assignment shall comprise of two parts:*

Part (i) Minimum essential questions, which are to be solved and submitted by all with in specified due date.
Part (ii) other important questions, which may also be solved and submitted for examining and guidance by teacher.

10). Examination Systems:

Sr. No.	Name of the Exam	Max. Marks	% of passing marks	Nature of paper Theory + Numerical	Syllabus coverage (in %)	Conducted by
1.	Ist Mid Term Exam	40		T+N	50-60	College
2.	IInd Mid Term Exam	40		T+N	100	College
3.	University (End) Term Exam	80	Overall 40%	T+N	100	University

JAIPUR

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