Poornima Group of Colleges, Jaipur

Session: 2011-12 (ODD Sem.)

Name of College: PCE

Department of Mathematics

Zero Lecture

Name of Faculty: Meenakshi Nawal Branch: Maths

1). Name of Subject with Code: M-III (3CS1,3IT1))

2). Self-Introduction:

a). Name: Meenakshi Nawal
b). Qualification: *M.Sc-IT ,MCA*
c). Designation: *Assistant Professor*
d). Research Area:
e). E-mail Id: *meenakshinawal@poornima.org*
f). Other details: Msc. In mathematics, The subjects I taught are M-1,M-2 Discrete mathematical structure, Numerical Analysis etc

3). Introduction of Students:

a). *Identifying and keeping records* of students based on

- Merit/ weak in academics
- Smart/ dull in extra & co-curricular activity
- Day scholar/ hosteller
- Hindi or English medium
- Urban or rural
- Family background
- Their learning style (seeing, hearing, doing) etc.

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)

4). Instructional Language: 70%English: 30 % Hindi (English not less than 60%)

5). Introduction to subject: -

a). Relevance to Branch: This subject has direct correlation with DBMS, Computer Networks and wherever the need of doing optimization

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.

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). Relation with laboratory: Directly related with the analysis of data obtained by some experiments or with samples.
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e). 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.

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6). Syllabus of Rajasthan Technical University, Kota

b). RTU Syllabus with Name of Subject & Code:
Mathamatics-III Code: 3CS1,3IT1
I

Unit I

Introduction: Engineering application of optimization, Statement and classification of optimization problem, single variable and multivariable optimization with and without constraints.

Unit II

Linear Programming: Formulation of Linear Programming problem, Graphical Approach, General Linear Programming problem, Simplex Method. Duality in Linear Programming and Transportation Problems.

Unit III

Project Scheduling: Project Scheduling by PERT and CPM Network Analysis. Sequencing Theory: General Sequencing problem n-jobs through 2 machines & 3 machines and 2-jobs through m machines.

Unit IV

Laplace Transform: Laplace transform with its simple properties. Inverse Laplace transform, convolution theorem (without proof), solution of ordinary differential equation with constant coefficient, solution of partial differential equation having constant coefficient with special reference to diffusion, Heat conduction and wave equation. Boundary value problems

Unit V

Numerical Analysis: Difference operators forward, backward, central, shift and average operators and relation between them. Newton's and Gauss forward and backward interpolation formula for equal interval, Stirling's formula for central difference. Lagrange's Interpolation formula and Inverse Interpolation. Numerical differentiation by Newton's, Gauss and Sterling's formula. Numerical Integration by Simpson's one third and there eight rule. Numerical Integration of ordinary differential equation of first order by Picard's method, Euler's and modified Euler's method, Milne's method and Runge-Kutta fourth order method. Solution of difference equation.

c). ABC analysis (RGB method) of unit & topics:

As per Attached Documents

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	1. Advanced Engineering Mathematics	K.C Sarangi,Vivek Sharma	Genius Publication	245	14
T2	2. Mathematics III	Kantesh Gupta	Aashirwad	210	52
T3	3. Mathematics III	D.C. Gokhroo		185	19
Reference Books					
Unit-1,2,3	1. Linear Programming	Mittal	(Krishna Publication)	245	

	2. Operations Research 3. Operations Research 4. Optimization and its Engineering Applications	Taha S D Sharma S. S. Rao			
Unit-4	. Integral Transform	by Vashishth	Krishna Publication)		
Unit-5	1.Numerical Analysis 2. Numerical Methods 3.Numerical Methodsfor Engineersand Scientists	B. S. Grewal Veerarajan Jain-Iyenger- Jain	Dhanpat Rai TMH New Edge		
Websites related to subject					
1	www.mathpower.com				
2	www.webmath.com				
3	www.purplemath.com				
4	www.mathforum.com				
5					

b). Journals :

No

c). Associations and Institutions:

To make them aware about different associations and institutions relative to the subject and branch

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.)

S. No.	Unit /Title	No. of Lectures
1.	Unit 1	**6**
2.	Unit 2	**15**
3.	Unit 3	**8**
4.	Unit 4	**7**
5.	Unit 5	**13**

Note: Individual faculty must calculate the exact no. of lectures available according to time table etc. after consultation with HOD.

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) = 3/4+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.	**Optimization Techniques**	6		Medium	2	1. Linear Programming by Mittal (Krishna Publication) 2. Operations Research by Taha 3. Operations Research by S D Sharma 4. Optimization and its Engineering Applications by S. S. Rao
2.	**Linear Programming**	15		Medium	2	1. Linear Programming by Mittal (Krishna Publication) 2. Operations Research by Taha 3. Operations Research by S D Sharma 4. Optimization and its Engineering
3.	**Project Scheduling**	8		Medium	2	1. Linear Programming by Mittal (Krishna Publication) 2. Operations

4.	**Laplace Transform**	7		Easy	2	Integral Transform by Vashistha (Krishna Publication)
5.	**Numerical Analysis**	5		Easy	2	1. Numerical Analysis by B. S. Grewal 2. Numerical Methods by Veerarajan (TMH) 3. Numerical Methods for Engineers and Scientists by Jain- Iyenger-Jain 4. Higher Engineering Mathematics by B.V.Ramana 5.Numerical Analysis by Bansal & Ojha

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: 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	40	70%+30%	60%	PGC
2.	IInd Mid Term Exam	40	40	90%+10%	40%	PGC
3.	University (End) Term Exam	80	30	70%+30%	100%	RTU

11). Any other important point:

Place: Jaipur
Date : 25/7/11

Meenakshi Nawal
Assistant Professor
(PCE-MATHS)