PhD COURSE WORK

SCHOOL OF ENGINEERING & TECHNOLOGY
BABA GHULAM SHAH BADSHAH UNIVERSITY
RAJOURI (J & K) – 185234
Ph. No/Fax No: - 01962-241016

Ref.BGSBU/DSOE&T/18/3199

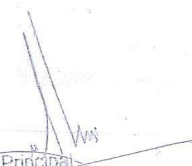Dated : 02/04/2018.

MINUTES OF THE MEETING

A meeting was held in the office of Dean, School of Engineering & Technology regarding course work of Ph.D. students enrolled in ERE Department on March 30, 2018. The meeting was attended by the committee members of DRC along with HoD, Department of ERE.

1. Dr. Mohammad Asger, DRC Chairman
2. Dr. Farhad Ilahi Bakhsh, DRC Member
3. Dr. Ram Singh, DRC Member
4. Dr. Feroz A. Mir, DRC Member
5. Mr. Shafqat Nabi Mughal, HoD, ERE

In the meeting, the following are the two courses which has been approved by the DRC, Department of ERE for the course work of Ph.D. students enrolled in ERE Department:

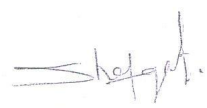| S. No.	Course Code	Course Title
1.	MERE-101	Renewable Energy Systems
2.	MERE-102	Research Methodology

The syllabus of following courses along with the time table has been enclosed.

Principal
College of Engineering & Technology
Baba Ghulam Shah Badshah University
Rajouri (J&K)
(Dr. Mohammad Asger)
DRC Chairman

(Dr. Farhad Ilahi Bakhsh)
DRC Member

(Dr. Ram Singh)
DRC Member

(Dr. Feroz A. Mir)
DRC Member

(Mr. Shafqat Nabi Mughal)
HoD, ERE

Forwarded to DAA for N/a

Course Code: MERE-101
Course Title: Renewable Energy Systems   Total Marks: 100

Unit I:

Overview of conventional and renewable energy technologies, World and India's energy scenario, Energy Security, Energy growth, Energy Demands.

Unit II:

Solar radiation: availability, measurement and estimation. Solar photovoltaic (SPV) system, application of photovoltaic system for power generation, concentrating solar power generation, solar thermal systems and its applications.

Unit III:

Wind resource assessments and Forecasting, Site assessment, Power in wind, Wind Turbines. General theories of wind machines, Wind energy conversion systems (WECS).

Unit IV:

Power Electronic Interface of Solar photovoltaic (SPV) system and Wind energy conversion systems (WECS) with the Grid and Isolated load.

Unit V:

Micro grid; Fuel cell, hydrogen energy, Energy Storage, hybrid and integrated energy systems.

Text/ References Books:

1. B. H. Khan, Non Conventional Energy Resources, TMH.
2. D. P. Kothari, K.C. Singal, Rakesh Ranjan, Renewable Energy Sources and Emerging Technologies, 2nd Ed., PHI.
3. C. S. Solanki, Solar Photovoltaics, PHI.
4. S. N. Bhadra, D. Kastha, S. Banerjee, Wind Electrical Systems, Oxford.
5. Freris L. L., Wind Energy Conversion Systems, PHI.
6. J. A. Duffie and W. A. Beckmen, Solar Engineering of Thermal Processes, John Wiley.
7. S. P. Sukhatme, Solar Energy-Principles of Thermal Collection and Storage, TMH.
8. MNRE Manual.

(Dr. Farhad Ilahi Bakhsh)

Dr. Feroz Ahmad

School of Engineering & Technology, BGSBU University, Rajouri.

Course Title: Research Methodology
Course Code: MERE-102

Total Marks: 100

Course Objectives: The aim of this course is to familiarize the students with scientific methods and techniques of research.

Unit-I: Research Problem: Nature and objective of research, Meaning of research problem, Characteristics of good research problem, Errors in selection problems, Scope and objective of research Problem

Unit-II: Survey and Experimental Methods: Meaning and definition of method, Scientific method, types of research method purpose and use of survey method, Meaning and definition of experimental method, Law of sample variable, Steps and classification of experimental method, Characteristics of good experimental methods

Unit-III: Data Collection: Data collection, Need and meaning of data Collection, Difference between facts and data, nature of data, Types of data, Data collection and organization of data, Statistical analysis of data.

Unit-IV: Basic Statistics: Measure of Central tendencies: Mean, Mode, Median, Range, Standard Deviation, Random variables, Mathematical Expectations.

Unit-V: Probability Distributions & Markov Chains: Distributions: Binomial, Poisson, Normal distribution, Introduction to Markov Chains, Finite state space, Transition and stationary markov chains, Birth and death process.
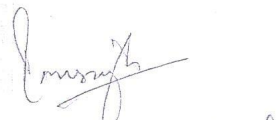
Laboratory Work: Implementation of mathematical and statistical techniques by using MATLAB software.

Course Outcomes: Upon the completion of this course, the students will be able to:
* Learn how to formulate engineering research problems
* Learn how to analyse and use the collected data
* Compute the mean, mode, median and apply these in various engineering problems
* Solve Binomial, Poisson, Normal distribution and learn how to apply these distributions in engineering problems

Dr. Feroz Ahmad

(Dr. Farhad Ilahi
)

Books Recommended:

1. 'Research Methodology: Methods and Trends', By C.R. Kothari
2. 'Probability and Statistics for Engineers and Scientists', By Walpole, R.E., Myers, S.L. and Ye, K., Ninth Edition, Pearson
3. 'Stochastic Processes', By J. Medhi, New Age Publishers
4. 'Fundamental of Research Methodology and Statistics', By Yogesh K. Singh, New Age International Publishers
5. 'Statistics for Research', Dowdy, S., Wearden, S. and Chilko, D., Wiley Series

Note for Paper Setter: -The Question paper shall comprise of 10 questions. Two questions will be set from each unit .The student has to attempt five questions at least one from each unit. Use of calculator is allowed in the examination.

Dr. Feroz Ahmad.   For Farhad Illahi (Dr. Farhad Illahi Bakhat)