जम्मू केन्द्रीय विश्वविद्यालय
Central University of Jammu

(17)

No: 11-2/CUJ/Reg/MST/2016/1743

18th October, 2016

NOTIFICATION

It is hereby notified on the recommendations of the Board of Studies, Material Science and Technology, the Vice Chancellor, in anticipation of the approval of the Academic Council, has approved the Course Scheme and Syllabus of 1st and 2nd semester for Master's in Material Science and Technology with effect from Academic session 2016-17. The approved Course Scheme is as follows:

SEMESTER-1st

Course Code	Course Title	Credit	CIA	MSE	ESE	Total Mark
	CORE COURSES					
PGMST1C001T	Crystal Structure and Properties of Materials	4	25	25	50	100
PGMST1C002T	Quantum Mechanics	4	25	25	50	100
PGMST1C003T	Computer Programming & Numerical Analysis	4	25	25	50	100
PGMST1C004L	Laboratory-I	4	25	25	50	100
	ELECTIVE COURSE					
PGMST1E001T	Polymer Science	4	25	25	50	100
	FOUNDATION COURSE					
PGMST1F001T	Molecular Biology	2	12.5	12.5	25	50
Total		**22**				**550**

SEMESTER-2ND

Course Code	Course Title	Credit	CIA	MSE	ESE	Total Mark
	CORE COURSES					
PGMST2C001T	Thermal Behaviour of Materials	4	25	25	50	100
PGMST2C002T	Nanomaterials	4	25	25	50	100
PGMST2C003T	Experimental Techniques in Material Science-I	4	25	25	50	100
PGMST2C004L	Laboratory-II	4	25	25	50	100

Rahya – Suchani (Bagla), District Samba, Jammu -- 181143 (J & K)
Ph: 01923-249657-58, Website: www.cujammu.ac.in

जम्मू केन्द्रीय विश्वविद्यालय
Central University of Jammu

	ELECTIVE COURSE					
PGMST2E001T	Semiconductor Devices	4	25	25	50	100
	FOUNDATION COURSE					
PGMST2F001T		2	12.5	12.5	25	50
Total		**22**				**550**

18/10/16
I/c. Registrar

End:- As above

To:
Head, Department of Material Science & Technology

Copy to:
I/c Controller of Examinations

Crystal Structures and Properties of Materials

Course Code: PGMST1C001T **4 credit (3-1-0)**

Unit I Crystal structure 12 hrs

Crystal structures and lattices with basis, symmetry properties, packing fractions, Miller indices, Common crystal structures, Reciprocal lattice, Brillouin zones, X-ray diffraction by a crystal and their equivalence, Laue equations, Ewald construction, Brillouin interpretation, Crystal and atomic structure factors, structure analysis: Types of probe beam, X-ray scattering from solid including Laue conditions and line intensities, rotating crystal and powder methods.

Unit II Lattice dynamics and thermal properties 10 hrs

Classical theory of lattice dynamics: Vibrations of crystals with mono-atomic and di-atomic basis's, Dispersion relations, Group velocity, Acoustical and optical modes; Phonons: Quantization of lattice vibrations, Phonon momentum, Inelastic scattering of neutrons by phonons; Thermal properties: heat capacity, Density of states, Normal modes, Debye and Einstein models for specific heat.

Unit III Electronic properties of solids-I 10 hrs

Free electron gas model: Electrical conductivity and Ohm's law, Density of states, Heat capacity, Fermi energy, Effect of temperature, effective mass, Band theory of solids: Periodic potential, Bloch's theorem, Kronig-Penney model, approximate solution near a zone boundary.

Unit IV Electronic properties of solids-II 10 hrs

Periodic, extended and reduced zone schemes of energy band representation. Construction of Fermi surfaces in Brillouin zones, methods for calculations of energy bands and their features, Tight binding method and its application to simple cubic (SC) and body centred cubic (BCC) structures.

Unit V Superconductivity 10 hrs

Introduction to Superconductivity, effect of magnetic field, Meissner effect, Type I and type II superconductors, Review of thermodynamic properties of superconducting materials, Isotope effect; London equation, Coherence length, BCS theory of superconductivity, Flux quantization in a superconducting ring; DC and AC Josephson effects; Macroscopic long-range quantum interference; High T_C superconductors.

Text Books:

1. **Charles Kittel,** Introduction to Solid State Physics, Wiley.
2. **Callister, W.D.**, Materials Science & Engineering: An Introduction, Wiley & Sons (2001).

References Books:

1. **Raghvan, V.**, Materials Science & Engineering, PHI (1998).
2. **Smith, W.**, Principles of Materials Science and Engineering, McGraw Hill (1990).

Quantum Mechanics

Course Code: PGMSTIC002T **4 credit (3-1-0)**

Unit-I **(10 Hrs)**

Inadequacies in Classical Physics, Blackbody Radiation, Quantum Theory of Light, Photoelectric Effect, Compton Effect, Franck- Hertz experiment, Wave Nature of Matter: De Broglie Hypothesis, Wave–Particle Duality, Davisson-Germer Experiment, Two Slit Experiment with Electrons.

Unit-II **(8 Hrs)**

Basic Postulates and Formalism: Energy, Momentum and Hamiltonian Operators, Time-Independent Schrodinger Wave Equation for Stationary States, Properties of Wave Function, Probability Density and Probability, Conditions for Physical Acceptability of wave Functions, Normalization, Linearity and Superposition Principles, Eigen values and Eigen functions, Expectation Values, Wave Function of a Free Particle.

Unit-III **(8 Hrs)**

Normalized one and three dimension wave packets, Wave description of Particles by Wave Packets, Group and Phase Velocities and Relation between them, Schrwartz's inequality uncertainty principle, application of uncertainty principle, Expectation values of physical observables and dynamical quantities, Ehrenfest theorem, Bohr's correspondence principle, Principle of complementarities, coordinate and momentum representations, significance of momentum wave function.

Unit-IV **(14 Hrs)**

Eigen Functions and Eigen values for a Particle in a One Dimensional Box, Bound State Problems: General Features of a Bound Particle System, (1) One Dimensional Simple Harmonic oscillator: Energy Levels and Wave Functions, Zero Point Energy; (2) Quantum Theory of Hydrogen Atom: Particle in a Spherically Symmetric Potential, Schrodinger Equation, Separation of Variables, Radial Solutions and Principal Quantum Number, Orbital and Magnetic Quantum Numbers, Quantization of Energy and Angular Momentum, Space Quantization; Electron Probability Density, Radiative Transitions, Selection Rules.

Unit-V **(12 Hrs)**

Scattering Problems in One Dimension: Finite Potential Step: Reflection and Transmission, Stationary Solutions, Probability Current, Attractive and Repulsive Potential Barriers; Quantum Phenomenon of Tunneling: Tunnel Effect, Tunnel Diode (Qualitative Description); Finite Potential Well (Square Well).

Text Books:

1. **N. Zettili**, Quantum Mechanics; Concept and Applications, John Wiley & Sons,LTD.
2. **Robert Eisberg & Robert Resnick**, Quantum Physics of Atoms, Molecules, Solids, Nuclei, and Particles, Second Edition, John Wiley & Sons,LTD.

Reference Books:

1. **L.I.Schiff**, Quantum Mechanics, 3rd Edition, (McGraw Hill Bool Co. New York 1968).
2. **E. Merzbacher**, Quantum Mechanics, 3rd Edition, (John Wiley & Sons, Inc 1997)
3. **A.Ghatak &S.Lokanathan**, Quantum Mechanics: Theory and Applications, 5th Edition, (Macmillan India, 2004)

Computer Programming & Numerical Analysis

Course Code: PGMSTIC003T **4 credit (2-0-4)**

Unit I Computer Fundamentals and Programming in C **14 hrs**

Flow charts, Algorithms, Integer and floating point arithmetic, Precision, Variable types, Arithmetic statements, Input and output statements, Control statements, Executable and non-executable statements, Arrays, Repetitive and logical structures, Subroutines and functions, Operation with files, Operating systems, Creation of executable programs.

Unit II Numerical Methods of Analysis-I **10 hrs**

Solution of algebraic and transcendental equations: Iterative, Bisection and Newton-Raphson methods; Solution of simultaneous linear equations: Matrix inversion method; Interpolation: Newton and Lagrange formulas

Unit III Numerical Methods of Analysis-II **10 hrs**

Numerical differentiation, Numerical Integration: Trapezoidal, Simpson and Gaussian quadrature methods; Least-square curve fitting: Straight line and polynomial fits; Numerical solution of ordinary differential equations: Euler and Runge-Kutta methods

Laboratory: Programming in C

1. Finding the roots of a Quadratic equation
2. Fitting a Straight line and Exponential curve
3. Fitting a Polynomial
4. Newton's Forward Difference Interpolation
5. Programming for Numerical integration: Trapezoidal and Simpson methods
6. Programming for Root finding: Bisection, Secant and Newton-Raphson methods
7. Numerical solution of ordinary differential equations: Euler and Runge-Kutta methods

Text Books:

1. **E. Balagurusamy**, Programming in ANSI C, 5th edition, McGraw Hill, New Delhi, 2011
2. **V. Rajaraman,** Computer Oriented Numerical Methods, 3rd edition, Prentice Hall of India, 2006

Reference Books:

1. **S. S. M. Wong,** Computational Methods in Physics and Engineering, 2nd edition, World Scientific.
2. **C. F.Gerald,** Applied Numerical Analysis, 7th edition, Pearson/Addison Wesley, 2004
3. **Teukolsky, Vetterling and Flannery,** Numerical Recipes 3rd Edition: The Art of Scientific Computing, Cambridge University Press, 2007
4. **E. Balagurusamy**, Object Oriented Programming With C++, 6th edition, McGraw Hill, New Delhi, 2001

Polymer Science

Course Code: PGMSTIE001T **4 credit (3-1-0)**

Unit-I Introduction to Polymers **10 hrs**

Basic concepts of high polymer system, macromolecular concept, structural feature of polymer, length to diameter ratio, classification, structure property relationship. Step reaction polymerization, radical chain polymerization, ionic and co-ordination polymerization, copolymerization.

Unit-II Polymer Chemistry **10 hrs**

Polymerization techniques like as bulk polymerization, solution polymerization, suspension polymerization, emulsion polymerization, melt polycondensation, solution poly condensation. Chemical bonds, polymer solubility, chemical reactivity, effect of thermal, photochemical and high energy radiation, aging and weathering, diffusion and permeability, toxicity, configuration of polymer chains.

Unit-III Structure and Morphology **10 hrs**

Crystal structure of polymer, morphology of crystalline polymer, crystallization and melting, polymer single crystals, lamellae, disorder & nature of the fold surface, crystallization from melt, degree of crystallization, crystallites, structural regularity and crystallizability, factors affecting crystallisabillity, helix structure, spherulites.

Unit-IV Properties of Polymers **10 hrs**

Glass transition temperature, melting temperature, measurement methods, factors affecting glass transition temperature and properties, Heat distortion temperature, Rheoproperties such as stress and strain, ideal elastic solid, Newtonian and non-Newtonian fluid, apparent viscosity, the power law, molecular hole concept, waissenberg effect, measurement of flow, melt fracture, time dependent flow, viscoelastic material and its mechanical model, relaxation, hysteresis and creep.

Unit-V Industrial Applications **10 hrs**

Conventional to modern outlook for industrial applications of polymers including environmental, energy, biological, and miscellaneous applications, Industrial applications of polymers

References:

Text Books

1. **V R. Gowarikar**, Polymer Science, 2016
2. **Billmeyer**, Text book of Polymer Science, John Wiley & Sons, 2007

Reference Books

1. **P Ghosh**, Polymer Science and Technology: Plastics, Rubbers, Blends and Composites,

Third Edition, McGraw Hill Education 2011
2. **RJ Young and PA Lovell**, Introduction to polymers, *Polymer International*, Chapman and Hall, 1991

Laboratory-I

Course Code: _ _ _ _ _ _

4 credit (0-0-8)

1. Hall-Effect measurement
2. Band-Gap of Semiconductor diode
3. Frank-Hertz experiment
4. Regulated power supply using Zener Diode
5. Photodiode
6. Preparation of unsaturated polyester
7. Measuring physical properties of Polyester/PVC
8. Four probe method Determination of resistivity of Germanium crystal at different temperature and estimation of energy band gap.
9. To study the intensity response of semiconductor materials
10. Silicon Control Rectifier (SCR) characteristics
11. Resistivity measurement of Superconducting Material
12. Study of thermoluminance property of materials

Students assigned the general laboratory work will perform at least eight (07) experiments of the above mentioned list. Experiments of equal standard may be added.

References:

1. **B.L. Worsnop & H.T. Flint,** Advanced Practical Physics for Students Methuen 1927.
2. **A. C. Melissinos, J. Napolitano**, Experiments in Modern Physics, Academic Press.

Thermal Behavior of Materials

Course Code: PGMST2C001T **4 credit (3-1-0)**

Unit I Classical and Quantum Statistics **(12 Hrs)**

Micro canonical, canonical and grand canonical ensembles, Maxwell Boltzmanns, Bose-Einstein and Fermi-Dirac statistics, Comparison of MB, BE and FD statistics.

Unit II Application of Statistics **(10 Hrs)**

Planck's Radiation law, Stefan-Boltzmann law, Einstein model of a solid, Bose condensation, Classical partition function and classical ideal gas, Equipartition theorem, Semiconductor statistics, Statistical equilibrium of electrons in semiconductors.

Unit III Thermodynamics-I **(10 Hrs)**

Laws of thermodynamics, internal energy, Enthalpy, Entropy, Helmholtz and Gibbs free energies, Thermodynamic relations, Euler equation, Maxwell's relations and applications,

Unit IV Thermodynamics-II **(10 Hrs)**

Chemical Potential, Gibbs phase rule, phase equilibria (single and multicomponent systems), Clausius-Clayperon equation, law of mass action, first order phase transition in single component systems, Second order phase transition

Unit V Heat and Mass Transfer **(10 Hrs)**

Basic concepts of conduction, convection and radiation, Hydrodynamics, Dimensionless numbers, Rayleigh's number, Reynold's number, Heat balance equation, Mass transfer convective flow, diffusion, Fick's law, diffusion coefficient-mass transfer coefficient, Application to melt growth

Text Books:

1. **S. Lokanathan and R. S. Gambhir**, Statistical and Thermal Physics:An Introduction by Prentice-Hall of India Private Limited.
2. **M. C. Gupta**, Statistical Thermodynamics. Wiley Eastern Ltd., New Delhi, 1993.

References:

1. **T. Engel and P. Reid**. Thermodynamics, Statistical Thermodynamics & Kinetics, Pearson Education, Inc. 2006.
2. **H.B.Callen**. Thermodynamics and an Introduction to Thermostatistics. Wiley India Pvt. Ltd.
2014.
3. **J.P.Holman.** Heat transfer. Tata McGraw Hill, New Delhi, 2008.
4. **F.Reif.** Fundamentals of Statistical and Thermal Physics. McGraw Hill, 1995.

Course Code: PGMST2C002T **Nanomaterials** **4 credit (3-1-0)**

Unit-1: Introduction & Background **10 hrs**

Introduction to Nanoscience and Technology, Insight and Intervention in Nanoworld, Historical Background, Recent Advances and Future Aspects, Application of Nanoscience and Technology in Different Field, Agriculture, Medical, Environmental, Defence, Food, Textiles, Consumer Etc.

Unit-2 Nanomaterials **12 hrs**

Nanoscale materials (introduction, properties of nanomaterials, brief discussion of nanocrystals and clusters, fullerenes, carbon nanotubes, dendrimers, nano wires, nanocomposites), Band structure of solids: Free electron theory (qualitative idea) and its features, Idea of band structure, insulators, semiconductors and conductors, Energy band gaps of semiconductors, Effective masses and Fermi surfaces, Localized particles, Donors, Acceptors and Deep traps, Mobility, Excitons, Density of states, Variation of density of states with energy and Size of crystal.

Unit -3 Synthesis of nanomaterials **10 hrs**

Top-down and Bottom-up approach, Synthesis methods: physical, chemical and biological methods of synthesis, Sol-Gel and Ball Milling methods, Properties of materials & nanomaterials, research and development in synthesis approach as per nonmaterial's applications, role of size in nanomaterials, Quantum confinement, Nanomaterials structures, two dimensional quantum systems, Quantum well, Quantum wire and Quantum dot, Fabrication techniques.

Unit-4 Characterizations tools and role of nanoscience in allied fields **10 hrs**

Spectroscopic and Microscopically Techniques, Characterizations Tools for Thin film and hybrid materials, Role of nanoscience in Information Technology (Bioinformatics), Nanobiotechnology, Nano and Micro-electromechanical systems and Sensors (biosensors).

Unit-5. Ethical issues related to nanoscience and technology **08 hrs**

Safety, Health and Environmental Issues, Societal Implications, Miscellaneous Ethical Issues related to Nanoscience and Technology:

References:

Text Book

1. **Charles P. Poole, Jr., Frank J. Owens,** Introduction to Nanotechnology, John Wiley & Sons, 2003
2. **Kulkarni, Sulabha K.**, Nanotechnology –Principle and practices, 3rd Edition, Capital Publishing Company, 2015.
3. **Bhushan, Bharat,** Handbook of Nanotechnology, Springer, 2010

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Reference Books

1. **Hari Singh Nalwa**, Encyclopaedia of nanoscience and technology, American Scientific Publisher, 2004
2. **Albert Folch**, Introduction to BioMEMS, CRC Press, 2012
3. Social and Ethical issues in Nanotechnology: Lesson form biotechnology and other high technologies, Biotechnology Law Report, 22 No.2, 376-96, 2003

4 (5)

Experimental Techniques in Materials Science-I

Course Code: PGMST200037 **4 credit (3-1-0)**

UNIT I: X-ray Diffraction techniques 10 hrs

Production of X-rays, its properties and hazards, Bragg's law, Laue techniques, Debye-Scherrer techniques. Powder method for crystalline and amorphous solid, Determination of crystal structure, line broadening, particle size, residual stress measurement, Phase identification, phase quantification, introduction to pole figure and texture analysis; Single crystal X-ray Diffraction techniques, chemical/elemental analysis by X-ray Fluorescence.

UNIT II: Electron microscopy 12 hrs

Principles and operation of electron microscope. Geometry of electron microscopes, Specimen Handling and preparation, Secondary electron image, Backscattered electron image, Example of electron micro-graphs and fractography studies, Field emission –Scanning electron microscope (FESEM), Tunnelling Electron microscopy (TEM).

UNIT III: Scanning Probe Microscopy 10 hrs

Principles and operation of scanning probe microscopes: Scanning Tunnelling Microscope, Atomic Force Microscope, Magnetic and Piezo-Force microscopy, Confocal microscopy.

UNIT IV: Thermal Analysis 08 hrs

Thermo Gravimetric Analysis, Differential Thermal Analysis, and Differential Scanning Calorimetry: Operating principles and their applications.

UNIT V: Photometery and Spectroscopy 12 hrs

Basics of UV and visible Spectroscopy, Electronic transitions, Beer-Lambert Law, visible spectrum and colour; Principle and working of UV/VIS Spectrophotometer, Infrared Spectroscopy: Instrumentation and sample handling, selection rule, types of bonds, absorption of common functional group, overtones, applications of FT-IR and IR Spectroscopy.

Text Books:

1. **Wachtman, J.B., Kalman, Z.H.,** Characterization of Materials, Butterworth-Heinemann, (1993)
2. **S. Jacksons**, Characterization of Materials, Wiley, 2014
3. **Kauffmann**, Characterization of Materials, Wiley

Reference books:

(4) 3

1. **Cullity B. D**, Elements of X-ray Diffraction., 4th Edition, Addison Wiley, 1978
2. **P.J. Goodhew, F.J. Humphreys**, Electron Microscopy and Analysis, Taylor & francis, 2nd edition, 1997
3. **Colin N. Banwell and Elaine M. McCash**, Fundamentals of Molecular spectroscopy, Tata McGraw-Hill Publishing Co. Ltd., Fourth edition
4. **Wendlandt, W.W.**, Thermal Analysis, John Wiley & Sons (1986)
5. **Y.R. Sharma**, Elementary organic spectroscopy: Principle and Chemical application, Published by S. Chand & Company ltd.

3

Semiconductor Devices

Course Code: PGMST2E001T **4 credit (3-1-0)**

Unit I Microscopic Study of Solid State Devices **10 hrs**

Allowed and forbidden energy forbidden energy bands, Direct and indirect band gap semiconductor, intrinsic carrier concentration, impurity conductivity, Density of States Function, Charge Carriers in Semiconductors, Dopant Atoms and energy Levels, Position of Fermi Level, Excess Carrier Lifetime, Surface effects.

Unit II Bipolar Devices I **10 hrs**

PN- Junction, Zero Applied Bias, Reverse Applied Bias, Non-uniformly Doped Junctions, PN-Junction Diode, Small Signal Model of the pn-junction, Generation- Recombination Currents, Junction Breakdown, Charge Storage and Diode Transients, Tunnel Diode, Schoktty Diode Metal Semiconductor Ohmic Contacts, Heterojunctions.

Unit III Bipolar Devices II **10 hrs**

Bipolar Junction transistor (BJT) action, Minority Carrier Distribution, Low frequency common base current gain, Nonideal effect, Equivalent Circuit models, Frequency limitation, large signal switching, other bipolar transistor structures.

Unit IV Unipolar Devices **10 hrs**

Two terminal MOS structure, Capacitance-Voltage characteristics, Basic MOSFET operation, Frequency limitations, CMOS technology, Nonideal effects, MOSFET scaling, Threshold voltage modifications, Additional electrical characterstics.

Unit V Optoelectronic Devices **10 hrs**

Solar cells (Solar radiation and ideal conversion efficiency p-n junction solar cell, heterojunction and thin film solar cell), Light Emitting Diode, Photo detector (photoconductor, photodiode, photo transistor), Photomultiplier tubes, Scintillators, Semiconductor Lasers.

Text Books:

1. **Donald A. Neamen,** Semiconductor Physics and Devices: Basic Principles, 4th edition, McGraw Hill, 2012

Reference Books

1. **S. M. Sze,** Physics of Semiconductor Devices, 3rd edition, Wiley, 2008
2. **B.G. Streetman, S. Banerjee,** Solid State Electronic Devices, 6th edition, Prentice Hall Series, 2006
3. **Robert L. Boylestad**, Electronic Devices and Circuit Theory, 10th edition, Pearson Education India, 2009

Members and Special Invitees present present in the meeting of Board of Studies of Nano Sciences and Materials held on 17-09-2016 at 3:00 PM in the Temporary Academic Block of Central University of Jammu.

Prof. S.K.Khosa
(Head of Deptt. Nano Sciences and Materials , CUJ) ----------

Prof. K.K.Raina
(Subject Expert, Derhadun Institute of Technology)----------

Prof. H.M.Mittal
(Deptt. of Physics, NIT Jalandhar) ---------- 17/9/16

Prof. K.K.Bamzai
(Deptt. of Physics, Jammu University) ---------- 17/09/16

Dr. Vishal Singh (Asstt. Professor)
(Department of Nano Sciences & Materials, CUJ) ----------

Dr. Tanuj Kumar (Asstt. Professor)
(Department of Nano Sciences & Materials, CUJ) ----------

Dr. Pragati Kumar (Asstt. Professor)
(Department of Nano Sciences & Materials, CUJ)----------

Dr. Pawan Kumar (Asstt. Professor)
(Department of Chemistry ,CUJ) ----------

जम्मू केन्द्रीय विश्वविद्यालय
Central University of Jammu

No: CUJ/Acad/Ad-BoS/2016/1665 Date: 22.08.16

Notification

In pursuance of Ordinance No. 13 governing Constitution of Board of Studies and terms of office of its members, the Vice Chancellor is pleased to approve the constitution of Board of Studies for the Department of Nano Sciences and Materials comprising the following:

a. Prof. S.K. Khosa — **Chairman**
(Head of the Department)

b. All Professors in the department — **(ex-officio members)**
(to be nominated by the Dean)

c. One Associate Professor of the Department — **Member**
By rotation in order of seniority to be nominated by the Dean

d. Dr. Tanuj Kumar, — **Member**
(One Assistant Professor of the Department
by rotation In order of seniority to be nominated by the Dean)

e. Dr. Vishal Singh — **Member**
(One teacher nominated by the Vice Chancellor
From allied subject)

f. Two experts invited by the Chairman
1. Prof. K.K. Bamzai — **Member**
Department of Physics, University of Jammu
2. Prof. H.M. Nittal — **Member**
Department of Physics, NIT Jalandhar

g. One Subject Expert
1. Prof. K.K. Raina — **Member**
Dehradun Institute of Technology

Registrar

To:
1. All members

Copy to:
1. Head, Department of Nano Sciences and Materials
2. PS to VC
3. PA to Registrar

PA
BOS in Nanosciences & Material
SKKhosa
26/8/2016

1st BoS

(1)

Minutes of the Meeting of Board of Studies in Nano Sciences and Materials held on 17-09-2016 at 3:00 PM in the Temporary Academic Block of Central University of Jammu.

Present

1. Prof. S.K.Khosa
2. Prof. K.K.Raina
3. Prof. H.M.Mittal
4. Prof. K.K.Bamzai
5. Dr. Vishal Singh
6. Dr. Tanuj Kumar

The Head of Department welcomed the members to the first meeting of Board of Studies in Nano Sciences and Materials and apprised them that the Syllabii were prepared by the department in consultation with the members of the Adhoc Board. The same is presented before the Board of Studies for consideration.

Item No.1: To prepare the scheme and detailed syllabi for the semester I, and II as per UGC guidelines and the University Ordinance.

Decision of Board of Studies: The Syllabii of Ist two semesters of two years M.Sc. programme in Nano Sciences and Materials were taken up for discussion semester wise. After threadbare discussion the changes were made as suggested by the members. The modified syllabus was then approved.

Item No.2: To prepare a panel of Paper Setters / Answer script / Dissertation / Thesis evaluators for the M.Sc./Ph.D. programmes in Nano Sciences and Materials.

For this purpose the list of examiners in annexure ''1'' was prepared and approved by Board of Studies. The Head of Department was authorised to withdraw or include any other reputed examiner if such a need arises in future.

Item No.3: To prepare a list of Journals in the field of Nano Sciences and Materials to which the University should subscribe.

17/09/2016

1. Prof. S.K.Khosa

2. Prof. K.K.Raina

17/9/16

3. Prof. H.M.Mittal

17/9/16

4. Prof. K.K.Bamzai

17/09/16

5. Dr. Vishal Singh

17/09/16

6. Dr. Tanuj Kumar