Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

MBA–INTERNATIONAL BUSINESS III SEMESTER (20-22)

MBAI 301C ADVANCED HUMAN VALUES AND PROFESSIONAL ETHICS

SUBJECT CODE	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
		THEORY			PRACTICAL		L	T	P	CREDITS
		END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MBAI301C	Advanced Human Values and Professional Ethics	60	20	20	-	-	4	-	-	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
*__Teacher Assessment__ shall be based on following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective

The objective of the course is to disseminate the theory and practice of moral code of conduct and familiarize the students with the concepts of "right" and "good" in individual, social and professional context

Examination Scheme

The internal assessment of the students' performance will be done out of 40 Marks. The semester Examination will be worth 60 Marks. The question paper and semester exam will consist of two sections A and B. Section A will carry 36 Marks and consist of five questions, out of which student will be required to attempt any three questions. Section B will comprise of one or more cases / problems worth 24 marks.

Course Outcomes

1. Help the students to understand right conduct in life.
2. To equip students with understanding of the ethical philosophies, principles, models that directly and indirectly affect personal and professional life.

COURSE CONTENT

Unit I: Inculcating Values at Workplace

1. Values: Concept, Sources, Essence
2. Classification of Values.
3. Values in Indian Culture and Management: Four False Views, Value Tree
4. Eastern and Western Values; Values for Global Managers

Unit II: Professional Ethics

1. Ethics: Concept, Five P's of Ethical Power, Organisational Tools to Cultivate Ethics
2. Theories of Ethics: Teleological and Deontological
3. Benefits of Managing Ethics in an Organisation
4. Ethical Leadership

Unit III: Indian Ethos and Management Style

1. Indian Ethos and Workplace
2. Emerging Managerial Practices
3. Ethical Considerations in Decision Making and Indian Management Model
4. Core Strategies in Indian Wisdom and Ethical Constraints

Unit IV: Human Behavior – Indian Thoughts

1. Guna Theory
2. Sanskara Theory
3. Nishkama Karma
4. Yoga: Types, Gains; Stress and Yoga

Unit V: Spirituality and Corporate World

1. Spirituality: Concept, Paths to Spirituality
2. Instruments to achieve spirituality
3. Vedantic Approach to Spiritual and Ethical Development
4. Indian Spiritual Tradition.

Suggested Readings

1. Kausahl, Shyam L. (2006). ***Business Ethics – Concepts, Crisis and Solutions***. New Delhi: Deep and Deep Publications Pvt. Limited
2. Murthy, C.S.V. (2012). ***Business Ethics –Text and Cases.*** Himalaya Publishing House: Mumbai
3. Chakraborty, S. K. (1999). ***Values and Ethics for Organizations***. Oxford university press
4. D.Senthil Kumar and A. SenthilRajan (2008). ***Business Ethics and Values.*** Himalaya Publishing House: Mumbai

Shri Vaishnav Vidhyapeeth Vishvavidhyalaya, Indore

P. G. Program M.Sc. (Physics)

Semester – III

Subject Code	Category	Subject Name	Teaching and Evaluation Scheme								
			Theory			Practical		Th	T	P	Credit
			End Sem University Exam	Two Term Exam	Teachers Assessment	End Sem University Exam	Teachers Assessment				
MSPH301	DC	Plasma Physics - I	60	20	20	0	0	3	1	0	4

Course Objectives	1. To develop the comprehensive understanding of laws of physics related to Plasma Physics – I and ability to apply them for laying the foundation for research and development. 2. To work ethically as member as well as leader in a diverse team.
Course Ourcomes	1. Student will be able to understand and solve the problems related to Plasma Physics - I. 2. Student will be able to determine physical parameter experimentally with optimal usage of resources and complete the assignments in time.

Abbreviation		
Th	Theory	**Teacher Assessment (Theory) shall be based on following components: Quiz / Assignment / Project / Participation in class (Given that no component shall be exceed 10 Marks).**
T	Tutorial	**Teacher Assessment (Practical) shall be based on following components: Viva/ File/ Participation in Lab work (Given that no component shall be exceed 50% of Marks).**
P	Practical	

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Plasma Physics - I

UNIT I: Introduction of Plasma: Occurrence of Plasmas in Nature, Definition of Plasma, Concept of Temperature, The Saha Equation, Quasineutrality, Debye Shielding, The Plasma Parameters, Three condition for Plasmas.

UNIT II: Single Particle: single particle motion, Uniform E and B Fields, Nonuniform B Field, Non-uniform E Field, Time varying E Field, Time-Varying B Field, Center Drifts, Adiabatic Invariants.

UNIT III: Plasma as Fluid: Plasma as a fluid, Relation of Plasma Physics to Ordinary Electromagnetics, Fluid Equation of Motion, Fluid Drifts Perpendicular to B, Fluid Drifts Parallel to B, Plasma Approximation.

UNIT IV: Plasma Oscillation and waves: Representation of Waves, Group Velocity, Plasma Oscillations, Electron Plasma Waves, Sound Waves, Ion Waves, Validity of the Plasma Approximation Comparison of Ion and Electron Waves, Electrostatic Electron Oscillations Perpendicular to B, Electrostatic Ion Waves Perpendicular to B.

UNIT V: Electromagnetic waves: Electromagnetic Waves with $B_0=0$, Experimental Applications, Electromagnetic Waves Perpendicular to B_0, Cutoffs and Resonances, Electromagnetic Waves Parallel to B_0, Experimental Consequences, Hydromagnetic Waves, Magnetosonic Waves, Elementary Plasma Waves.

References

1. J D Jackson: Classical electrodynamics (Berkley, California, 1974)
2. J A Bittencourt: Fundamentals of Plasma Physics (Springer, III Edition)
3. F F Chen: Introduction to Plasma Physics (Plenum Press, III Print)

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Semester – III

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			Theory			Practical		Th	T	P	Credit
			End Sem University Exam	Two Term Exam	Teachers Assessment	End Sem University Exam	Teachers Assessment				
MSPH302	DC	Material Science - I	60	20	20	0	0	3	1	0	4

Course Objectives	1. To develop the comprehensive understanding of laws of physics related to Material Science - I and ability to apply them for laying the foundation for research and development. 2. To work ethically as member as well as leader in a diverse team.
Course Ourcomes	1. Student will be able to understand and solve the problems related to Material Science - I. 2. Student will be able to determine physical parameter experimentally with optimal usage of resources and complete the assignments in time.

Abbreviation		Teacher Assessment (Theory) shall be based on following components: Quiz / Assignment / Project / Participation in class (Given that no component shall be exceed 10 Marks).
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Material Science - I

UNIT I: Binary alloys : Interstitial and substitutional solid solution, Factors governing solid solubility, Statistical stability of alloys, Temperature dependence of solubility, phase diagrams, Super lattices, Equilibrium between two phases. Two component systems containing two phases, The phase rule.

UNIT II:. Binary phase diagrams: Isomorphous alloy systems, The Lever rule, Eutectic systems, The equilibrium microstructure of eutectic systems, applications, Peritectic transformation, IronCarbon phase diagram, Austenite, pearlite, Bainite and Martensite phases, TTT diagram, Heat treatments, Intermatallic compounds, Hume-Rothery electron compounds

UNIT III:. Thin films and their need, deposition processes, growth of thin films, kinetics of nucleation, mechanism of growth, epitaxy, molecular beam epitaxy.

UNIT IV: Defects in thin films, electron transport in thin films, size effect, galvanometric effects, optical properties of thin film, thin film filters, laser mirrors, magnetic properties, magneto optical effects.

UNIT V: Synthesis Technique of Materials:• Solid State Reactions : steps involved in method and examples,• Sol-gel method : Introduction to Sol-Gel, Advantages of Sol-Gel Technique, Limitations of Sol-Gel Technique, Hydrothermal Process ,Co-Prec~pitation Process ,Polyol Process ,Combustion Process .

References

1. Thin film phenomena, Kasturi L Chopra, Robert E Krigger publishing company, Huntington, New York 1979.
2. An introduction to the thin film state: prepration, structure and basic characteristic of thin films B Damodar Das, Aparna publication, Ashoka road, Mysore 1992
3. Preparation of thin film, Joy George, Marcel Dekker, Inc. 1992
4. Vacuum technology, A. Roth, North Holland Company, (1989).
5. Vacuum technology, Andrew Guthrie, Robert E. Krieger Publishing Company. Malabar, Florida, 1990

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Semester – III

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			Theory			Practical		Th	T	P	Credit
			End Sem University Exam	Two Term Exam	Teachers Assessment	End Sem University Exam	Teachers Assessment				
MSPH303	DC	**Laser Physics - I**	60	20	20	0	0	3	1	0	4

Course Objectives	1. To develop the comprehensive understanding of laws of physics related to Laser Physics - I and ability to apply them for laying the foundation for research and development. 2. To work ethically as member as well as leader in a diverse team.
Course Ourcomes	1. Student will be able to understand and solve the problems related to Laser Physics - I. 2. Student will be able to determine physical parameter experimentally with optimal usage of resources and complete the assignments in time.

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Laser Physics - I

UNIT I: Spontaneous and Stimulated Emission, Einstein Coefficients, Population Inversion, Pumping, Resonator, Properties of Laser: Intensity, Brightness, Monochromaticity, Coherence (temporal and Spatial), Directionality, General Applications of Laser.

UNIT II: Light Amplification, The Threshold Condition, Critical Fluorescence Power, Line Broadening Mechanisms: Homogeneous and inhomogeneous Broadening, Natural Broadening, Collision Broadening, Crystal Field Broadening, Doppler Field Broadening.

UNIT III: Classification of Lasers, 2, 3 and 4- Level Pumping Scheme, Pumping Techniques: Optical Pumping, Electrical Discharge Pumping, Chemical Pumping, Gas Dynamic Pumping, Injection Pumping.

UNIT IV: Functions of Resonator, Modes of Resonator, Types of resonator: Stable and Unstable resonator, Mode filling and Efficiency in various types of resonators (Plane–Plane, Plano–Concave, Concave–Concave, Plano–Convex, Convex–Convex Resonators), Ring resonator.

UNIT V: Various Laser Systems: He-Ne Laser, Co_2 Laser, Excimer Laser, Nd:YAG Laser, Nd:Glass Laser, Dye Laser, Semiconductor Laser.

Text and Reference Books

1. Introduction to Atomic and Molecular Spectroscopy by V.K.Jain
2. Optical Electronics, M. Yariv.
3. Laser Spectroscopy, Demtroder:
4. Non-Linear Spectroscopy, Letekhov :
5. Principles of Lasers, Svelto
6. Lasers and Non-linear Optics, B.B. Laud.

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Semester - III

Subject code	Subject Name	Teaching & Evaluation Scheme								
		Theory			Practical		Th	T	P	Credit
		End Sem University Exam	Two Term Exam	Teachers Assessment	End Sem University Exam	Teachers Assessment				
MSPH304	Nano Physics - I	60	20	20	0	0	3	1	0	4

Course Objectives	1. To develop the comprehensive understanding of laws of physics related to Nano Physics - I and ability to apply them for laying the foundation for research and development. 2. To work ethically as member as well as leader in a diverse team.
Course Ourcomes	1. Student will be able to understand and solve the problems related to Nano Physics - I. 2. Student will be able to determine physical parameter experimentally with optimal usage of resources and complete the assignments in time.

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Nano Physics-I

UNIT I: Size, Confinement and Oxidation Effects: Basic concepts, Interatomic trapping, Interatomic bonding, Intercluster coupling, Hamiltonian and energy band, Atomic cohesive energy and thermal stability, Barrier confinement. Quantum uncertainty, Atomic coordination reduction, Surface-tovolume ratio, Bond order-length and bond length-strength correlation, Densification of mass, charge, and energy, Oxide long-range interaction, Shape-and-size dependency, Bond–band–barrier correlation, Surface potential barrier, Bond geometry, Valence density of states, Lone-pair interaction, Bond-forming kinetics.

UNIT II Quantum Wells, Wires, and Dots: Preparation of quantum nanostructures, Size and dimensionality effects, Conduction electrons and dimensionality, Fermi gas and density of states, Potential wells, Quantum wells and quasi–two–dimensional systems, Coupled wells and superlattices, Doped heterojunctions, Nanolithography partial confinement, Properties dependent on density of states.

UNIT III Mechanical and electronic properties: Stress-strain behaviour, Mechanical and dynamical properties of nano pendulum, Nanometer string, Nanospring. Bindings in solids, Elastic constants, Lattice vibrations, Density of states, Specific heat, Thermal expansion, Thermal conductivity.

UNIT IV Vibrational, Raman, Infrared spectroscopy, Phonon confinement, Effect of dimension on lattice vibration and density of states, Effect of size on Debye frequency, Melting temperature, Plasmons, Phase transition, Effect of lattice parameter on electronic structure, Measurements of electronic structure of nanoparticles.

UNIT V Nanostructured magnetism: Magnetic variables, Magnetic materials, Magnetic phenomena, Quantum effects, Band theory effects, Magnetic anisotropy, Magnetocrystalline anisotropy, Shape anisotropy, Magnetic domains, Hysteresis, Small particle magnetism, Single-domain particles, Coercivity of single-domain particles, Coherent rotation of magnetization, Curling, Fanning, Superparamagnetism, Coercivity of small particles.

References

1 Synthesis, properties and applications of oxide nanomaterials, J. A. Rodriguez, and M. F. Garcia, Wiley Interscience 2007.

2 Introduction to Nanotechnology, Charles P. Poole Jr., and Frank J. Owens, Wiley Interscience,

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3 The Physics and Chemistry of Nano solids: Frank J. Owens, and Charles P. Poole Jr., Wiley Interscience, 2008.

4 Nanoscale materials in Chemistry, Edited by Kenneth J. Klabunde, Wiley Interscience 2001.

5 Foundations of Nanomechanics, A. N. Cleland, Springer 2005.

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Semester - III

Subject code	Subject Name	Teaching & Evaluation Scheme								
		Theory			Practical		Th	T	P	Credit
		End Sem University Exam	Two Term Exam	Teachers Assessment	End Sem University Exam	Teachers Assessment				
MSPH305	Nuclear and Particle Physics	60	20	20	0	0	3	1	0	4

Course Objectives	1. To develop the comprehensive understanding of laws of physics related to Nuclear and Particle Physics and ability to apply them for laying the foundation for research and development. 2. To work ethically as member as well as leader in a diverse team.
Course Ourcomes	1. Student will be able to understand and solve the problems related to Nuclear and Particle Physics. 2. Student will be able to determine physical parameter experimentally with optimal usage of resources and complete the assignments in time.

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Nuclear and Particle Physics

UNIT I: Nuclear sizes and shapes. Experimental methods of determining nuclear radius. Two-nucleon problem: Deuteron problem. Central and non central forces. Tensor forces. Mechanism of scintillations in inorganic and organic scintillators, Photo multiplier tubes, semiconductor detectors, p-n junction detector, Lithium drifted Ge-detector, high purity Ge-detectors, Gamma ray interactions, NaI (Tl) scintillation spectrometer.

UNIT II: Nuclear models: Semi empirical mass formula and isobaric stability. Nuclear shell structure. Magic numbers. Single particle model. Spin orbit coupling. Schmidt lines. Rotational and vibrational spectra and elementary idea of unified model.

UNIT III: Nuclear reactions: Q value. Compound nuclear reaction and direct reactions. Single level Breit-Wigner formula. Nuclear fission: Liquid drop model. Multiplication factor and chain reaction. Concept of thermal, fast and breeder reactor. Elementary ideas of energy generation by fusion. Radiative transition in nuclei, multipole transitions and selection rules.

UNIT IV: Fermi theory of beta decay Kurie plot, ft value. Allowed and forbidden transitions. Determination of neutrino helicity. The - puzzle. Parity non conservation and it's experimental verification. Fundamental interactions classifications and properties of elementary particles. Conservation laws and it's violation in different types of interactions.

UNIT V: Hadron-Hadron interaction: Isospin of two nucleon and nucleon systems. Strangeness. Elements of group theory and symmetry. Gell-Mann-Nishigima formula quark models, Baryon decuplet and octet, Meson monet, Colour, Elementary ideas of Quantum chromodynamics

Books Recommended:

1. Nuclear Physics: R. R. Roy and B. P. Nigam
2. Introduction to high-energy physics: D. H. Parkins
3. Introduction to nuclear physics: H. A. Enge
4. Concepts of nuclear physics: B. L. Cohen
6. Numerical methods in Science and Engineering: S. Rajsekharan

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7. Numerical methods for Science and Engineering: J.H. Mathews
8. Computer oriented numerical methods: V. Rajaraman

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