

**Pandit Shambhu Nath Shukla
University.
Shahdol (M.P.)**

Ph.D. COURSE WORK STRUCTURE

Physics

2024-25

Syllabus for Ph.D. Entrance Exam

Subject-Physics

Instructions: The Entrance Examination will contain two parts A & B. The part A shall consist of 50 objective type compulsory question of 2 mark each based on research methodology. It shall be of generic-nature, intended to assess the research aptitude of the candidate. It will primary-designed to test reasoning ability, data interpretation, and quantitative aptitude of the candidate. Part B - consist of 50 very short answer type questions of 2marks.

Part-A

Max.Marks100

Research-methodology

Paper Code: PHD 699101

Credits:3(2L+1T)

Unit I: Research Aptitude: Meaning, aims, nature and scope of Research, Prerequisites of research, Motivations in Research, Types of Research, Research Approaches, Significance of Research, Criteria of Good Research.

Unit II: Defining the Research Problem: What is Research Problem?, Selecting the Problem, Necessity of and Techniques in defining the problem

Unit III: Methodology, tools and technology

Research Methods v/s Methodology, Research and Scientific Methods, Research Process, Presentation skills, Assessing Research Quality.

ICT: Meaning, advantages, disadvantages and uses; Basic of internet and e-mailing ,Introduction to different soft-wares used for thesis preparation. MS-Word and Power Point presentation.

Unit IV: Literature Review: Purpose of the review, Primary sources, secondary sources, searching e - resources, authenticity of e- resources, writing literature review.

Unit V: Report writing: Research proposal and concept, format for writing thesis, reports and research papers, Title, subtitle, formatting, citation, references, Bibliography.

Research ethics: Ethics in conducting research, Copyright, Plagiarism, Originality-of research work

Syllabus of session 2024-25 as recommended by

Board of studies of physics and approved by Pandit Shambhunath.Shukla University

Shahdol (M.P.)

References:

- Best, Johns . & James Kahn Research-in Education (2008) New York, Prentice Hall.
- Borg, Walter. (1981) Applying Educational Research: Practical guide for teachers, New York Longman.
- Borg, Walter R.& Meredith, D. Gall(1979) Educational Research An introduction, New York, Longman.
- Engelhard, Max D.(1972)Methods of Educational Research. Chicago, Rand McNally & Co.
- Fox, David.(1969) the Research Process in Education .New York, Holt, Rinehart & Winston. Inc.
- Guilford J.P. Fundamental Statistics in Psychology and Education, McGraw Hill, New York.
- Garrett H.E. (1967) Statistics in Psychology of Education. Veils Prefer and Simons Private Ltd. Bombay.

Part-B**Max.Marks100**

1. **Classical-mechanics: Elementary-principles**, Mechanics of systems of particles. Constraints. D-Alembert's Principle and Lagrange's equations. Velocity Dependent-potentials, variational principles and Lagrange's equations Hamilton's principle. Calculus-of variations, Lagrange's equation from Hamilton's principle, conservation theorems and symmetry-properties.
2. **Statistical-mechanics:-Thermodynamic-Quantities** , Macroscopic-motion, relations between the derivative of thermodynamic-quantities, Nernst theorem and quantum justification, the dependence of thermodynamic quantities on number of particles, thermodynamic-potential, equilibrium of a body-external field. Statistical distribution, Gibbs distribution, the Maxwell an distribution, free energy in Gibbs distribution, partition-function, the Maxwell an distribution, the Bose Einstein distribution, Fermi Dirac distribution.


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Maxwell's equation, Poynting Theorem, propagation of electromagnetic waves in dielectric media, Reflection and refraction of electromagnetic waves at a plane interface between two dielectrics.

- 3. Atomic and Molecular Physics:-** Atomic spectra, Hydrogen spectrum, electron spin and vector atom model, Pauli's principle, doublet fine structure of alkali elements normal anomalous Zeeman effect, explanation, Stern-Gerlach experiment, selection and intensity-rules, various coupling-schemes. Molecular-spectra, Molecular spectra of diatomic molecules, rotation, vibrational and electronic bands, isotropic effect and spin effect of the nucleus, anharmonicity of spectra, intensity of rotation, vibration and electronic-bands.
- 4. Quantum-mechanics:** Schrodinger's wave-equation; interpretation of wave function probability current density; one and three dimensional square well potential; linear-harmonic oscillator; hydrogen atom. WKB approximations; boundary conditions in the case of a classical case; Bohr Sommerfeld's quantization-rule; penetration through a potential-barrier, a decay. Angular momentum, various commutation relations; Eigen values and Eigen functions of the angular momentum; spin; spin operator; Pauli's-spin matrices. Perturbation theory, Perturbation independent of time; first and second-order, the effect of an electric field on the energy levels of an atom (Stark effect); perturbations depending on time; first-order transitions; constant perturbation; Fermi's-golden rule; interaction of an atom with electromagnetic radiation; the Einstein A & B coefficients.
- 5. Solid-state Physics:** Basics of crystal structures, symmetry, reciprocal-lattice, Bravais lattice, imperfection in crystals, crystal-diffraction, de-Broglie hypothesis, x-ray diffraction, Bragg's law, Brillouin zones, XRD, powder XRD, rotation XRD, correction to Bragg's law. Vibrations of crystals with. Mon-atomic basis, two atoms-per primitive-basis, Energy levels and density of orbitals in one and three-dimensions, electron motion in a magnetic field and Hall effect thermal conductivity of metals, Superconductivity, Occurrence and destruction of superconductivity by magnetic fields; Meissner effect, energy gap, and isotope-effect; thermodynamics superconducting-transitions, London-equation, coherence-length, elementary ideas of BCS theory, flux quantization, type-I and II superconductors. Energy bands and semiconductor crystals, Nearly free electron model, Bloch functions, Kronig-Penney model, wave equation of electron in a periodic potential number of orbitals in band.




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- 6. Lasers and Fiber Optics:** The optical fiber, comparison of optical fiber with other inter-connectors, concept of an optical wave-guide, rays and modes, principle of light wave guides, fiber-types. Electro-magnetic analysis of simple Top optical wave guide; basic wave guide equation, propagating modes of symmetric step index planar wave guide, TB modes of symmetric step index planar wave-guide, principles of-laser, gain and-absorption coefficients, population inversion, population inversion-in Three and four level lasers, laser amplification, line broadening mechanisms, Ruby, He-Ne,CO₂,Nd-glass lasers.
- 7. Nuclear Physics:** Nuclear models, Introduction, degenerate gas model liquid drop model-particle model, shell model, spin orbit coupling model, collective and optical models, cyclotron, synchro cyclotron, electron and proton synchrotron, betatron, linear-accelerator. Nuclear reactions, Conservation laws of nuclear reactions, reaction energies-and Q value, threshold energy, binding energy and of value charged particle induced-reactions, neutron induced-reaction, photo disintegration, reaction cross-section, theories-of nuclear-reactions.
- 8. Elementary Particles:** Production of new particles in high energy reactions, types of interaction and their relative-strengths, parameters of elementary particles like quantum-number, mass-baryon number, strangeness, parity and charge conjugation-etc., conservation laws and their validity, properties of elementary particles, resonance states of elementary particles, quarks.


पंडित शम्भुनाथ शुक्ला
21.09.2024

H. P. S.
J. K. S.

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Ph.D COURSE WORK STRUCTURE
PHYSICS

विश्वविद्यालय की अधिसूचना क्रमांक 1045/ अकादमिक/2024 शहडोल दिनांक के अनुसार पीएचडी कोर्स 2024-25 एवं 2025-26 के लिए प्रश्न पत्रों के नाम और अंक योजना का निर्धारण निम्नानुसार होगा

PAPER CODE	NAME OF THEORY PAPERS	CREDITS	MAXIMUM MARKS (THEORY+INTERNAL ASSESSMENT)	MINIMUM PASSING MARKS
Ph.D -101	Research Methodology	4	100(80+20)	55
Ph.D -102	Computer application	3	100(80+20)	55
Ph.D -103	Specialization subject (any one of the following): MP 103 (a) (Group-A) : Astrophysics MP 103 (b) (Group-B) : Materials science	3	100(80+20)	55
Ph.D -104	Rivew of published research IN THE RELEVANT	3	100	55
Ph.D-105	Research Ethics	2	50	28
Ph.D-106	Comprehensive viva	3	100	55

उपरोक्त प्रश्नपत्र क्रमांक 4 की कार्ययोजना प्रस्तुतिकरण/मूल्यांकन comprehensive viva voce निम्नलिखित बिन्दुओं पर केंद्रित होगा -03 क्रेडिट ।

अ. Rivew. of. Published research IN THE RELEVANT subject में विद्यार्थी को प्रोजेक्ट रिपोर्ट तैयार करना होगा जिसका मूल्यांकन-50 अंका होगा।

ब. विद्यार्थी को के द्वारा प्रस्तुत परियोजना कार्य का RAC के समक्ष प्रस्तुतिकरण किया जायेगा, जिसका मूल्यांकन -20 अंका होगा।

स. विद्यार्थी द्वारा परियोजना कार्य के सम्बन्ध में प्रायोगिक कार्य क्षेत्रीय कार्य, एवं सन्दर्भ साहित्य के संग्रह एवं अध्ययन में संलग्नता के स्तर का मूल्यांकन-20 अंको पर आधारित होगा।

द. उपर्युक्त अ, ब, स के सम्बद्ध पक्षों का विद्यार्थी द्वारा समय प्रस्तुतिकरण एवं साक्षात्कार 10 अंको का होगा।

नोट- बिंदु क्रमांक 4 के सम्बद्ध पाठ्यक्रम विश्वविद्यालय विद्या परिषद की बैठक 24-01-2019 द्वारा स्वीकृत है कुलपति द्वारा अनुमोदित

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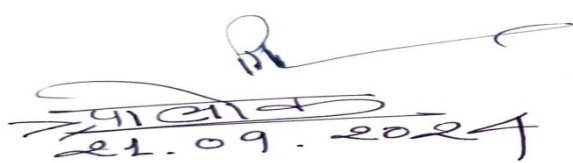
पंडित शम्भुनाथ शुक्ल विश्वविद्यालयशहडोल (मध्यप्रदेश)

Pandit Shambhunath Shukla University SHAHDOL(M.P.) Structure of syllabus for Ph.D. Course Work (Physics)

(SESSION- 2024-25)

(AS PER ORDINANCE NO.11 DOCTOR OF PHILOSOPHY)

PAPER CODE	NAME OF THEORY PAPERS	CREDITS	MAXIMUN MARKS (THEORY+INTERNAL ASSESSMENT)	MINIMUM PASSING MARKS
Ph.D -101	Research Methodology	4	100(80+20)	55
Ph.D -102	Computer application	3	100(80+20)	55
Ph.D -103	Specialization subject (any one of the following): MP 103 (c) (Group-A) : Astrophysics MP 103 (d) (Group-B) : Materials science	3	100(80+20)	55
Ph.D -104	Rivew of published research IN THE RELEVANT	3	100	55
Ph.D-105	Research Ethics	2	50	28
Ph.D-106	Comprehensive viva	3	100	55


21.09.2024



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Shahdol (M.P.)

Ph.D. (PHYSICS)
Ph.D. 101: Research Methodology

TIME : 03 Hrs.

Theory Paper: Max. Marks -80
Internal Assessment: Max. Marks : 20
Minimum Pass Marks : 55

The paper setter is required to set in all Eight Questions, out of which only four questions are to be attempted by the students. All questions will be of equal marks. Two questions are to be set from each unit.

The students are required to attempt at least one question from each unit.

Unit-1-

Concepts in Research: Definition and Objective, Research Approach & Types of Research, Criteria of Good Research, Defining Research Problems, Research Design: Features of Good Research Design, Research Design With Reference to Physics, Basic Principles of Experimental Research Designs, Report, Paper & Dissertation Writing Concept.

Unit-2-

Nature and Purpose of Mathematical Statistics, Tabulation and Statistical Inference, Tabular and Graphical Representation of Data, Bar, Pie & Radar Diagrams; Mean, Median, Mode & Variance, Co-relation and Co-efficient, Random Sampling, χ -Test, Method of Least squares curve Fitting of Straight Lines & Polynomials Data Fourier Techniques and applications.

Unit-3

Theoretical Modeling Methods: Bisection Method, General idea of Mathematical Modeling and Simulation Monte Carlo Technique, Random Walk Problem, Newton Rap son Method, Least Square Fitting of Linear and Exponential Functions, Numerical Differentiation & Integration. Simpson's Rule, Rung Kutta Method.

Unit-4

General idea of Preparation of Materials: Solid State Reaction Method and Wet Chemical Method, Electro- Deposition Methods: (Basics only), Elementary idea of Vacuum Coating Methods. Basic Principles & Applications of XRD, SEM, And FTIR Methodology of Space Research-Ground Based & Satellite Observations, Cosmic Ray Detectors, Methods of Extracting Scientific Information from Space Data.

Reference Books:

1. Research Methodology: Methods & Techniques: R. Kothari, New Age International Publisher, N. Delhi (2009).
2. How to Write and Publish: R.A, Dayanu, B. Gastel, Cambridge University Press.
3. How to Research: L. Bllaxter, C. Hughes and M. Tigt Viva Books.
4. A Student Guide to Methodology: P. Clough &, C. Mutbrown, Sage Publications.
5. Fundamentals to Computers: V. Rajuriman (PHI).
6. Probability & Statistical For Engineers & Scientists: Shelder Ren Elsevier Academic Press.
7. Principles of Instrumental Analysis: Skoog & Leary.
8. Astronomy: Baker




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Ph.D (PHYSICS)**Ph.D.102: CS**

TIME : 03 Hrs.

Theory Paper : Max.Marks -80 Internal Assessment : Max.Marks : 20 Minimum Pass Marks : 55

The paper setter is required to set in all Eight Questions, out of which only four questions are to be attempted by the students. All questions will be of equal marks. Two questions are to be set from each unit. The students are required to attempt at least one question from each unit.

Unit -1

Anatomy of computers and their classification: Input and output devices. Concepts of computer ware languages processors and computers languages. Basics of the operating system : with emphasis on the window operating system. Concept of OLE. Basics of MS-Office: MS World, MS Excel, MS Power point. Internet and E-mail basic web search engine, Types of search engines.

UNIT-2

Conceptual framework of the computers languages (Algorithm, Flow charts). Need of structures programming, Top-down, bottom- up and modular programming .Introduction to C and C++ Languages. Basic structure of C++program. Character set, keyword and identifier C++ data type , variable and data type declaration ARITHMETIC relation ,logical assignment ,conditional increment and decrement operations input and output statement .


UNIT-3

Control statements : Branching , looping and jumping ; if, if-else, if nested, if- else statements , switch , while, Do While and for statements . Simple C++ PROGEAMS (SEARCH OF PRIME NUMBER BETWEEN GIVEN RANGE OF THE NUMBERS , FINDING AND SMALLEST AND LARGEST OF GIVEN NUMBERS , SUM OF ALEBRIC SERIES, FACTORIAL OF GIVEN NUMBER , ROOTS OF QUADRATIC EQUATION , BINARY TO DECIMAL AND DECIMAL TO BINARY CONVERTOR ETC.). Functions: need of functions, calling the function by value and reference . Category of function, no argument no return, arguments but no return , argument with return, Recursion : One and Two dimensional arrays . String and string handling functions like sprint ()stropy (), sscanf () strien () , size off () stomp(), arrays and string functions.

UNIT-4

Computer network: LAN, MAN, WAN, elient server. Network topologies: Bus, Ring, Star, Mesh. Internet: History of internet, Service provider (ISP), Types of internet account-shell Address, TCP/IP Address. Types of connectivity-Dial up, Leased lines, Satellite. IP Address, Class A, Class B, Class C, Domain Name Address, URL (absolute and relative). Web Technology: Web Browser: Internet Explorer,Netscape Navigator, Static and dynamic web page. Introduction to HTML: HTML tags, <HTML>, <TITLS>, <HEAD> <BODY>, <P>,
, <ALIGN>,<>, , <DIV>, <PRE>, and their attributes. , <a> and their attributes.

Statistical packages: MS-Excel, Statistical functions, SPSS package: structure and characteristics, use of SPSS in data analysis in Physics. Origin software: Need, characteristics and application in Physics.



21.09.2024




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Reference Books:

1. Let us c: Yashwat Kanetkar.
- 2 Programming with Ct+: Balaguruswami.


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Ph.D. (PHYSICS)
Ph.D. 103(a): ASTROPHYSICS

TIME : 03 hrs.

Theory Paper: Max.marks- 80
Internal Assessment: Max.marks- 20
Minimum Pass Marks - 55

The paper setter is required to set in all Eight Questions, out of which only four questions are to be attempted by the students. All questions will be of equal marks. Two questions are to be set from each unit. The students are required to attempt at least one question from each unit.

Unit-1: Solar output and Cosmic Ray Modulation

Physical Characteristics of Sun, Solar Structure, Development of Centre of Activity, Sunspots, Prominences and Flares, The Sun and Interplanetary Space, the Solar Atmosphere (Photosphere, Chromosphere and Corona), Solar Wind and concept of heliosphere, Solar Wind Observation, Solar and Interplanetary Magnet Fields, Interplanetary Sector Structure, Theory of Solar Cycle Evolution, Solar Flares and Coronal Mass Ejections, Variational Characteristic of different types of Solar Modulation, Long and Short Term Cosmic Ray Variation, Forbush Decreases, Ground level Enhancement, Cosmic Ray Propagation Models (Diffusion, Convection and Drift Model).

Unit-2 Magnetosphere Processes

Structure of Geo magneto sphere, Different Regions of Magneto sphere and Associated Phenomena, Magnetosphere Models, the Concept of Closed and Open Magnetosphere, Interplanetary and Geomagnetic Disturbance's, Shock-Wave in Interplanetary Space, Magnetosphere Storms, Interaction of Solar plasmas with Magnetosphere, Collision of the Interplanetary Shock Wave with 0 Magneto Sphere, Storms Sudden Commencement (SSC), Interaction of Solar Plasma with Magnetosphere, Morphology of Geomagnetic Storms, Polar Sub Storus and Auroras Phenomena, Association of geomagnetic Storms with Solar and Interplanetary Parameters, Near Earth Space Weather.

Unit-3: Radio Astronomy

Telescopes, Reflection and Refraction Telescope, Ground Based Optical Telescope (Visible And Infra-Red), Space Telescope (From Ultraviolet to Sub Millimetre), Radio Single Dishes and Aperture Synthesis, Radio Telescope (Beyond the Sub Millimetre Range). Large Toloscope of the future, Radio Astronomy, Quasars and Molecules in Space, Infra-Red and X-Ray Astronomy, Neutrino Astronomy, Neutron Detector.

Unit-IV Stars and Galaxies

Formation of Stars, Evolution of Stars, Stollar Spectra and the Hertzsprung- Russell Diagram, Explanation Main- Sequence (the Mass-Luminosity Relation) Variable Stars, the Pulsation Theory of Variable Stars, Neutron stars The Classification and Morphology of Galaxies, Formation and Evolution of Galaxies; Rotation of the Galaxy (Differential Rotation) the General Structure of Galaxy (the Central Region, the Galactic Disk and the Galactic Halo), the Mass of The Galaxy, the Cause of Spiral Structure, Luminosity Distribution in a Galaxy, Distances of Galaxies, Radio Galaxies, Seyfert Galaxies Nebulae, Nova, Super Nova, Chandrasekhar Limit and Black Holes.

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Reference Books:**1.COSMIC RAYS:DORNAN****2.ASTRONOMY-D.H MENZEL****3.SOURCE BOOKS OF SPACE PHYSICS-GLASSTONE****4.THE SUN-ABBETI****5.PROGRESS IN STP(Y-INT.SYMPOSIUM)**

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Shahdol (M.P.)

Ph.D (PHYSICS)
Ph.D.103(b): (MATERIAL SCIENCE)

TIME : 03 Hrs.

<p>Theory Paper : Max. Marks -80 Internal Assessment: Max. Marks : 20 Minimum Pass Marks : 55</p>

The paper setter is required to set in all Eight Questions, out of which only four questions are to be attempted by the students. All questions will be of equal marks. Two questions are to be set from each unit. The students are required to attempt at least one question from each unit.

Unit-1: Crystal Graph and Nano materials Basics

Nucleation & Growth: Concept of Nucleation and their Types-Homogeneous & Heterogeneous Nucleation Processes, Growth and Overall Transformation Kinetics. Micro to Nano: Properties of Nano-particles, Nature of Carbon Bonds and Carbon Allotropes, Structure and Properties of Co, Grapheme and Carbon Nanotubes, Synthesis of Nanomaterial's Top Down and Bottom Up Approach, Chemical Route of Synthesis of Magnetic Nanoparticles: Sol-Gel Synthesis methods, Nano materials in Energy application (solid state Batteries, smart window and solar cells basics only),

Unit-2 Solid State Ionics

Super Ionic Solids- Definition and Characteristic Features, General Classification of Super ionic Solids, Basic Idea of Ion Transport in Solids, Polymer Electrolytes and their Types. Mechanism of Ion Transport in Polymer Electrolyte-Macroscopic Approach: VIF and WLF. Forms, Configurational Entropy Models, Application of Superionic Solids with emphasis to Electrochromic Display Devices, Sensors and Solid State Batteries (Without Theory).

UNIT-3-Solar Cells

Sun's Spectrum, Solar Constant, Air Mass, Method of Measuring Solar Radiation (Out line only) Direct and Indirect Band Gap Materials, P-N Junction Diode, Photovoltaic Effect, Solar Cell Parameters and I-V Characteristics, Design Consideration for Solar Cell Fabrication, Type of Solar Cells. Metal Semiconductor Contacts and Photo electrochemical Solar Cells (Basic Concept Only), Organic Solar Cells, Basic principles and types, Photovoltaic modules and arrays. Super conductors. Comparison between Superconductor & ideal Conductor, High Temperature Cuprate (HTSC) Families,

Unit-IV Superconductors comparison between superconductor & ideal conductor, high temperature cuprate (HTSC) Families, Structure of $Y_1Ba_2Cu_3O_{7-x}$ and Variation of T_c with x , General Characteristics of Cuprate Superconductors, Methods of Preparation of High Temperature Superconductors in Bulk and Thin Film Forms. Type I Superconductivity, Phase Diagram of $La_{2-x}Sr_xCuO_4$ Electronic Structure of Cuprates, Two Band Model & Hubbard Model, Normal State Properties, Critical Current of Pure Elements, Critical Current in Mixed State, Role of Inhomogeneities in Flux Pinning Depinning, Anisotropies in HTSC, Limitations of BCS Theory, RVB Theory of High Temperature Superconductivity

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Reference Books:

1. Fahrenbruch and Bubo: Fundamentals of Solar Cells.
2. R.:K. Kotnala, N.P. Singh: Essentials of Solar Cells.
3. S.M. Sze: Physics & Technology of Semiconductor Devices.
4. S.Chandra: Photoelectrochemical Solar Cells.
5. A. K. Saxona High Temperature Superconductor
6. T.V. Ramakrishna & C.N.R. Rao: Superconductivity Today.
7. S.V. Subramaniam & E.S.R. Gopal: High Temperature Superconductors.
8. A S. Edelstein and R.C. Cammaraira:Nanomaterials-Synthesis, Properties, Characterization and Applications
9. H.S. Nalwa Encyclopedia of Nanotechnology
10. Handbook of Nanotechnology: Bhushan (Ed), Springer Verlag, New York (2004).
11. CNR Rao and Govindaraj:Nanotubes And Nanowires.
12. Handbook of Analytical Instruments, R.S. Khandpur
13. Thermal Methods of Analysis: W.W. Wendlands
14. Elements of X-Diffraction, B.D. Cullity
15. Tuan Vo-Dinh: Nanotechnology, In B:-"logy and Medicine: Methods, Devices and Application
16. Mao Hong Fan, Chin-Pao Huang, Alan E Bland, Z Honglin Wang, Rachid Sliman,

Ph.D 104

Rivew of published research IN THE RELEVANT Subject.


21.09.2024






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FOR ALL SUBJECT
Ph.D. COURSE WORK
PART-II
(w.e.f. Academics session -2024-25)

OBJECTIVE:

This paper is meant to develop skill of writing a literature review of Research Student to use critically a Segment of a published body of knowledge through Summary classification and comparison of previous research studies and to Present a Review of literature.

PART-I

REVIEW OF LITERATURE AND REPORT WRITIN

Guidelines for Review of Literature-Marks: 100


Understanding review of literature:- Relevance, Approach and Applications; Developing an Outline for the literature review, Formulate key questions for review.





Organizing a literature search:- identify which literature base to search; Developing the Theoretical basis for the Research , Question, Searching for, locating and organizing relevant Professional.

Conducting the Review:- abstract relevant information from appropriate studies in a Systematic manner, Critically reviewing the literature, Rate the Scientific quality of research Study and the level of evidence for each question.

Synthesizing the Review: Create evidence tables and summary tables; interpret the pattern of Evidence in terms of strength and consistency, summarize the studies' Findings.

Report Writing: - Writing a first draft; Writing references and citations. Obtaining, giving, and Making producing use of feedback; the redrafting process, Professional formatting. The student is expected to collect the literature on the Area, Issue or Problem selected For research and review it for developing a research Problem. Each student will prepare a Presentation/seminar at the end of the semester on thirst area selected for research. The DRC will evaluate the presentation and seminar on the basis of quality, adequacy and relevance of Literature Reviewed and performance in the presentation. It is expected that the student Should present a tentative topic of research by explaining the research gap in literature Reviewed.


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 21.09.2024





 H. K. S. S.

Review Of Literature and Seminar:-

1. Seminar, Open seminar, evaluation will be done by member of DRC.
2. Project based on review of research work: use of literature, knowledge of National and International Journals, Impact factor, Citation index, SCI Journals. (To be supervised and Evaluated by Guide concerned).


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 21.09.2024





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Ph.D. Physics-105: Research and Publication Ethics

Full Marks: 50 Credit: 2

Philosophy and Ethics

Introduction to philosophy: definition, nature and scope, concept, branches Ethics : definitions, moral philosophy, nature of moral judgments and reactions

Scientific conduct

Ethics with respect to science and research, intellectual honesty and research integrity, Scientific misconducts: duplicate and overlapping publications, salami slicing Selective reporting and misrepresentation of data.

Publication Ethics

Publication Ethics: definition, introduction and importance, Best practices/standards setting initiatives and guidance: COPE, WAME, etc., conflicts of interest Publication misconduct: definition, concept, problems that lead to unethical behavior and vice versa, types, Violation of publication ethics, authorship Identification of publication misconduct, complaints and appeals, Predatory Publishers and journals

Open access Publishing

Open access publications and initiatives, SHERPA/ RoMEO online resources to check publisher copyright and self-archiving policies, software tool to identify predatory publications developed by SPP Journal finder/ journal suggestion tools viz. JANE, Elsevier journal Finder, Springer journal suggester, etc

Publication Misconduct

1. **Group Discussion**

Subject specific ethical issues, FFP, authorship, conflicts of interest, complaints and appeals.

2. **Software tools**

Use of plagiarism software like Turn tin, Urkund and other open source software tools

Database and Research Metrics

Database

Indexing databases, Citation database : Web of Sciences, Scopus, etc.

Research Metrics

Impact factor of journal as per Journal Citation Report, SNIP, SJR,IPP, Cite Score Metrics : h-index, g-index, i10-index, altmetrics

The image shows several handwritten signatures and dates. On the left, there is a signature and the date '21.09.2024'. In the center, there is a signature. On the right, there are two signatures, one of which appears to be 'H. S. Shukla'.

Syllabus of session 2024-25 as recommended by

Board of studies of physics and approved by Pandit Shambhunath.Shukla University
Shahdol (M.P.)

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1. Bird, A. (2006). *Philosophy of Sciences*. Routledge.
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3. P. Chaddah, (2018) *Ethics in Competitive Research: Do not get scooped; do not get plagiarized*, ISBN: 978-9387480865
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5. Resnil, D.B.(2011). *What is ethics in research and why is it important*. National Institute of Environmental Health Sciences, 1-10. Retrieved from <https://www.niehs.nih.gov/research/resources/bioethics/whatis/index.cfm>
6. Bcall, J. (2012). *Predatory publishers are corrupting open access*. *Nature*, 489(7415),179-179. <https://doi.org/10.1038/489179a>
7. Indian National Science Academy (INSA), *Ethics in Science Education, Research and Governance*(2019), ISBN:978-81-939482-1-7. http://www.insaindia.res.in/pdf/Ethics_Book.pdf

Handwritten signatures and dates in Hindi. The text includes '21.09.2024' and several illegible signatures.

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