SYLLABUS FOR Ph.D COURSE WORK IN GEOGRAPHY (2014-15)

GEOGRAPHY PAPER-II

UNIT-1

1. Geomorphology: Fundamental concepts; Endogentic and Exogentic forces, Denudation and weathering;Geosynclines,continental drift and plate tectonics,Concept of geomorphic cycle;landforms associated with fluvial glacial,arid,coastal and karst.

2. Climatology: Composition and structure of the atmosphere; Heat budget of the earth;Distribution of temperature;Atmospheric pressure and general circulation of winds;Monsoon and jet stream;Tropical and temperate cyclones;.

03. Oceanography: Bottom Relief of Ocean,Ocean deposits;Coral reefs;Temperature and salinity of the oceans;Tides and ocean currents.

UNIT-2

04. Geographic Thought: Genral character of Geographic knowledge during the ancient and medieval period;Foundations of modern Geography;Determinism and possibilism;Areal differentiation and spatial organisation.

05. Population Geography: Patterns of world distribution; Growth and density of population;Patterns and processes of migration;Demographic transition.

06. Settlement Geography: Site,situation,types,size,spacing and internal morphology of rural and urban settlements;City-region;Primate city;Rank-size rule;settlement hierarchy;Christaller's Central Place theory.

UNIT-3

07. Economic Geography: Sectors of economy;primary,secondary,tertiary and quaternary;Natural resources;renewable and non-renewable.

08. Agricultural Geography: Measurment of agricultural productivity and efficiency:Crop combination and diversification;Von thunen's Model.

09.Industrial Geography: Classification of Industries:Webre's and Losch's approaches;Resource based and footloose industries.

10. Social Geography:Ethnicity;tribe;dialect;language;caste and religion;Concept of social well-being.

11. Cultural Geography:Culture-areas and cultural regions;Human races;Habitate races;Habitat;Economy and society of tribal groups.

UNIT-4

12. Regional Planning: Regional concept in Geography;Concept of planning regions;Types of regions;Methods of regional delineation;Regional planning in India;Indicators of development;Regional imbalances;Evolution,nature and scope of town planning with special reference to India, and Fundamentals of Town and Country planning.

13. Geography of India: Physiographic divisions;Climate:Its regional variations vegetation types and vegetation regions Majorsoil type;Irrigation and agriculture;Population distribution and growth;Settlement patterns;Mineral and power resource;major industries and industrial regions.

UNIT-5

14. Cartography: Types of maps:Techniques for the study of spatial patterns of distribution;Choropleth;Isopleth and Chorochromatic maps and pie diagrams

Remote sensing and Computer Application in mapping;Digital mapping,Geographic Information System(GIS).

PAPER – II (CHEMISTRY)

CW 02: ADVANCED RESEARCH TECHNIQUES IN CHEMICAL SCIENCES

UNIT – I

Physical Chemistry:

Areas of ongoing research in the theoretical chemistry and Quantum Chemistry. Electronic Structure Elucidation-Basic knowledge of the useful tools. Chemical Dynamics and its applications in the elucidation of reaction mechanism of simple reactions. Acid-Base and Enzyme catalysis. Chem-informatics and its importance in modern chemical sciences

UNIT – II

Organic Chemistry:

Basic techniques of Phytochemical research. Isolation and characterization of organic molecules by spectral methods (UV VIS, FTIR, NMR techniques), GC MS, HPLC etc. Knowledge of the research in the synthesis of complex molecules, development of new methods using organometallic reagents, molecular recognition, drug design and drug discovery, Protein Chemistry

UNIT – III

Inorganic Chemistry:

Methods of research in the area of Synthetic inorganic chemistry, Coordination Chemistry and metal Complexes, metal Complexes in the nature and their importance in the human life. Inorganic polymers, their preparation and characterization. Polymer kinetics, and macrocyclic chemistry of metals

UNIT – IV

(pH metry, voltammetry, conductometry) polarography etc.)

Analytical chemistry:

Principal of Solution Chemistry. Advanced techniques of Spectroscopy, Thermal Analyses {TGA, DTA, etc}, Chromatography, Electroanalytical methods and Diffraction [X-Ray, Electron and neutron] methods and their application in research in chemical sciences. Separation methods - surfaces and interfaces. Environmental Chemistry Basic idea of Research methodology in the areas of air and water research, Sampling techniques, Analyses and removal of pollutants from air and water samples. Spectrophotometric methods, ~~Electro-analytical~~ and AAS techniques and their applications in ~~environmental~~ research

UNIT – V

Semi-conductors

Multidisciplinary research and our Heritage:

Basic idea of researches going on in the areas of nanochemistry, green chemistry, supramolecular chemistry and Chemistry of super conductors. Awareness of research contributions of at least two pioneer Indian chemists of modern India (Prof. P C Ray, Prof N R Dhar, Prof CNR Rao, Prof. S Ghosh, Prof RC Mehrotra, Prof. RD Tiwari, Prof K. Bahadur, Prof. H L Nigam, Prof RC Kapoor, Prof RP Rastogi, Prof. A K Dey Prof W U Mallick, Prof P T Narsingham, Prof T R Sheshadri Prof SG Tandan etc). and knowledge of some Noble laureates of Indian origin

Rasharad 06/2/15

Books suggested –

1. Practical Skills in Chemistry, J.R. Dean, A.M. Jones, D Holmes, R Reed, J Weyers and A Jones, Pearson Education Ltd. 2003
2. Experiments and Techniques in Organic Chemistry, D. Casto, C. Johnsom and M. Miller, Prantice Hall inc 2007
3. Elementary Practical Organic Chemistry Pt I,II and III, A.I. VogelCBS Publishers and Distributers
4. Synthesis and Characterisation of inorganic Compounds, W.L. Jolly, PHI
5. Official Methods of Analysis, AOAC, Washington
6. Organic Spectroscopy, William Kemp, ELBS Macmilliam, 1987
7. Modern Analytical Methods, David Harvey, Interscience Pub, /, 1996
8. Separation Methods, M.N. Shastry
9. Instrumental Methods of Analysis, H Willard, D.u. Merritt and J.R.J.A. Deans, CBS Publishers and Distributers.
10. Green Chemistry : Theory and Practice, P.T. Anastas and J.C. Warner, Oxford University Press, 2000
11. Green Chemistry, M. Lancaster, Royal Society of Chemistry, 2002
12. Natural Products : Chemistry, Biochemistry and Pharmacology, G. Bramhachary, Narosa Publishing House, 2009
13. Solvent Extraction in Analytical Chemistry, H. Fraiser, John Wiley, New York, 1958
14. Spectroscopic identification of Organic Compounds, R.M. Silverstein and F.X. Webster John Wiley New York, 2003
15. Physical Methods in Chemistry, R.S. Drago, Affiliated East West Publishers New Delhi, 1998
16. Principles of instrumental Analysis, D.A. Skoog, F.J. Holler and T .A. Neiman, Harcourt Brace & Co., 1998
17. Chemical instrumentation : A Systematic Approach, H.A. Strobel, Addison Wesley, 1973
18. Standard Methods of Analysis of Water and Waste Water, APHA, 1986
19. Spectroscopy. B K Sharma Goel Publishing House, Krishna Prakashan Media Pvt Ltd. Shivaji Road Meerut. 250001. U P.
20. Chromatography: .Kamalesh Bhansal, Campus Books International, Prahlad Street, Ansari Road, Darya ganj New Delhi 110002.

➢ ***Any other books suggested by Course coordinator/ Course Teacher/ Supervisor concerned may be applied.***

Rasheed 06/9/13

PAPER – II (COMPULSORY)

CW 02: Theory and Issues of Political Science and ~~Public~~ Administration

Unit-I **Political theory and thought -**

Nature of Political theory

~~Main Concern~~ After -1950 to Present Day

I Decline of Political theory

II Regurence Since 1970

Political thought -

Plato, Aristotle, Machievali
Hobbes, lock, Ronsseau
Mill, Carl Mark
Gandhi, Ambedkar
M.N. Roy, Ram Manohar Lohia

Unit-II **Indian Constitution and Government** - Basic Structure and

Salient features, and Preamble of constitution.
Fundamental Rights and duties.
Directive Principles of state policy
Indian federalism
Union and state executive.
~~Union and High Court.~~ Judiciary
~~Local Government Rural and Urban.~~ Panchyati Raj 243 I 73rd & 74th Amen
Electoral Process in India.

Changing

Changing Pillars of Indian Democracy -

Marginalization of parliament -
Causes and consequence.
Judicial Activism -
Nature, Causes and Consequences.
Challenge to Internal Security -
Naxlite Movement.
Terrorism.
Emerging Trends in Chhattisgarh.
~~Feminism / Gener Sensitivity~~

Unit-III **Principles of Public Administration -**

Public Administration Meaning, Nature and Scope of Public Administration - ~~Administration~~

Principles of Organization -

Hierarchy
Span of control
Unity of Command
Centralization V/S Decentralization
Financial Administration

R.P. Gadtz
6.2.15

Personnel Administration
Beaurocracy
Administrative Corruption
Lokpal
Good Governance

Unit-IV **International Politics -**

International ~~Internal~~ Politics - Meaning, nature and scope.

Power Dimension - National Power, Meaning, Nature and Elements.

New Phenomena in world order -

Globalization

Liberalization

Terrorism - Meaning, objectives, Terrorism V/S Democratic System, Role of UN in Human Right

Human Rights - 1. Violation of International and national Levels.

2. ~~Role of U.N.~~

3. Remedies

Indian Foreign Policy -

Meaning, Nature, Agencies

Determination Elements of foreign Policy

Diplomatic Privileges and Immunities

India's Role in U.N.

India's Relation with Super Power U.S.A., Russia, China.

Role of Regional Organization - SAARC, Asean

Unit - V. **Contemporary Political Issues -**

Gender Issues - Meaning, Nature

Empowerment of Woman - Objective,

Mean of Empowerment.

Effort of Empowerment.

Environmental Issues -

Meaning and Nature.

Consequence of Pollution

Environment and Development.

Environmental Laws.

R.P. Gaur
6-2-15

Mandey

PAPER – II (COMPULSORY)

CW 02: Approaches to English Literature

Marks: 100

All units are Compulsory. There will be internal choice in each unit.

Unit 1: Modern Critical Approaches to Literature.

- Jques Darrida: Structure, Sign and Play in the discourse of human science; Difference.
- Elaine Showalter: Feminist Criticism in the Wilderness.

Unit 2: Contemporary Critical Theories.

- Terry Eagleton: Categories for a Materialist criticism.
- Stuart Hall: Cultural studies: Two Paradigms.

Unit 3: Modern Literature

- J.M. Synge: The Playboy of the Western world.
- Chinua Achebe: Things Fall apart.

Unit 4: Colonial and Post Colonial Studies.

- Edward Said: Text: From the introduction to Orientatlism.
- Gayatri. C. Spivak: Can the subaltern speak?

Unit 5: Contemporary Writers.

- Salman Rushdie: Midnight's Children.
- Bharati Mukherjee: Jasmine.

Recommended Readings:

1. Beginning Theory: Peter Barry
2. Modern Critical Theory: David Lodge (ed.)
3. Contemporary criticism: V.S. Seturaman (ed.)
4. Literary criticism: A reading - Das & Mohanty.
5. Interpreting Literature: K. L. Knickerbocker et al (ed.)
6. Five approaches to Literature: Wilberscott.
7. The critical tradition: David H. Richter (ed.)
8. From Modernism to Post Modernism, An Anthology ed. Lawrence Cahoone.
9. Deconstruction: A reader.
10. 20th Centuary Literature: Issues and themes: Philip Thody, (Macmillan, London, 1996).
11. The present: Bloomsbury guide to English literature.
12. Literature in the modern world: (ed.) Dennis Walder.
13. The Empire Writer Back: Bill Ashcraft, Gareth Griffiths & Helen Tiffin.
14. The Location of Culture: Homi K. Bhabha (ed.) (Routledge, London 1994).
15. Nation and Narration: Homi K. Bhabha (ed.) (Routledge, London 1990).
16. Orientalism : Edward Said, (Pantheon, New York, 1990).
17. Post Colonial Theory: Leela Gandhi.
18. Critical Inquiry: Gayatri C. Spivak.

PAPER – II (ZOOLOGY)

CW 02: TOOLS AND TECHNIQUES

UNIT – I

Principles of Ecology and Biodiversity: Abiotic and Biotic factors in biology. Understanding diversity in field. Abundance and distribution of animals. Different sampling and field methods. Diversity of animals- genetic diversity, Species diversity, Ecosystem diversity. different indices of species structure in community. Endangered and endemic species. IUCN red list. Conservation of Biodiversity. Study of life cycles and Construction of life tables.

UNIT – II

Principles of Biological Research: Physico-chemical analysis of water, air and soil. Estimation of Primary and Secondary productivity. Estimation of Biomass and gross productivity. Collection. Preservation. Staining. Mounting and Identification of animals. Maintaining of live animals for experimentation.

UNIT – III

Biochemical techniques: Introduction and types of chromatography. paper, thin layer, gas, Gel, ion exchange, HPLC and affinity chromatography and instrumental details of each. Applications of Chromatographic techniques in Biology. Electromagnetic and molecular studies: Electromagnetic spectrum, Beer Lambert's law, UV/VIS Spectrophotometry, Infrared Spectroscopy, Atomic Absorption spectroscopy, Mass spectroscopy. Application of different Spectroscopic techniques in Biology. Paper and gel electrophoresis, Polyacrylamide gel electrophoresis, Agarose gel electrophoresis.

UNIT – IV

Cell and tissue staining techniques: Elements of microtomy- pre-microtomy processes, microtomy process, post microtomy process. In situ and histological staining techniques- Whole mount (In situ) staining techniques, microbial staining techniques. Histochemistry- General histochemistry, enzyme histochemistry, immunochemistry.

Microscopy- Light microscopy, electron microscopy, three dimensional microscopy, camera lucida.

UNIT – V

Principles of Toxicology: general bioassays of toxic substances, pesticides, insecticide residue, their effect on animals, Statistics of toxicology, Median lethal dose, Behren's method, Graphical methods, Rapid approximate method by Huson, Finney method. Insect pest control – biological, microbial, chemical method

Books suggested –

1. Research Methodology- G.R. Basotia and K.K. Sharma
2. Research Methodology- C.H. Chaudhary, RBSA Publication
3. Ecology - Odum
4. Ecology and Environment – P.D. Sharma
5. Environmental Studies – Dr. Raghavendra Nambiar
6. Chemical and Biological Methods for Water Pollution Studies. R.K. Trivedi and P.K. Goyal
7. Biodiversity principles and conservation. Kumar and Asija.,Agrobios(India).
8. Biodiversity and environment - S.K.Agrawal , S.Tiwari and P.S. Dubey 1996
9. The Biology of Biodiversity, Springer - M. Kato
10. Manual of Freshwater Biota - Duttamunshi and Duttamunshi.
11. Instrumentation and Bio-analytical techniques - Alka Gupta
12. Biological Instumentation & Methodology - Dr.P.K.Bajpai
13. Text book of physiology and functional histology - A. K. Berry
14. Cell and Molecular Biology - De Roberties and De Roberties.
15. Principles and Techniques of Biochemistry and Molecular Biology – Wilson and Walker
16. Instrumentation & Techniques by Chatwal & Chatwal.
17. Toxicology- Balaram Pani
18. A Text book of Insect Toxicology – RP Shrivastava and RC Saxsena

- ***Any other books suggested by Course coordinator/ Course Teacher/ Supervisor concerned may be applied.***

PAPER – II (COMPULSORY)

CW 02: Advance application of Economics

Module 1- **Introduction** - Nature and scope of Economics, Methodology in economics, production function, Market Structure, Theories of wage, rent, Interest and profit determination.

Module 2- **National Income** - Concept and measurement, foreign trade in India recent changes in the Composition and direction of foreign trade. Trade problem and trade policies in India during the last five decades. Recent reforms in banking sector in India. Budget preparation & passing of budget in India.

Module 3- **Indicators of development** – PQLI, HDI & GDI, objective and strategy of Indian planning broad demographic features of Indian population, The new population policies Rural-urban migration employment policy in India & various employment generation porgramms.

Module 4- Role of agriculture in economic development, land reforms in India. Technological changes in agriculture, pricing of agriculture input and Output. Agriculture finance Food security, WTO and its impact on the different sector of the economy, cost benefit analysis.

Module 5- Indian tax system, Revenue of the union. States and local bodies. Taxes in India. Reports of finance commission. Labour legislation in India. Globalization and labour market, environment laws and their implementation. Mechanism for environmental regulation in India.

Ref. Books.

1. Growing dimension of Indian Economy - P.K. Dhar
2. Indian Economy - Mishra & Puri
3. Indian Economy - Rudra Dutt, Sundaram & Mahajan
4. Indian Economy - Dr. S.N. Lal
5. Indian Economy - Dr. Badrivishal Tripathi
6. Micro Economics - Dr. V.C. Singh
7. Micro Economics - M.L. Jhingan
8. Macro Economics - V.C. Sinha
9. Macro Economics - M.L. Jhingan
10. Advance Micro Economics - Dr. H.L. Ahuja
11. Environmental Economics - S. Uloognathan
12. Environmental Economics - T.Eugene
13. Public Economics - V.C. Sinha
14. Industrial Economics - V.C. Sinha
15. Labour Economics - V.C. Sinha & Pushpa Sinha
16. Demography - V. Kumar

PAPER – II (BOTANY)
CW 02: TOOLS AND TECHNIQUES

UNIT – I

Fundamental Tools: ICBN - Principles, major rules, revisions and recommendations, effective and valid publications, typification, rejection of taxa, starting date point, priority &authority. Melbourne code –Salient features. Crop Improvement- Selection and Hybridization in self and cross pollination crops applied in improvement of crops. Herbarium - Preparation, Methodology, application and storage. Standard solutions: Molar, Molal, Normal and percent (%) solutions. pH of solutions, role of buffers and their preparation. Microbial staining techniques. Cytological-technique - Fixatives, treatments and staining. Physicochemical properties and analysis of water.

UNIT – II

Instrumentation: Microscopy – Confocal, Phase contrast and Electron microcopy. Chromatography – Principle, protocol and application of TLC, GLC and HPLC. Spectrophotometry – Principle and applications, NMR, MASS spectrometry. Centrifugation – Principle, types and applications. Electrophoresis – Principle, protocol and applications. Principle and applications of pH meter, flow cytometer, colony counter, turbid meter and Microtome.

UNIT – III

Basic Techniques: Micrometry - Determination of factor, techniques and applications of micrometry in research. Isolation of Cyanobacteria, Bacteria free cultures, Continuous cultures, Synchronous culture and mass culture. Isolation and culture of bacteria from air, water and soil- general requirement Nutrient Media - common media [Knop's (Modified) Modified Chu'10 medium, Allen and Arnon's Medium (Modified), BG-11medium].Isolation and culture of fungi from air, water and soil- general requirement, Media, Screening of fungi for production of antibiotics and organic acids.

UNIT – IV

Applied Botany: Introduction, Scope and status of ethnobotanical studies in Chhattisgarh and India. Ethnobotanical aspects of conservations and management of the resources. Introduction, classification of Growth regulators-Growth analysis of crop plants and its significance, Applications of PGRs in agriculture. Production of microbial biomass, Primary and Secondary metabolites and enzymes. Algal and Bacterial fertilizers - preparations and applications. Role of microbes in the production of alcohol, organic acids and antibiotics. Sources, Biodiesel production techniques from –Sugarcane, Jowar, and Maize. Methods to study crop weed interactions. Processing of data on weeds in terms of Weed Indices: Weed control efficiency, Weed Index, Weed Smothering Efficiency.

UNIT – V

Advanced Techniques: Cell and tissue culture in plants, totipotency, Callus culture, Micro-propagation, Embryo culture, Secondary metabolites. Basic Principles, nature of electromagnetic radiation, Beer-Lamberts law, UV-VIS Absorption. Isotopes in biochemistry, applications of radioisotopes. Recombinant DNA technology and gene cloning techniques of restriction mapping, construction of chimeric DNA, cloning in bacteria and eukaryotes, PCR and gene amplification. Applications of biotechnology in agriculture, medical, forestry and crop improvement.

Books suggested –

1. Naik, V. N. (1985) Taxonomy of Angiosperms. Tata McGraw-Hill Co. New Delhi,
2. Mondal, A.K. (2005) Advanced Plant Taxonomy. New Central Book Agency, Kolkata, India.
3. Aneja, K.R. (2004) Experiments in Microbiology, Plant Pathology and Bitechnology (4th Ed.), New Age International Publishers, New Delhi, India.
4. Dwivedi, J.N. and R.B.Singh (1990) Essentials of Plant Techniques. Scientific Publishers, Jodhpur, India.
5. Razdan, M.K.(1995) An Introduction to Plant Tissue Culture. Oxford and IBH publishing co, New Delhi, India.
6. Trivedi, R.R. and Goel D.K.: Chemical and Bilogical Methods for water Pollution studies, Environmental Publication, Karad (MS), India.
7. APH (1975) Standard Methods for Examination of Water and Waste Water (14th Ed.) American Public Health Association, New York, USA.
8. Bhojwani, S.S.(1990) Plant Tissue Culture: Applications and Limitations, Elsevier Science Publishers, New York, USA.
9. Hand Book of field and herbarium Techniques.-S K Jain and R R. Rao.
10. Practical Biochemistry -Principles and Techniques: Wilson and J K Walkers. Cambridge Publishing Coy. (2000).
11. Applied Radiobiology and Radiation Protection: GranierR and Gambini D J Ellis Harward.
12. Biochemistry: L. Virakumary. MJP Publishers.Tamilnadu Book House 47 Nalathambi Street, Chennai.600005.
13. Spectroscopy of organic compounds: P S Kalasi .New Age International Publishers.DaryaGanj, New Delhi.110002.
14. Electron Microscopy .PrakashTrivedi. Oxford Book Company.Jaipur –New Delhi.
15. Nuclear and Radiochemistry. G Friedlander, J W Kennedy S Macias M Miller John Wiley and Sons, New York.
16. Text Book of Spectroscopy. JyotiKumar, Sonali Publications, New Delhi.110002.
17. Spectroscopy. B K Sharma Goel Publishing House, Krishna Prakashan Media Pvt Ltd. Shivaji Road Meerut. 250001. U P.
18. Chromatography: .KamaleshBhansal,Campus Books International,Prahlad Street,Ansari Road, Darya ganj New Delhi 110002.
19. Biopesticides and pest management.G. S. Dhaliwal and OpenderKoul, Kalyani Publishers.New Delhi.
20. Plant Growth substances in Agriculture; Weaver J.1972, W H.Freeman&Co.San Francisco.
21. Fuels and Biofuels; Vijayalaxmi, Meena Devi and Nagendra Prasad. Published B UpadeshPurohit for Agrobios, Shriya Computers and Printers Chopasani Road Jodhapur 342002.

- ***Any other books suggested by Course coordinator/ Course Teacher/ Supervisor concerned may be applied.***

PAPER – II (PHYSICS)

CW 02: SYNTHESIS & CHARACTERIZATION OF MATERIALS

UNIT – I

Purification of Materials & Crystal growth – General principle of purification, Methods of purification, Different methods for detection of impurities in a sample. Crystal growth from melt, solution and by changing temperature.

UNIT – II

Thin film & Synthesis of Phosphors – General idea of preparation of thin film by thermal evaporation, sputtering, CVD, LPCVD, spin coating, molecular beam epitaxy. Synthesis of phosphor by solid state reaction/ diffusion method, combustion method, microwave processes etc.

UNIT – III

Characterization techniques – Basics, principle, working and applications of XRD, SEM, TEM, STEM, STM, AFM, FTIR, Raman spectroscopy, ESR, photoluminescence.

UNIT – IV

Environmental radiation & Health Physics Fundamentals – Sources of Environmental radiations, Interactions of radiation with matter, Dosimetric quantities, units, Measurement techniques, Biological effects of ionizing radiations, Effects of non ionizing EM radiations.

UNIT – V

Nanotechnology – Origin of nanotechnology, Nanomaterials, Types of nanomaterials, Surface area to volume ratio, Quantum confinement effect, band theory of nanomaterials, Physical and Chemical properties of nanomaterials, Synthesis of nanomaterials; Inert gas condensation, Arc discharge, Laser ablation, Ball milling, Sol-gel technique, Combustion synthesis, Ultrasonic precipitation process. Chemical vapor deposition.

Books suggested –

1. Methods of Experimental Physics, Vol. 6 Solid State Physics, Part A, Edited by K Lork-Horovitz and Vivian A. Johnson, Academic Press
2. Material Science and Engineering, V. Raghvan, Prentice Hall, India 5th edition, 2009.
3. Crystal Growth, Pimplin, Pergamon Press
4. Characterization of Materials, J B Watchman (Butterworth-Heinemann)
5. Luminescence of Solids, D R Vij (Plenum Press)
6. Thin Film deposition: Principle & Practice, Donald L Smith, McGraw Hill Professional
7. Thin Film Phenomenon, K L Chopra McGraw Hill, NewYork
8. Nano: The Essentials: Understanding Nano Science and Technology, T Pradeep, TMH, Nw Delhi
9. Nanoscale Science and Technology, Robert W. Kelsall, Ian W. Hamley and Mark Geoghegan, John Wiley & Sons,. Ltd., UK. 2005
10. Nanomaterials, A K Bandhopadhyay, New Age Intrnational, Nw Delhi
11. Nuclear Radiation Physics, R E Lapp
12. Experimental Nuclear Physics, E Serge

- ***Any other books suggested by Course coordinator/ Course Teacher/ Supervisor concerned may be applied.***

Subject-Home Science
Bilaspur University, Bilaspur

Paper II
REVIEW OF THE SUBJECT-HOME SCIENCE

Unit I

Writing and submission of review of literature-
In area of proposed Ph.D. work, under the supervision of supervisor.

- Importance of food and nutrition and its interrelation to health: dimension of health.
- Food guide-basic five food groups, food exchange list.
- Methods of improving nutritional quality of foods.
- Current nutrition and health status of women and children in India, changing concept and controversies in maternal and child nutrition.
- Malnutrition in mothers and children (etiology and management in brief) nutritional problems of community and schemes and programmes to combat these problems in India.
- Current methodologies for assessment of nutritional status, their interpretation and comparative application of the following- food consumption, anthropometry, clinical and laboratory (biochemical).
- Definition, components, assessment criteria of age specific fitness and health status, energy calculations for various physical activities, resting energy expenditure.
- Alternative systems for health and fitness life- ayurveda, yoga, meditation, vegetarianism and traditional diets.
- Qualitative research in food and nutrition- types of qualitative research, tools, techniques and methodologies, PRA, PLA.
- Contamination, adulteration and preservation of food.

Unit II

- Meaning concept and principles of growth and development.
- Methods of studying human development.
- Aspect of development in different stages of life.
- Foundation of the developmental pattern, heredity and environment, maturation and learning, motivation, individual differences, impact of play as means of development and learning.
- Importance of early childhood care and education. Current policies and programmes in E.C.C.E.
- Psychology of exceptional children and problem children.
- Theories and principles of guidance and counseling.
- Mental health, definition, concept and importance of mental health.
- Fundamentals of psychometric tests, personality assessment test, interest test, aptitude test and other test.

Unit III

- Resources- its classification, management and basic characteristics.
- Housing- interior decoration, principles of design, study of color and color schemes.
- Ergonomics- scope of ergonomics in home science and other occupations.
- Concept of work simplification - its importance in home, simple, pen and pencil techniques.
- Decision making- types and models.
- Consumer education - laws protecting consumer, role of consumer society in protecting consumer.
- Entrepreneurship- conceptual framework, types and govt. policies and schemes for enterprise development.

Unit IV

- Origin of clothing- religious influence, clothing symbols, socialization and development of the self.
- Blends and mixtures- non-woven fibres, chemistry of blends, mixtures and nonwoven; their types, properties, development.
- Eco friendly natural fibres.
- Colour.
- Eco friendly natural dyes.
- Dyeing of blends.
- Chemistry of cellulosic fibres, scientific basis of dyeing and printing of textiles.
- Design variation- combination of traditional and modern.
- Textured yarn.
- Social and psychological aspect of clothing.
- Designing dresses for physically challenged people.
- Changes in fashion trends.

Unit V

- Management and administration of formal/non formal and extension education monitoring, supervision and evolution of formal, non formal and extension education.
- Vocationalization of home science in India.
- Concept and classification of communication.
- Classroom communications in home science trends.

Seminar- will be given by the student in her subject of specialization/in the proposed subject of her PhD 20 marks

Project report- will be prepared and submitted by the student in the field of her subject of research 30 marks

References-

1. Hildebrand Verna (1981) Introduction to Early Childhood Education, N.Y. Macmillan.
2. Kaul, V (1997). Early Childhood Education Programme, New Delhi. NCERT
3. Muralidharan R. (1991) Guide to Nursery School Teacher. New Delhi. NCERT
4. Berry, J.W., Dasen, P.R. & Saraswathi, T.S. (Eds.) (1997). Handbook Of Cross Cultural Psychology: Basic Processes and Human Development, (2nd edition) Boston: Allyn and Bacon.
5. Dattan, N. & Reese, H.W (Eds.) (1997) Life Span Developmental Psychology. New York Academic Press.
6. Dawson L. & Lonner, W. (Eds.) (1974). Readings in Cross- Cultural Psychology. Hongkong: University Of Hongkong Press.
7. Saraswathi, T.S. (1999), Culture, Human Development and Socialization. New Delhi: sage.
8. Valand, J. (2000). Culture and Human Development.
9. Social And Preventive Medicine By Park
10. Therapeutic Nutrition - Su Rhodwells Williams
11. Therapeutic Nutrition And Diet Therapy - Bell Davidson And Robinson
12. Dietetics - Sri Laxmi
13. Diet Therapy - Willson Fisser And Fuca
14. Diet Therapy - F.P.Antia
15. Normal And Therapeutic Nutrition - Robinson
16. Home Management - Goss And Crendle
17. Home Management - Nickle And Dorsy
18. Resource Management Principle And Application - Deacon R.E. And Firedaugh F.M.
19. The Consumer And The Law - S. George
20. Costume Patterns And Designs- Max Tilake
21. Fashion Designing And Product Development - Carr H. And Pomery J.
22. Introduction To Clothing Production Management - Chuter A. J.
23. Fashion Merchandising An Introduction - Stone E. And Samples J. A.
24. Development Communication - Narulla Uma
25. Communication For Development In Third World Theory And Practice - Saga Publication New Delhi
26. Communication And Development - Issues And Perspectives - Mehta S. R.

PAPER – II (MICROBIOLOGY)

CW 02: TOOLS AND TECHNIQUES

UNIT – I

Fundamentals of Microbiology: Basic concept of microbial research. Concepts of microbial diversity and their habitats. Koch's postulates. Identification of microbes (bacteria, fungi and cyanobacteria) - basic and ribosomal gene sequence analysis methods. Assessment of microbial diversity by molecular techniques. Applications of microbiology in agriculture, industry, medical science and environment science.

UNIT – II

Applied Microbiology: Methods of microbiological examination of water and aerobiological research. Biodegradation of recalcitrant compounds (lignin, pesticides); Bio-inoculants - Bio-pesticides, Bio-herbicides and Bio-insecticides. Production of proteins in bacteria; Recombinant and Edible vaccines; Antibiotics - Properties, Production and its applications. Probiotics, Biofuels, Genetically modified microorganisms and their applications. Bio-fermenter, Biosensor.

UNIT – III

Basic Techniques of Microbial research: Condition and maintenance of microbiological laboratory; Culture media for bacteria, fungi and cyanobacteria; Sterilization - methods applied for samples, chemicals, glassware and whole laboratory; Autoclave and Laminar air flow. Isolation and characterization of microbes (bacteria, fungi and cyanobacteria). Techniques to measure growth of microorganisms. Effects of carbon, nitrogen, temperature, osmotic pressure, oxygen and CO_2 on microbial growth. Methods for antimicrobial assay.

UNIT – IV

Instrumentation: Microscopy - Confocal, Phase contrast and Electron microcopy. Chromatography - Principle, Protocol and Applications of TLC, GLC and HPLC. Spectrophotometry - Principle and applications. Centrifugation - Principle, types and applications. Electrophoresis - Principle, protocol and applications. Principle and applications of pH meter, colony counter and flow cytometer.

UNIT – V

Advanced Techniques & Bioinformatics: Principles and applications of PCR and DNA Sequencer. DNA isolations, DNA microarray, DNA sequencing, Protein microarray, Protein sequencing /profiling, X-ray Crystallography and NMR. Introduction and Bioinformatics: Knowledge of various databases and bioinformatics tools available at these resources - Literature databases, Nucleic acid sequence databases: GenBank, EMBL and DDBJ, Protein sequence and structure databases, Genome Databases, Basic online and offline tools for Sequence alignment, Molecular phylogeny, Genomics and Proteomics, and Drug designing.

Books suggested –

1. Dubey, R.C. and Maheshwary, D.K. (1999). Text book of Microbiology. S. Chand and company.
2. Aneja, K.R. Experiments in Microbiology, Plant pathology and Biotechnology, Fourth edition, New Age International publishers.
3. Powar, C.B. and Daginawal, H.F. General Microbiology. Vol-I and Vol- II, Himalaya Publishing House.
4. Wilson & Walker. (2000). Principles and Techniques in Practical Biochemistry. 5th Edition Cambridge University Press.
5. Reed. G. Prescott and Dunn's (1999). Industrial Microbiology. CBS Publishers.
6. Demain, A. L. (2001). Industrial Microbiology and Biotechnology. 2nd Edition.
7. Waites, M.J., Morgan, N.L., Rockey, J.S. and Higton, G. (2002). Industrial Microbiology: An Introduction. Blackwell Science Publishers.
8. Mount D. (2004). Bioinformatics: Sequence and Genome Analysis. Cold Spring Harbor Laboratory Press, New York.
9. Baxevanis, A.D. and Francis Ouellellette, B.F. (2009). Bioinformatics- A Practical Guide to the Analysis of Genes and Proteins. Wiley India Pvt Ltd.
10. Text Book of Spectroscopy. Jyoti Kumar, Sonali Publications, New Delhi.110002.
11. Chromatography :.Kamalesh Bhansal, Campus Books International, Prahlad Street, Ansari
    Road, Darya ganj New Delhi 110002.
12. Biopesticides and pest management.G.S.Dhaliwal and Opender Koul, Kalyani Publishers.New Delhi.

➢ ***Any other books suggested by Course coordinator/ Course Teacher/ Supervisor concerned may be applied.***

PAPER – II (Mathematics)

CW 02:

UNIT – I

Typesetting Mathematical Text with LATEX: Sample document, type Style, environments lists, centering, tables, verbatim, vertical and horizontal spacing, equalizer environments, fonts, hats and underlining, braces, arrays and matrices, customized commands, theorem – like environments, math styles, document classes and the overall structure, titles for documents, sectioning commands, packages inputting files, inputting pictures, making a bibliography, making an index, slides

Unit – II

Fuzzy set theory: Basic definitions, α-cuts, convex fuzzy sets, basic operations on fuzzy sets, properties & α-cuts, representation of fuzzy sets, first and second decomposition theorem, fuzzy complements, t-norms and t-conorms, algebraic product and sum, bounded difference and sum, combination of operators.

Unit – III

Information Theory: Requirements of a measure of uncertainly of a probability distribution, the Shannon's measure of uncertainty and its properties, concavity and convexity of functions useful in information theory, different measures of entropy and directed divergence available in literature, measure of information improvement, measure of generalized measure of information improvement, Normalized measure of entropy different faces of entropy, mean code word lengths, suitable codes.

Unit – IV

Fixed point theory: Definition and example of fixed point and common fixed point, contraction mapping, contractive mapping,

Non expansive mapping, Lipschitz mapping relation between these mapping and continuous mapping.

Banach contraction principle and its generalization.

Fixed point theorem of Brouwer and Schauder.

Fixed point thorem for multifunction

Unit – V

Summability & Approximation:

Trigonometrically series Fourier series. Definition, summation & convergence of Trigonometrically series

Tests for the convergence Fourier series, modulus of continuity, Riemann-Lebesgue theorem, partial sums, theorem of Steinhaus, young theorem, Lebesgue test Young test, Hardy-Littlewood Test

Summability of Fourier Series Abel mean, Cesaro mean, Fejer's theorem, summability of conjugate series, Abel summability,

Classes of functions and Fourier series, Riesz-Fischer theorem, Caratheodory's theorem , Liner operations, Transformation of Fourier series.

Book recommended

1. G.HJ. Kur & B. Yuan fuzzy sets & fuzzy logic, prentice Hall of India, New Delhi.
2. Maximum entropy module in science & engineering by J.N. Kapur, wiley Eastern Limited.
3. Entropy & Coding by J.N. Kapur.
4. An introduction to information theory McGraw Hill book company, inc. 1961 by F.N.Reza.
5. Information theory, inter science publishers, New York 1965, R. Ash.
6. Functional Analysis by Walta Rudin
7. Functional Analysis by B.V. Limye
8. Some topic in Non linear functional analysis by M.C. Joshi & R.K. Bose
9. Real analysis by H.L. Royden
10. Functional analysis by Kreyszing
11. A course in functional analysis by John B. Conway
12. A first course in functional analysis by D. Somsundaram
13. A treatise on generating functional H.M. Shrivastava & H.L. Manoch
14. Trignometric series by Zygmund A., Vol. I & II Combridge University press London/ New York.
15. The theory of function by Titchmarsh E.C., Oxford.

BILASPUR UNIVERSITY BILASPUR

(OLD HIGH COURT BHAVAN,BILASPUR ,C.G)

PRE-PH.D. COURSE WORK SYLLABUS

PAPER –II (FOR COMMERCE)

UNIT-I

FUNDAMENTALS OF FINANCIAL ACCOUNTING ;-DOUBLE ENTRY SYSTEM,PREPARATION OF FINAL ACCOUNT,DEPRECIATION,AMALGAMATION AND RECONSTRUCTION OF COMPANIES.

UNIT-II

COST ACCOUNTNG:-UNIT COSTING,CONTRACT ACCOUNT,PROCESS ACCOUNT,BREAK-EVEN ANALYSIS,RECONCILIATION STATEMENT

UNIT-III

FINANCIAL MANAGEMENT :-RATIO ANALYSIS ,WORKING CAPITAL ,CAPITAL BUDGETING, CAPITAL STRUCTURE. , cost of capital.

UNIT-IV

APPLIED ECONOMICS :-NATURE AND SCOPE OF ECONOMICS, DEMAND AND COST ANALYSIS,MARKET STRUCTURE,PRICE DETERMINATION IN DIFFERENT MARKRTS,FACTOR PRICING (WAGES,RENT,PROFIT,INTEREST),COSUMER BEHAVIOUR ANALYSIS(EQUI-MARGINAL AND DIMINISHING MARGINAL UTILITY THEORY).

UNIT-V

MANAGEMENT PRINCIPALS :-MEANING AND FUNCTIONS OF MANAGEMENT,MBO,SWOT ANALYSIS,DECISION MAKING,DELEGATION OF AUTHORITY,E-COMMERCE,MARKETING RESEARCH (CONCEPT ONLY)

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REFERENCE BOOKS/BOOKS RECOMMENDED:-

1.FINANCIAL ACCOUNTING—DR, S.M. SHUKLA,SAHITYA BHAWAN, AGRA

2.CORPORATE ACCOUNTING - DR, S.M. SHUKLA,SAHITYA BHAWAN, AGRA

3.COST ACCOUNTING-M.L.AGRAWAL,

4.FINANCIAL MANAGEMENT –S.P.GUPTA

5.BUSINESS/MANAGERIAL ECONOMICS-V.C.SINHA.,J.C.PANT.,M.L.SETH

6.MANAGEMENT PRINCIPALS-R.C.AGRAWAL, S.C. JAIN.PHILIP KOTLER

NOTE: OTHER BOOKS MAY ALSO BE USED AS PER REQUIREMENTS.

Pandey 6/2/15