

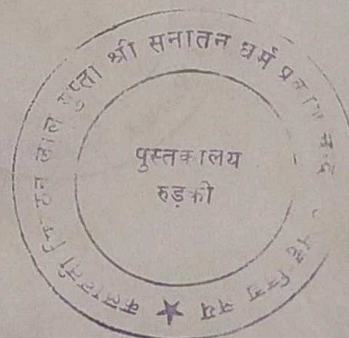
Courses related with Field Study & Projects

First Semester

M.A.Drg.&Ptg.

- Theory : **History of Indian painting:-**
Introduction of art, Painting in Pre-historic India, Indus Valley, Jogimara, Ajanta, Bagh, Badami, Sittanvasal, Ellora, Elephanta, Tanjavur, Pal school Jain school, Deccani school (Ahemadnagar, Bijapur, Golconda)
- Theory : **Philosophy of art (Indian):-**
Relationship of mythology and Art in India. Sources and evolution of aesthetic concepts in India. Rasa theory of Bharat Muni, Abhinava Gupta, Sadharanikaran, Dhvani (suggestiveness of work of Art: richness of Ambivalence and association) Alankar (Artistic embellishment) Auchitya (Propriety in works of Art) Riti (Style in Art) Guna and Dosha (Merits and Demerits of Art work) Shadang theory.
- Practical : **Free Hand Drawing:- (Out Door) -**
Free hand Drawing from Nature, Animals, Birds, Human etc. in different posture.
- | | | |
|------------|---|-------------------------|
| Sessional | : | 50 Sketches |
| Medium | : | Pencil / Pen / Charcoal |
| Paper size | : | 11 x 15 Inch |
| Time | : | 2 hrs |
- Practical : **Portrait study :-**
Exercise in finishing, Portrait Painting from live model (Bust only) in different sides. Pictorial organization and character of the model should be stressed on.
- | | | |
|------------|---|-----------------------|
| Sessional | : | 10 Best work |
| Medium | : | Oil / Water / Acrylic |
| Paper size | : | 11 x 22 Inch |
| Time | : | 09 hrs |
- Practical : **Landscape :- Spot painting.**
- | | | |
|------------|---|-----------------------|
| Sessional | : | 10 Best work |
| Medium | : | Oil / Water / Acrylic |
| Paper size | : | 11 x 22 Inch |
| Time | : | 09 hrs |


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Second Semester

M.A. Drg.&Ptg.

Theory : History of Indian painting:-
Mughal Painting under Akbar, Jahangir, Shahjahan, Aurangzeb. Prominent Mughal Artists. Rajasthani school (Mewar, Malwa, Bundi, Kishangarh, Nathdwara) Pahari school (Basohli, Guler, Kangra, Mandi, Garhwal) Kalighat Painting, Company Painting, Raja Ravi Verma and his follower, Renaissance period.

Theory : Philosophy of art (western):-
Concept of Art and Beauty with reference to thinkers like Plato, Aristotle, Plotinus and Augustine, Aquinas, Leonardo- de -Vinci, Lessing, Diderot, Baumgarten. Kant, Hegel, Tolstoy, Croce, Roger Fry, Clive Bell, Bullough, Bradely, Susanne Langer, Freud, Sartre etc. communist Philosophy of Art, Study of relationship between Aesthetics and actual works of Art.

Practical : Portrait study:-
Exercise in finishing, Portrait painting from live model (Bust only) in different sides. Pictorial organization and character of the model should be stressed on.

Sessional : 10 Best work
Medium : Oil / Water / Acrylic
Paper size : 11 x 22 Inch
Time : 09 hrs (Three sittings)

Practical : Landscape :- Spot painting.

Sessional : 10 Best work
Medium : Oil / Water / Acrylic
Paper size : 11 x 22 Inch
Time : 09 hrs

Practical : Poster Designing:-

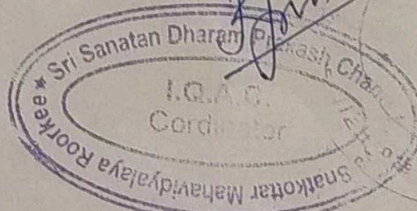
Sessional : 10 Best work
Medium : Oil / Water / Acrylic
Paper size : 11 x 22 Inch
Time : 09 hrs

Self Study : Study of Mediums & Techniques of Painting:-
Candidate will prepare a detail report with supporting Charts and Diagrams.

Recommended Readings:-

- | | |
|--|--------------------------------------|
| 1. Bharat ki Chitrakala ka Itihas | : A.B. Verma |
| 2. Kala Aur Kalam | : G.K. Agarwal |
| 3. Bhartiya Chitrakala | : Vachaspati Gairola |
| 4. Kala Darshan | : Hardwari Lal Sharma |
| 5. Saundarya Shastra | : Hardwari Lal Sharma |
| 6. Kala Darshan | : Prakash Vereshwer and Nupur Sharma |
| 7. Bhartiya Saundarya Shastra ki Bhumika | : Nagendra |
| 8. Saundarya | : Rajendra Bajpai |
| 9. Saundarya Shastra | : Mamta Chaturvedi |
| 10. Kala Saundarya Aru Samiksha | : Ashok |
| 11. Kala Chintan : Saundaryatmak Vivechana | : Vidhu Kaushik |
| 12. Adhunik Bhartiya Chitrakala ka Vikas | : G.K. Agarwal |
| 13. Contemporary Indian Artists | : Geeta Kapoor |
| 14. Indian Modern and Contemporary Art | : P.N. Mago |
| 15. Chitrana Vidhan Evm Samagri | : Srotriya |
| 16. Foster series book related to portrait paintings. | |
| 17. Foster series book related to landscape paintings. | |

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Wright, Quincy, A Study of International Relations.

M.A. Pol. Science (II semester)

COURSE- V: RESEARCH METHODOLOGY

Unit-I: Meaning, relevance of Research methodology ;Scientific Methods: Main Steps of Scientific Methods.

Unit-II: Selection and Formulation of Research Problem.

Unit-III: Hypothesis, Research Design, Techniques of Data collection-Observation, Interview, Questionnaire and Schedule Method.

Unit-IV: Sampling: Meaning, Types; Introduction to Statistics; Data Processing ; Thesis Writing.

Readings Recommended:

Blalock, H.N., An Introduction to Social Research, Englewood Cliffs NJ, Prentice Hall, 1970.

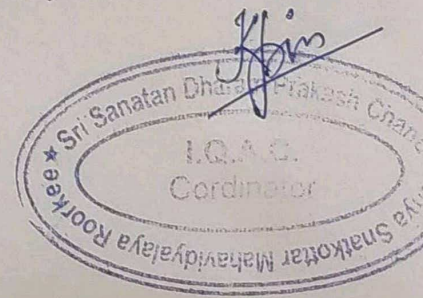
Eulau, H., The Behavioural Persuasion in Politics, New York, Random House, 1964.

Evera, S.V., Guide to Methods for Students of Political Science , Ithaca ,NY ,Cornell University Press, 1997.

Frohock, F.M., The Nature of Political Inquiry, Homewood Illinois, Dorsey Press, 1967.

Galtung, John, Theory and Practice of Social Research.

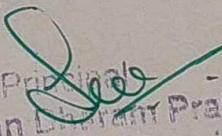
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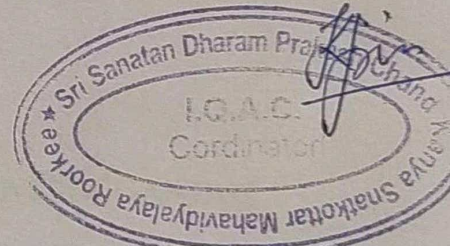


M.A. Pol: Science (IV Semester)

COURSE-XXI: DISSERTATION

Students will be required to undertake a short research work on a topic of their choice finalized in consultation with their teacher supervisor and submit a dissertation on the same prepared under the supervision of a teacher of the Department.


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ELECTIVE/OPTIONAL COURSES:



Sociology - B.A. III year

PAPER - II (B) : Empirical Research Report (OPTIONAL)

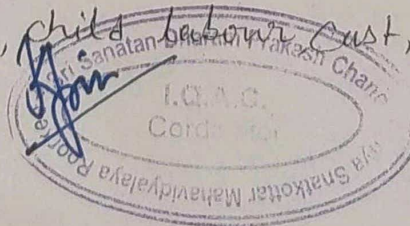
Field Report shall be based on various aspects of Rural /Urban /Tribal Life/Scheduled Castes/Weaker Sections/ Backward Castes/Population/Environment etc. of Garhwal Region.

- (a) Only regular students who have obtained at least 45% marks in Sociology in B.A.II year Examination are eligible to opt this paper.
- (b) Two copies of typed reports shall be submitted by the candidate in the department.
- (c) Report should be about 75 pages.
- (d) A Demand Draft of Rs. 100 (Rupees one hundred only) in the name of Registrar / Finance Officer , H.N.B. Garhwal University, shall be submitted by the candidate as an evaluation fee with the field work report in the department.
- (e) Field Report shall be evaluated by a board of examiners (Head of the Department, Supervisor and External Examiner appointed by the University) followed by Viva - voce of each candidate.

Dowry, Domestic violence, Child labour, Caste,

- वस्त्रों में आने वाली
हमारे जीवन में

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Political Science

IV Sem SEC

2. Public Opinion and Survey Research

Course Objective: This course will introduce the students to the debates, principles and practices of public opinion polling in the context of democracies, with special reference to India. It will familiarise the students with how to conceptualize and measure public opinion using quantitative methods, with particular attention being paid to developing basic skills pertaining to the collection, analysis and utilisation of quantitative data.

I. Introduction to the course (6 lectures)

Definition and characteristics of public opinion, conceptions and characteristics, debates about its role in a democratic political system, uses for opinion poll

II. Measuring Public Opinion with Surveys: Representation and sampling (6 lectures)

- What is sampling? Why do we need to sample? Sample design.
- Sampling error and non-response
- Types of sampling: Non random sampling (quota, purposive and snowball sampling); random sampling: simple and stratified

III. Survey Research (2 lectures)

- Interviewing: Interview techniques pitfalls, different types of and forms of interview
- Questionnaire: Question wording; fairness and clarity.

IV. Quantitative Data Analysis (4 lectures)

- Introduction to quantitative data analysis
- Basic concepts: correlational research, causation and prediction, descriptive and inferential Statistics

V. Interpreting polls (6 lectures)

Prediction in polling research: possibilities and pitfalls
Politics of interpreting polling

READING LIST

I. Introduction to the course

Essential Readings:

R. Erikson and K. Tedin, (2011) *American Public Opinion*, 8th edition, New York: Pearson Longman Publishers, pp. 40-46.

G. Gallup, (1948) *A guide to public opinion polls* Princeton, Princeton University Press, 1948. Pp. 3-13.

II. Measuring Public Opinion with Surveys: Representation and sampling

Essential Readings:

G. Kalton, (1983) *Introduction to Survey Sampling* Beverly Hills, Sage Publication.

Lokniti Team (2009) 'National Election Study 2009: A Methodological Note', *Economic and Political Weekly*, Vol. XLIV (39)

Political Science

Generic Elective -2 (Interdisciplinary): (2)

1) Reading Gandhi

Course Objective: The course seeks to meet two essential objectives: one, to acquaint the students with the art of reading texts, to enable them to grasp its conceptual and argumentative structure and to help them acquire the skills to locate the texts in a broader intellectual and socio-historical context. Second, it aims to acquaint the students with the social and political thought of Gandhi. The themes in Gandhian thought that are chosen for a close reading are particularly relevant to our times.

A). Ways to read a text:

- a. textual
- b. contextual

- Terence Ball, *Reappraising Political Theory*, Ch. 1, OUP, 1995
- "Meaning and Interpretation in the History of Ideas" in *Visions of Politics*, Quentin Skinner (ed.), Vol. 1, CUP, Cambridge, 2002.

B) Hind Swaraj:

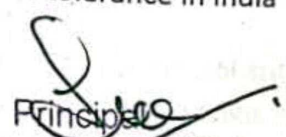
1. Gandhi in his own words: A close reading of Hind Swaraj.
2. Commentaries on Hind Swaraj and Gandhian thought:

- "Introduction", M.K.Gandhi, Hind Swaraj and other writings ed. A.J.Parel (1997).
- B.Parekh, Gandhi (1997), chs. 4 ("Satyagraha") and 5 ("The critique of modernity").
- D.Hardiman, Gandhi in his time and ours (2003), ch.4 ("An alternative modernity")

C) Gandhi and modern India.

- a. Nationalism.
- b. Communal unity
- c. Women's Question
- d. Untouchability.

This component will contain the following selections from Gandhi's India of my Dreams (compiled R.K.Prabhu): "The meaning of Swaraj" (no.2); "In defence of Nationalism" (no.3); "India's cultural heritage" (no.45); "Regeneration of Indian women" (no.54); "Women's education" (no.55); "Communal unity" (no.59); "The curse of untouchability" (no.61); "Religious tolerance in India" (no.62); "The problem of minorities" (no.66)


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Political Science

COURSE- XXII-B: POLITICAL PHILOSOPHY OF MAHATMA GANDHI

Unit-I: Influence on Gandhi, Gandhiji's Conception The end and means.

Unit-II- :Truth, Non-violence and Satyagrah.

Unit- III: Social ideas, Political ideas, Economic ideas.

Unit- IV: Contribution and relevance of Gandhi.

Readings Recommended:

- Adhikari, G., Gandhism- A Review. Bombay, 1940.
Alexander, Horace, and Others, Social and Political Ideas of Mahatma Gandhi.. New Delhi, 1949.
BARR, f. Mary, Conversations and Correspondence with Mahatma Gandhi. Bombay, 1949.
Bose, N. K., Studies in Gandhism. Calcutta, 1947.
Catlin, G., In the Path of Mahatma Gandhi. London, 1948.
Datta, d.m., The Philosophy of Mahatma Gandhi. Wisconsin, 1953.
Dhawan Gopinath, The Political Philosophy of Mahatma Gandhi, The Gandhi Peace Foundation, New Delhi, 1990
Hocking, W.E. Man and the State. Yale University PRESS, 1926- The Lasting Elements of Individualism. Yale University Press, 1937.

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Botany

Semester II

Core Course Botany –II

C-2 Plant Ecology and Taxonomy

(Credits: Theory-4, Practicals-2)

THEORY

Lectures: 60

Unit 1:

Introduction (2 Lectures)

Ecological factors (10 Lectures)

Soil: Origin, formation, composition, soil profile. Water: States of water in the environment, precipitation types. Light and temperature: Variation Optimal and limiting factors; Shelford law of tolerance. Adaptation of hydrophytes and xerophytes.

Plant communities (5 Lectures)

Characters; Ecotone and edge effect; Succession; Processes and types.

Unit 2:

Ecosystem (7 Lectures)

Structure; energy flow trophic organisation; Food chains and food webs, Ecological pyramids production and productivity; Biogeochemical cycling; Cycling of carbon, nitrogen and Phosphorous

Phytogeography (3 Lectures)

Principle biogeographical zones; Endemism

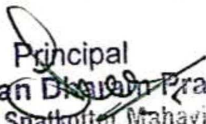
Unit 3:

Introduction to plant taxonomy (2 Lectures)

Identification, Classification, Nomenclature.

Taxonomic hierarchy (1 Lectures)

Ranks, categories and taxonomic groups


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Microbiology

HEMWATI NANDAN BAHUGUNA GARHWAL UNIVERSITY,
SRINAGAR- GARHWAL-246174, UTTARAKHAND

DSE-4: MICROBIAL BIOTECHNOLOGY (THEORY)

SEMESTER -V/VI

CREDITS: 04

TOTAL HOURS: 60

Unit I: Scope and Applications of Microbial Biotechnology

No. of Hours: 10

Scope and applications of microbial biotechnology in human therapeutics, agriculture, environment and food technology; Genetically engineered microbes for industrial application: Bacteria and yeast.

Unit II: Therapeutic and Industrial Biotechnology

No. of Hours: 12

Recombinant microbial production processes in pharmaceutical industries: Streptokinase and recombinant vaccines (Hepatitis B vaccine), Microbial polysaccharides and polyesters, Microbial production of bio-pesticides and bioplastics; Microbial biosensors.

Unit III: Applications of Microbes in Biotransformations

No. of Hours: 13

Microbial based transformation of steroids and sterols; Bio-catalytic processes and their industrial applications: Production of high fructose syrup and production of cocoa butter substitute.

Unit IV: Microbes for Bio-energy and Environment

No. of Hours: 15

Bio-ethanol and bio-diesel production: Commercial production from lignocellulosic waste and algal biomass; Biogas production: Methane and hydrogen production using microbial culture; Microorganisms in bioremediation: Degradation of xenobiotics, Removal of heavy metals.

Unit V: Applications of Antisense RNA and RNAi

No. of Hours: 10

Antisense RNA: Mechanism of action, Applications in therapeutics and agriculture; RNAi: Mechanism of action, Applications in therapeutics and agriculture.

DSE-4: MICROBIAL BIOTECHNOLOGY (PRACTICAL)

SEMESTER -V/VI

CREDITS: 02

TOTAL HOURS: 60

1. Isolation and screening of microbial cultures for enzyme production.
2. Qualitative estimation of enzyme production by microbial culture.
3. Estimation of enzyme production by microbial culture via liquid state fermentation.
4. Isolation of *Rhizobium* sp. from root nodules of leguminous plants.
5. Isolation of rhizobacteria from plant rhizosphere.
6. Estimation of plant growth promotion potential of rhizobacteria.

Suggested Readings

1. Crueger, W. and Crueger, A. Biotechnology: A textbook of industrial microbiology. Sinauer Associates, Sunderland.
2. Reed, G. Prescott and Dunn's industrial microbiology. Globe Bookservices, London.
3. Demain, A.L and Davies, J.E. Manual of industrial microbiology and biotechnology. ASM Press, Washington, D.C.
4. Casida, J.E. Industrial microbiology. Wiley Eastern, New Delhi.

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Microbiology

DEPARTMENT OF BOTANY & MICROBIOLOGY
HEMWATI NANDAN BAHUGUNA GARHWAL UNIVERSITY,
SRINAGAR- GARHWAL-246174, UTTARAKHAND

DSE-6: INDUSTRIAL AND FOOD MICROBIOLOGY (THEORY) SEMESTER -V/VI

TOTAL HOURS: 60

CREDITS: 04

Unit I: Introduction to Industrial Microbiology

No. of Hours: 10

History; Basic idea about design of fermenter/bioreactor; Types of fermentor/ bioreactors; Types of fermentation processes (Solid state, liquid state, batch, fed-batch and continuous fermentation).

Unit II: Basic Aspects of Fermentation

No. of Hours: 13

Media formulation; Inoculum development; Criterion used for selection of microorganisms for fermentation; Strategies for strain improvement: Natural selection followed by primary and secondary screening. Mutation, Protoplast fusion, Recombinant DNA technology; Preservation of industrial strains.

Unit III: Microbial Fermentation Processes

No. of Hours: 14

Downstream processing; Microbial production of industrial products: Citric acid, Ethanol, Penicillin, Vitamin B12, Amylase, Single cell protein, Fermented food (Vinegar, yogurt and cheese).

Unit IV: Food Spoilage and Preservation

No. of Hours: 14

Factors affecting microbial growth in food; Microbial spoilage of milk, vegetables, meat and canned food products; Physical and chemical methods of food preservation.

Unit V: Foodborne Infections and Intoxications

No. of Hours: 09

Infections and intoxications of *Clostridium*, *Escherichia*, *Salmonella* and *Staphylococcus*; Laboratory testing procedures.

B. Sc. III Year Microbiology

Paper VII. Environmental Microbiology

Unit I

Air Pollution: Sources, types, effect of pollutants, control measures brief account transmission of microbes; viruses, bacteria and fungi, their diseases and prevention. Aeroallergy and aeroallergens. assessment of air quality.

Unit II

Aquatic microbiology: water ecosystem and its type, marine microorganism importance, eutrophication, brief account of major water born diseases and measures.

Unit III

Soil microbiology: classification of soil, physical and chemical characteristics, various soil types, brief account of microbial interactions, symbiosis, commensalisms, competition, amensalism, synergism, parasitism, predation.

Unit IV

Biogeochemical cycles and the microorganisms- carbon, nitrogen, phosphorus, biofertilizer; Vesicular Arbuscular Micorrhizae (VAM); ecto, endo, ectendo mycorrhizae.

Unit V

Water treatment- wastes, types, solid and liquid wastes characterization, primary, secondary, tertiary solid waste treatment, Bioaccumulation, Bioremediation, Bioleaching of uranium, Environmental impact assessment: Introduction, Assessment & Control.

Suggested Readings:

1. Atlas & Bartha. Microbial Ecology. 2007. Pearson Education.
2. Paul & Clark. Soil Microbiology & Biochemistry. Academic Press.
3. Jogdand S.N. Environmental Biotechnology. Himalaya Publishing House.
4. Powar & Dagainwala. Microbiology. Himalaya Publishing House.
5. Dubey R.C. & D.K. Maheshwari. A text Book of Microbiology. S. Chand.