

Academic Year: 2023-2024

Bachelor of Science in Agriculture



Syllabus & Scheme

Semester – I & II

School of Agricultural Science





GYANVEER UNIVERSITY, SAGAR (M.P.)

Scheme of Examination B.Sc (Agriculture) II Semester

School of Agricultural Science (Academic Session 2023-24)

Subject wise distribution of marks and corresponding credits

| S. No. | Subject Type | Course | Subject Code | Paper Name | Maximum Marks Allotted | | | | | | | | | | Total Marks | Contact Periods Per week | | | Credit Allotments | Total Credits |
|--------|--------------|-----------------------|--------------|---|------------------------|---|-----------------------|------------------------|-------------------------|------------------------|------------|-----------------------------------|-----------|----------|-------------|--------------------------|---|--------|-------------------|---------------|
| | | | | | Theory Slot | | | | Practical Slot | | | | | | | L | T | P | | |
| | | | | | End Term Exam | Internal Assessment Class test (Descriptive & Objective)/Assignment/Seminar | | | Internal Assessment | | | External Assessment | | | | | | | | |
| | | | | | | Final Exam | Internal Assessment I | Internal Assessment II | Internal Assessment III | Class test/Interaction | Attendance | Practical/Presentation/Lab Record | Viva Voce | Lab Work | | | | | | |
| 1 | Core Course | B.Sc (Agriculture) | GUBSCAG 201T | Fundamentals of Genetics(Theory) | 70 | 15 | 15 | 15 | - | - | - | - | - | 100 | 2 | 0 | 0 | 3(2+1) | 2 | |
| 2 | Core Course | | GUBSCAG 201P | Fundamentals of Genetics(Practical) | - | - | - | - | 10 | 10 | 10 | 10 | 10 | 50 | 0 | 0 | 1 | | 1 | |
| 3 | Core Course | | GUBSCAG 202T | Agricultural Microbiology(Theory) | 70 | 15 | 15 | 15 | - | - | - | - | - | 100 | 1 | 0 | 0 | 2(1+1) | 1 | |
| 4 | Core Course | | GUBSCAG 202P | Agricultural Microbiology(Practical) | - | - | - | - | 10 | 10 | 10 | 10 | 10 | 50 | 0 | 0 | 1 | | 1 | |
| 5 | Core Course | | GUBSCAG 203T | Soil and Water Conservation Engineering(Theory) | 70 | 15 | 15 | 15 | - | - | - | - | - | 100 | 1 | 0 | 0 | 2(1+1) | 1 | |
| 6 | Core Course | | GUBSCAG 203P | Soil and Water Conservation Engineering (Practical) | - | - | - | - | 10 | 10 | 10 | 10 | 10 | 50 | 0 | 0 | 1 | | 1 | |
| 7 | Core Course | | GUBSCAG 204T | Fundamentals of Crop Physiology(Theory) | 70 | 15 | 15 | 15 | - | - | - | - | - | 100 | 1 | 0 | 0 | 2(1+1) | 1 | |
| 8 | Core Course | | GUBSCAG 204P | Fundamentals of Crop Physiology(Practical) | - | - | - | - | 10 | 10 | 10 | 10 | 10 | 50 | 0 | 0 | 1 | | 1 | |
| 9 | Core Course | | GUBSCAG 205T | Fundamentals of Agricultural Economics | 70 | 15 | 15 | 15 | - | - | - | - | - | 100 | 2 | 0 | 0 | 2(2+0) | 2 | |
| 10 | Core Course | | GUBSCAG 206T | Fundamentals of Plant Pathology(Theory) | 70 | 15 | 15 | 15 | - | - | - | - | - | 100 | 3 | 0 | 0 | 4(3+1) | 3 | |
| 11 | Core Course | | GUBSCAG 206P | Fundamentals of Plant Pathology(Practical) | - | - | - | - | 10 | 10 | 10 | 10 | 10 | 50 | 0 | 0 | 1 | | 1 | |
| 12 | Core Course | | GUBSCAG 207T | Fundamentals of Entomology(Theory) | 70 | 15 | 15 | 15 | - | - | - | - | - | 100 | 3 | 0 | 0 | 4(3+1) | 3 | |
| 13 | Core Course | | GUBSCAG 207P | Fundamentals of Entomology(Practical) | - | - | - | - | 10 | 10 | 10 | 10 | 10 | 50 | 0 | 0 | 1 | | 1 | |
| 14 | Core Course | | GUBSCAG 208T | Fundamentals of Agricultural Extension Education(Theory) | 70 | 15 | 15 | 15 | - | - | - | - | - | 100 | 2 | 0 | 0 | 3(2+1) | 2 | |
| 15 | Core Course | | GUBSCAG 208P | Fundamentals of Agricultural Extension Education(Practical) | - | - | - | - | 10 | 10 | 10 | 10 | 10 | 50 | 0 | 0 | 1 | | 1 | |
| 16 | Core Course | | GUBSCAG 209T | Communication Skills and Personality Development(Theory) | 70 | 15 | 15 | 15 | - | - | - | - | - | 100 | 1 | 0 | 0 | 2(1+1) | 1 | |
| 17 | Core Course | | GUBSCAG 209P | Communication Skills and Personality Development(Practical) | - | - | - | - | 10 | 10 | 10 | 10 | 10 | 50 | 0 | 0 | 1 | | 1 | |

Total of Credits is = 24

Note* Allotment of Marks for Internal Assessment for theory portion is Best of Two / either of two and addition of them.

*R: Remedial course;

** NC - Non Gradual Course



II SEMESTER

Course Title : GUBSCAG 201T Fundamentals of Genetics(Theory)

3(2+1)

Theory

Pre and Post Mendelian concepts of heredity, Mendelian principles of heredity.

Architecture of chromosome; chromonemata, chromosome matrix, chromomeres, centromere, secondary constriction and telomere; special types of chromosomes

Chromosomal theory of inheritance- cell cycle and cell division- mitosis and meiosis. Probability and Chi-square. Dominance relationships, Epistatic interactions with example.

Multiple alleles, pleiotropism and pseudoalleles, Sex determination and sex linkage, sex limited and sex influenced traits, Blood group genetics, Linkage and its estimation, crossing over mechanisms, chromosome mapping. Structural and numerical variations in chromosome and their implications, Use of haploids, dihaploids and doubled haploids in Genetics.

Mutation, classification, Methods of inducing mutations & CIB technique, mutagenic agents and induction of mutation. Qualitative & Quantitative traits, Polygenes and continuous variations, multiple factor hypothesis, Cytoplasmic inheritance. Genetic disorders. Nature, structure & replication of genetic material. Protein synthesis, Transcription and translational mechanism of genetic material, Gene concept: Gene structure, function and regulation, Lac and Trp operons



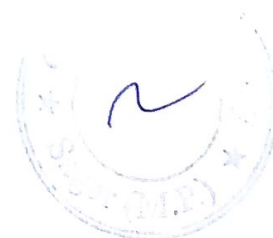
Course Title : GUBSCAG 201P Fundamentals of Genetics (Practical)

List of Practical's

1. Study of microscope.
2. Study of cell structure.
3. Mitosis and Meiosis cell division.
4. Experiments on monohybrid, dihybrid, trihybrid, test cross and back cross
5. Experiments on epistatic interactions including test cross and back cross.
6. Practice on mitotic and meiotic cell division,
7. Experiments on probability and Chi-square test.
8. Determination of linkage and cross-over analysis (through two point test cross and three point test cross data).
9. Study on sex linked inheritance in Drosophila.
10. Study of models on DNA and RNA structures.

References

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|---------------------------------|---|--|
| 1. Fundamentals of Genetics | – | B.D. Singh, Kalyani Publisher |
| 2. Elements of Genetics | – | Phundan Singh, Kalyani Publisher |
| 3. Genetics | – | M.W. Strickberger |
| 4. Principles of Genetics | – | Snoids & Simonds (4 th edition) John Willy Publication, New York |
| 5. Manual of Practical genetics | – | Singh, Chouhan and Katiyar, Kalyani Publisher |
| 6. Cytogenetical practices | – | Choubey and Bhardwaj, Kalyani Publisher |
| 7. Genetic | – | R.K. Gupta |



Course Title : GUBSCAG202T Agricultural Microbiology(Theory)

2(1+1)

Theory

Introduction. Microbial world: Prokaryotic and eukaryotic microbes. Bacteria: cell structure, chemoautotrophy, photo autotrophy, growth.

Bacterial genetics: Genetic recombination- transformation, conjugation and transduction, plasmids, transposon.

Role of microbes in soil fertility and crop production: Carbon, Nitrogen, Phosphorus and Sulphur cycles.

Biological nitrogen fixation- symbiotic, associative and asymbiotic. Azolla, blue green algae and mycorrhiza. Rhizosphere and phyllosphere.

Microbes in human welfare: silage production, biofertilizers, biopesticides, biofuel production and biodegradation of agro- waste.



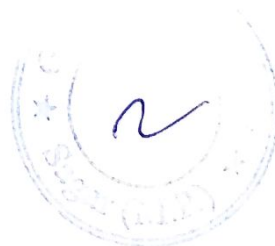
Course Title : GUBSCAG202P Agricultural Microbiology (Practical)

List of Practical's

1. Introduction to microbiology laboratory and its equipment's; Microscope- parts.
2. principles of microscopy, resolving power and numerical aperture.
3. Methods of sterilization. Nutritional media and their preparations.
4. Enumeration of microbial population in soil- bacteria, fungi, actinomycetes.
5. Methods of isolation and purification of microbial cultures.
6. Isolation of Rhizobium from legume root nodule.
7. Isolation of Azotobacter from soil.
8. Isolation of Azospirillum from roots.
9. Isolation of BGA.
10. Staining and microscopic examination of microbes.

References

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|--------------------------------------|---|--|
| 1. Agricultural Microbiology | – | Rangaswami and Bhagyaraj |
| 2. Soil Microbiology | – | N.S. Subbarao |
| 3. Agricultural Microbiology | – | N. Mukherjee and T. Ghosh |
| 4. Biofertilizers | – | L.L. Somani, S.C. Bhandari, S.N. Saxena |
| 5. Introduction to Soil Microbiology | – | M. Alexander |
| 6. An Introduction to Microbiology | – | P. Tauro, K.K. Kapoor and K.S. Yad |



Course Title : GUBSCAG203T Introductory Soil and Water Conservation Engineering

Theory

2(1+1)

Introduction to Soil and Water Conservation, causes of soil erosion. Definition and agents of soil erosion, water erosion: Forms of water erosion.

Gully classification and control measures. Soil loss estimation by universal Loss Soil Equation.

Soil loss measurement techniques. Principles of erosion control: Introduction to contouring, strip cropping.

Contour bund. Graded bund and bench terracing. Grassed water ways and their design. Water harvesting and its techniques.

Wind erosion: mechanics of wind erosion, types of soil movement. Principles of wind erosion control and its control measures.



Course Title : GUBSCAG203P Introductory Soil and Water Conservation Engineering

List of Practical's

1. General status of soil conservation in India.
2. Calculation of erosion index.
3. Estimation of soil loss
4. Measurement of soil loss.
5. Preparation of contour maps.
6. Design of grassed water ways.
7. Design of contour bunds.
8. Design of graded bunds.
9. Design of bench terracing system.
10. Problem on wind erosion.

References

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|---|---|------------------------------------|
| 1. Principles of Agricultural Engineering Vol. II | – | Dr. A.M. Michael and Dr. T.P. Ojha |
| 2. Irrigation – Theory and Practice | – | Dr. A.M. Michael |
| 3. Surveying and Leveling | – | B.C. Punamia |



Course Title : GUBSCAG 204T Fundamentals of Crop Physiology (Theory)
2(1+1)

Theory

Introduction to crop physiology and its importance in Agriculture; Plant cell: an Overview:
Diffusion and osmosis;

Absorption of water, transpiration and Stomatal Physiology; Mineral nutrition of Plants:
Functions and deficiency symptoms of nutrients, nutrient uptake mechanisms;

Photosynthesis: Light and Dark reactions, C₃, C₄ and CAM plants; Respiration: Glycolysis,
TCA cycle and electron transport chain;

Fat Metabolism: Fatty acid synthesis and Breakdown; Plant growth regulators: Physiological
roles and agricultural uses,

Physiological aspects of growth and development of major crops: Growth analysis, Role of
Physiological growth parameters in crop productivity.



Course Title : GUBSCAG 204P Fundamentals of Crop Physiology(Practical)

List of Practical's

1. Study of plant cells,
2. structure and distribution of stomata, imbibition, osmosis, plasmolysis.
3. measurement of root pressure, rate of transpiration,
4. Separation of photosynthetic pigments through paper chromatography.
5. photosynthesis.
6. Respiration.
7. tissue test for mineral nutrients,
8. estimation of relative water content,
9. Measurement of photosynthetic CO₂ assimilation by Infra Red Gas Analyser (IRGA).

References

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|---|--|
| 1. Plant Physiology | - R.M. Devlin and F.S. Witham (1986) |
| 2. Text Book of Plant Physiology | - C.P. Malik and A.K. Shrivastava |
| 3. Introductory Plant Physiology | - G. Ray Noggle and George, T. Fritz (1994) |
| 4. Crop Physiology | - U.S. Gupta |
| 5. Plant Physiology | - Frank, B. Salisbury & Cleon W. Ross (1995) |
| 6. Test Book of Plant Physiology | - S. Mukherjee and A.K. Ghosh |
| 7. List of Practical Plant Physiology | - O.P. Sharma |
| 8. Plant Physiology | - C.P. Malik |
| 9. Plant Physiology | - S.C. Dutta |
| 10. Plant Physiology | - H.S. Shrivastava |
| 11. Plant Physiology | - R.G.S. Bid Well (1979) |
| 12. An introduction to crop physiology | - Milthorpe, F.L. and Moorley, J. |
| 13. Physiology of Crop Plants | - Gardner, T.P., Pearce, R.B. & Mitchell, R.L. |
| 14. Principles of Post Harvest Seed Physiology and Technology | - Maiti, R.K., N.C. Sarkar and V.P. Singh |
| 15. Techniques in Seed Science and Dadlani Technology | - P.K. Agrawal and M. |

Course Title : GUBSCAG 205T Fundamentals of Agricultural Economics**2 (2+0)****Theory**

Economics: Meaning, scope and subject matter, definitions, activities, approaches to economic analysis; micro and macro economics, positive and normative analysis. Nature of economic theory; rationality assumption, concept of equilibrium, economic laws as generalization of human behavior. Basic concepts: Goods and services, desire, want, demand, utility, cost and price, wealth, capital, income and welfare.

Agricultural economics: meaning, definition, characteristics of agriculture, importance and its role in economic development. Agricultural planning and development in the country. Demand: meaning, law of demand, demand schedule and demand curve, determinants, utility theory; law of diminishing marginal utility, equi-marginal utility principle. Consumer's equilibrium and derivation of demand curve, concept of consumer surplus.

Elasticity of demand: concept and measurement of price elasticity, income elasticity and cross elasticity. Production: process, creation of utility, factors of production, input output relationship. Laws of returns: Law of variable proportions and law of returns to scale. Cost: Cost concepts, short run and long run cost curves.

Supply: Stock v/s supply, law of supply, supply schedule, supply curve, determinants of supply, elasticity of supply. Market structure: meaning and types of market, basic features of perfectly competitive and imperfect markets. Price determination under perfect competition: short run and long run equilibrium of firm and industry, shut down and break even points. Distribution theory: meaning, factor market and pricing of factors of production. Concepts of rent, wage, interest and profit. National income: Meaning and importance, circular flow, concepts of national income accounting and approaches to measurement, difficulties in measurement.



Population: Importance, Malthusian and Optimum population theories, natural and socio-economic determinants, current policies and programmes on population control. Money: Barter system of exchange and its problems, evolution, meaning and functions of money. Classification of money, money supply, general price index, inflation and deflation. Banking: Role in modern economy, types of banks, functions of commercial and central bank, credit creation policy. Agricultural and public finance: meaning, micro v/s macro finance, need for agricultural finance, public revenue and public expenditure. Tax: meaning, direct and indirect taxes, agricultural taxation, VAT. Economic systems: Concepts of economy and its functions, important features of capitalistic, socialistic and mixed economies, elements of economic planning.

References

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|---|---|--|
| 1. Elements of Economic Theory | — | K.K. Dewett and J.P. Verma |
| 2. Indian Economy | — | S.K. Mishra and V.K. Puri, Himalayan Publication Pvt. Ltd., New Delhi |
| 3. Fundamentals of Agricultural Economics — | | K.N. Sandhu & Amarjeet Singh, Himalayan Publication Pvt.Ltd., New Delhi. |

Course Title :GUBSCAG 206T Fundamentals of Plant Pathology(Theory)

4(3+1)

Theory

Introduction: Importance of plant diseases, scope and objectives of Plant Pathology. History of Plant Pathology with special reference to Indian work. Terms and concepts in Plant Pathology.

Pathogenesis. Causes / factors affecting disease development: disease triangle and tetrahedron and classification of plant diseases. Important plant pathogenic organisms, different groups: fungi, bacteria, fastidious vesicular bacteria, phytoplasmas, spiroplasmas, viruses, viroids, algae, protozoa,

phanerogamic parasites and nematodes with examples of diseases caused by them. Diseases and symptoms due to abiotic causes.

Fungi: general characters, definition of fungus, somatic structures, types of fungal thalli, fungal tissues, modifications of thallus, reproduction (asexual and sexual).

Nomenclature, Binomial system of nomenclature, rules of nomenclature, classification of fungi. Key to divisions, sub-divisions, orders and classes.

Bacteria and mollicutes: general morphological characters. Basic methods of classification and reproduction.

Viruses: nature, structure, replication and transmission. Study of phanerogamic plant parasites.

Nematodes: General morphology and reproduction, classification, symptoms and nature of damage caused by plant nematodes (Heterodera, Meloidogyne, Anguina, Radopholus etc.)

Growth and reproduction of plant pathogens. Liberation / dispersal and survival of plant pathogens. Types of parasitism and variability in plant pathogens. Pathogenesis. Role of enzymes, toxins and growth regulators in disease development. Defense mechanism in plants.

Epidemiology: Factors affecting disease development. Principles and methods of plant disease management. Nature,

chemical combination, classification, mode of action and formulations of fungicides and antibiotics.

Course Title :GUBSCAG 206P Fundamentals of Plant Pathology (Practical)

List of Practical's

1. Acquaintance with various laboratory equipments and microscopy.
2. Collection and preservation of disease specimen.
3. Preparation of media, isolation and Koch's postulates.
4. General study of different structures of fungi.
5. Study of symptoms of various plant diseases.
6. Study of representative fungal genera.
7. Staining and identification of plant pathogenic bacteria. Transmission of plant viruses.
8. Study of phanerogamic plant parasites.
9. Study of morphological features and identification of plant parasitic nematodes.
10. Sampling and extraction of nematodes from soil and plant material,
11. Preparation of nematode mounting.
12. Study of fungicides and their formulations.
13. Methods of pesticide application and their safe use.
14. Calculation of fungicide sprays concentration

References

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|--|---|---------------------|
| 1. Introduction to Principles of Plant Pathology | - | R.S. Singh |
| 2. Plant Pathology | - | E.N. Agrios |
| 3. Plant Pathology | - | R.S. Mehrotra |
| 4. A text book of modern Plant Pathology | - | Bilgramie and Dubey |
| 5. Essentials of Plant Pathology | - | V.N Pathak |
| 6. Introductory Plant Pathology | - | M.N. Kamath |
| 7. Plant Diseases | - | P.D. Sharma |
| 8. Fungicides in Plant Disease Control Thapaliyal | - | Y.L. Nene and P.N. |

Bombycidae; Coleoptera: Coccinellidae, Chrysomelidae, Cerambycidae, Curculionidae, Bruchidae, Scarabaeidae;

Hymenoptera: Tenthredinidae, Apidae, Trichogrammatidae, Ichneumonidae, Braconidae, Chalcididae; Diptera: Cecidomyiidae, Tachinidae, Agromyziidae, Culicidae, Muscidae, Tephritidae.

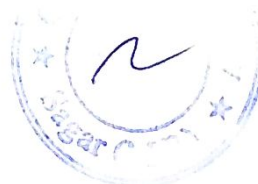
Course Title : GUBSCAG 207P Fundamentals of Entomology(Practical)

List of Practical's

1. Methods of collection and preservation of insects including immature stages;
2. External features of Grasshopper/Blister beetle
3. Types of insect antennae, mouthparts and legs;
4. Wing venation, types of wings and wing coupling apparatus.
5. Types of insect larvae and pupae;
6. Dissection of digestive system in insects (Grasshopper);
7. Dissection of male and female reproductive systems in insects (Grasshopper);
8. Study of characters of orders Orthoptera, Dictyoptera, Odonata, Isoptera, Thysanoptera, Hemiptera, Lepidoptera, Neuroptera, Coleoptera, Hymenoptera, Diptera and their families of agricultural importance.
9. Insecticides and their formulations.
10. Pesticide appliances and their maintenance.
11. Sampling techniques for estimation of insect population and damage.

References

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|--|---|----------------------------------|
| 1. Plant Protection Techniques | – | P.B. Chatterjee |
| 2. Text Book of Agricultural Entomology | – | H.S. Pruthi |
| 3. General and Applied Entomology | – | K.K. Nayar, T.N. |
| 4. Text book of Entomology | – | Pruthi, H.S. |
| 5. Economic and Applied Entomology | – | Ashok Kumar and Prem Mohan Nigam |
| 6. A Test book of Applied Entomology (Vol. II) | – | K.P. Shrivastava |



**Course Title : GUBSCAG 208T Fundamentals of Agricultural Extension
Education (Theory) 3(2+1)**

Theory

Education: Meaning, definition & Types; Extension Education- meaning, definition, scope and process; objectives and principles of Extension Education; Extension Programme planning- Meaning, Process, Principles and Steps in Programme Development.

Extension systems in India: extension efforts in pre-independence era (Sriniketan, Marthandam, Firka Development Scheme, Gurgaon Experiment, etc.) and post-independence era (Etawah Pilot Project, Nilokheri Experiment, etc.);

various extension/ agriculture development Programmes launched by ICAR/ Govt. of India (IADP, IAAP, HYVP, KVK, IVLP, ORP, ND, NATP, NAIP, etc.).

New trends in agriculture extension: privatization extension, cyber extension/ e- extension, market-led extension, farmer-led extension, expert systems, etc.

Rural Development: concept, meaning, definition; various rural development Programmes launched by Govt. of India.

Community Dev.-meaning, definition, concept & principles, Philosophy of C.D. Rural Leadership: concept and definition, types of leaders in rural context; extension administration: meaning and concept, principles and functions. Monitoring and evaluation: concept and definition, monitoring and evaluation of extension programmes; transfer of technology: concept and models, capacity building of extension personnel; extension teaching methods: meaning, classification, individual, group and mass contact



Course Title : GUBSCAG 208P Fundamentals of Agricultural Extension Education (Practical)

List of Practical's

1. To get acquainted with university extension system.
2. Group discussion- exercise; handling and use of audio visual equipment's and digital camera and LCD projector; preparation and use of AV aids.
3. Preparation of extension literature – leaflet, booklet, folder, pamphlet news stories and success stories;
4. Presentation skills exercise; micro teaching exercise;
5. A visit to village to understand the problems being encountered by the villagers/ farmers;
To study organization and functioning of DRDA and other development departments at district level; visit to NGO and learning from their experience in rural development; understanding PRA techniques and their application in village development planning; exposure to mass media;
6. visit to community radio and television studio for understanding the process of programme production; script writing, writing for print and electronic media. developing script for radio and television.

References

1. Extension Education in Community Ministry of Agriculture, Govt. of India – Directorate of Extension, Development
2. Education and Communication for Development – Dhama, O.P. and Bhatnagar, O.P., Oxford and IBH Publicity Co. New Delhi
3. An Introductory of Agricultural Extension – Mosher, A.T.
4. Extension Communication and Management – Ray G.L., Naya Prakashan 206 Bidhan Sarani, Calcutta-6
5. Rural Development – Principles, Policies and Management – Singh, Katar, Sage Publications, New Delhi
6. Dimensions of Agriculture Extension – Singh, A.K. and K. Roy Burman, Aman Publication, Merut
7. Text Book of Extension Education – Singh, Ranjeet, Oxford & IBH
8. Extension Education – Reddy, A.V.V., Laxmi Press, Bapala (AP)
9. An Introductory to Extension Education – Supe, S.V., Oxford & IBC Published Co. New Delhi



**Course Title: GUBSCAG 209T Communication skills and Personality
Development (Theory) 2(1+1)**

Theory

Communication Skills: Structural and functional grammar; meaning and process of communication,

verbal and nonverbal communication; listening and note taking, writing skills, oral presentation skills;

field diary and lab record; indexing, footnote and bibliographic procedures.

Reading and comprehension of general and technical articles, precise writing, summarizing, abstracting;

Individual and group presentations, impromptu presentation, public speaking: Group discussion. Organizing seminars and conferences.



Course Title: GUBSCAG 209P Communication skills and Personality Development (Practical)

List of Practical's

1. Listening and note taking, writing skills, oral presentation skills;
2. Field diary and lab record; indexing, footnote and bibliographic procedures.
3. Reading and comprehension of general and technical articles,
4. Precise writing, summarizing, abstracting; individual and group presentations.
5. Methods, ICT Applications in TOT (New and Social Media), media mix strategies; communication: meaning and definition;
6. Principles and Functions of Communication, models and barriers to communication.
7. Agriculture journalism; diffusion and adoption of innovation: concept and meaning, process and stages of adoption, adopter categories.

References

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|---|---|---------------------------|
| 1. English Language and Indian Culture | – | Tribhuwan Nath Shukla |
| 2. English Conversation Practice | – | Grant Taylor |
| 3. A Course in Phonetics and Spoken English | – | J. Sethi and P.V. Dhamija |
| 4. Objective English | – | Hari Mohan Prasad |
| 5. High School English Grammar | – | Wren and Martinin |

