



M.Sc. (Agri.) Agricultural Extension
Teaching Scheme & Curriculum
Semester 1

Subjects				Contact Hours/Week			Theory Marks		Practical/Viva Marks		Total Marks
Sr.	Name	Type	Credit	Lect	Tut	Lab	T	T	P	P	
1	Extension Landscape	Major	2	2	-	0	50	50	-	-	100
2	Applied Behaviour Change	Major	3	2	-	2	50	50	-	-	100
3	Organisational Behaviour and Development	Major	3	2	-	2	50	50	-	-	100
4	Research Methodology in Extension	Major	3	2	-	2	50	50	-	-	100
5	Managing Extension Organisations	Minor	3	2	-	2	50	50	-	-	100
6	Computer Applications for Agricultural Extension Research	Supporting	3	2	-	2	50	50	-	-	100
7	Library and Information Services	Non-Gradual	1	0	-	2	-	-	-	100	100
8	Basic Concepts in Laboratory Techniques	Non-Gradual	1	0	-	2	-	-	-	100	100
Total			19	12		14					800

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical

Theory Passing % : 60 Practical Passing % : 60



Prerequisite	Basic understanding of agricultural extension, rural development, and communication systems.
Rationale	The course provides comprehensive knowledge of the changing extension landscape, including pluralistic extension systems, institutional arrangements, policy environments, and emerging approaches in agricultural and rural development.
Course Title	Extension Landscape
Credits	2 (2+0)
Objectives of the course	1. To understand the evolution, structure, and dynamics of extension systems in national and global contexts. 2. To analyse the roles of public, private, non-governmental, and community-based organizations in extension services. 3. To examine emerging trends, challenges, and opportunities in the extension landscape. 4. To develop competencies in designing collaborative and inclusive extension approaches for sustainable development.
Syllabus	
Theory	UNIT I Extension and Advisory Services (EAS)- Meaning (embracing pluralism and new functions) New Challenges before farmers and extension professionals: Natural Resource Management-Supporting farmers to manage the declining/deteriorating water and soil for farming; Gender Mainstreaming-How extension can enhance access to new knowledge among women farmers; Nutrition- Role of extension in supporting communities with growing nutritious crop and eating healthy food; Linking farmers to markets-Value chain extension including organizing farmers, strengthen value chain and supporting farmers to respond to new standards and regulations in agri-food systems; Adaptation to climate changes-How extension can contribute to up-scaling Climate Smart Agriculture; Supporting family farms-strengthening the capacities of family farms; Migration-Advising farmers to better respond to opportunities that emerge from increasing mobility and also supporting migrants in enhancing their knowledge and skills; Attracting and Retaining Youth in Agriculture including promotion of agri-preneurship and agri-tourism; Urban and peri-urban farming- How to support and address issues associated with urban and peri-urban agriculture; Farmer distress, suicides- Supporting farmers in tackling farm distress. UNIT II Beyond transfer of technology: Performing new functions to deal with new challenges; Organizing producers into groups-dealing with problems that need collective decision making such as Natural Resource Management (NRM) and access to markets; Mediating conflicts and building consensus to strengthen collective decision making; Facilitating access to credit, inputs and services-including development of service providers; Influencing policies to promote new knowledge at a scale Networking and partnership development including convening multi-stakeholder platforms/ innovation platforms. New Capacities needed by extension and advisory services at different levels –at



the individual (lower, middle management and senior management levels), organizational and enabling environment levels; –Core competencies at the individual level; Varied mechanisms for capacity development (beyond training).

UNIT III

Pluralism in Extension Delivery: Role of private sector (input firms, agri-business companies, consultant firms and individual consultants)- Trends in the development of private extension and advisory services in India and other countries; challenges faced by private extension providers; Role of Non-Governmental Organizations (National/international)/ Civil Society Organizations (CSOs) in providing extension- Experiences from India and other countries; Producer Organizations- Role in strengthening demand and supply of extension services; their strength and Social Sciences: Agricultural Extension Education weaknesses-experiences from different sectors; Role of Media and ICT advisory service providers; global experiences with use of media and ICTs in advisory services provision.

UNIT IV

Diffusion of Innovations paradigm- strengths and limitations; multiple sources of innovation-farmer innovation, institutional innovation; farmer participation in technology generation and promotion; strength and limitations; Agricultural Knowledge and Information Systems (AKIS); strength and limitations; Agricultural Innovation Systems (AIS); Redefining Innovation- Role of extension and Advisory Services in AIS-From information delivery to intermediation across multiple nodes; Role of brokering; Innovation Platforms, Innovation Management; Strength and weaknesses of AIS. Rethinking Communication in the Innovation Process – Network building, support social learning, dealing with dynamics of power and conflict.

UNIT V

Evolution and features of extension approaches: Transfer of technology approach; educational approach, farmer participatory extension approach, demand-driven extension, market led extension (value chain extension), extension for climate smart agriculture, gender sensitive extension, extension for entrepreneurship Extension systems in different regions: Asia-Pacific, Europe, Latin America, Australia, North America Networking for Strengthening EAS: GFRAS (Global Forum for Rural Advisory Services) and its regional networks.

UNIT VI

Reduction in public funding: public withdrawal from extension provision (partial/ full); Examples/Cases; Privatization: Public funding and private delivery; cost sharing and cost recovery; Examples/Cases; Decentralization of extension services; examples/ Cases; Lessons from extension reforms in different countries; Extension and Sustainable Development Goals (SDGs).

UNIT VII

Pluralism: Managing pluralism and Co-ordination of pluralistic extension provision; Public private partnerships in extension (including the role of local



	governments/ panchayats and producer organizations); examples, challenges in co-ordination; Achieving convergence in extension planning and delivery, Financing extension Mobilizing resources for extension: public investments, donor support (grants/loans); Monitoring and Evaluation of extension: Generating appropriate data for Assessment and Evaluation of pluralistic extension; Strengthening extension policy interface; generating evidence on impact of extension and policy relevant communication.
Course Outcomes	CO1: Explain the concepts, evolution, and components of contemporary extension systems. CO2: Analyse the functions and interactions of different stakeholders within the extension landscape. CO3: Assess emerging issues, innovations, and policy influences affecting extension services. CO4: Design inclusive and participatory extension strategies for addressing agricultural and rural development challenges.
Suggested Readings	➤ Adolph B. 2011. Rural Advisory Services Worldwide: A Synthesis of Actors and Issues. ➤ Ashok G, Sharma P, Anisha S and Prerna T. 2018. Agriculture Extension System in India ➤ Saravanan R, Sulaiman RV, Davis K and Suchiradipta B. 2015. Navigating ICTs for Extension and Advisory Services. Note 11. GFRAS Good Practice Notes for Extension and Advisory Services. ➤ Swanson BE. 2008. Global Review of Good Agricultural Extension and Advisory Service Practices. Food and Agriculture Organization of the United Nations. Rome. FAOpdf ➤ Terblanche S and H Ngwenya. 2017. Professionalisation of Rural Advisory Services. Note 27.
Suggested Website	➤ AESA- Agricultural Extension in South Asia http://www.aesanetwork.org ➤ FAO- Food and Agricultural Organisation (Research and Extension) http://www.fao.org ➤ GFRAS- Global Forum for Rural Advisory Services http://www.g-fras.org/en ➤ INGENEAS- Integrating Gender and Nutrition within Agricultural Extension Services https://ingenaes.illinois.edu/ ➤ IFPRI- International Food Policy Research Institute (Extension) http://www.ifpri.org/topic ➤ KIT- Royal Tropical Institute (KIT)- Sustainable Economic Development https://www.kit.nl/sed/ ➤ WUR- Wageningen University and Research (Knowledge, Technology and Innovation Group (KTI)) https://www.wur.nl/en



Prerequisite	Basic understanding of social science concepts, human behavior, communication, and extension or development processes.
Rationale	The course equips students with theoretical and practical knowledge of behavior change approaches for addressing social, health, environmental, and developmental issues at individual and community levels.
Course Title	Applied Behaviour Change
Credits	2 (2+1)
Objectives of the course	1. To develop understanding of theories and models related to behavior change. 2. To enhance skills in designing and implementing behavior change interventions in diverse social settings. 3. To analyze factors influencing human behavior and decision-making processes. 4. To build competencies in evaluating the effectiveness of behavior change communication and intervention strategies.
Syllabus	
Theory	Unit 1 Foundations of Human Behaviour Human behaviour – Meaning, importance and factors influencing human behaviour; Biological bases of human behaviour – Nervous system, brain, endocrine system and genes; Individual variations – intelligence, ability and creativity– foundations and theories, personality and temperament - foundations, approaches, theories of personality, measuring personality (traits, locus of control, self-efficacy; Personal, social and moral development – meaning, concepts – self-concept, self-esteem and self-worth and theories. Motivation – foundations, approaches, theories, managing human needs and motivations; perceiving others – impression, attitude, opinions; Emotions - foundations, types and functions, measuring emotional intelligence. Unit 2 Cognitive Processes affecting Human Behaviour Sensory organs and their role cognition; Cognitive processes – Attention, perception, remembering and forgetting, knowledge and expertise – foundations and theories; Principles and processes of perception; Consciousness – meaning, types, sleep and dreams; Learning and Memory – Memory - meaning, types and mechanisms of storage and retrieval of memories in the Human brain; Complex cognitive processes- Concept formation, Thinking, Problem solving and transfer – foundations, theories and approaches. Unit 3 Information Processing Information processing – meaning, principles; Models of information processing Waugh and Norman model of primary and secondary memory; Atkinson and Shiffrin's stage model of memory; other models including blooms taxonomy and Sternberg's Information Processing Approach; Attention and perception – meaning, types, theories and models; Consciousness.



	Unit 3 Learning Learning – foundations, approaches and theories; Cognitive approaches of learning– meaning, principles theories and models; Memory – foundations, types; Behavioural approaches of learning – foundations and theories - classical conditioning, operant conditioning, applied behaviour analysis; Social cognitive and constructivist approaches to learning – foundations and theories – social cognitive theory, Self regulated learning; learning styles – meaning, types and applications in learning. Unit 4 Human judgement – meaning, nature, randomness of situations, theories and models; Choice – meaning, criteria for evaluating options; theories and models of human choice; Choice architecture; Decision-making – Meaning, problem analysis; steps and techniques of decision-making under different contexts. Unit 5 Attitudes and Influence Attitudes - meaning, assumptions, types, theories and models of attitude formation; methods of changing attitudes, Relating to others - liking, attraction, helping behaviour, prejudice, discrimination and aggression; Liking/ affect – meaning, types and theories; Attraction – meaning, types and theories; Persuasion – meaning, theories and techniques; Social influence and groups – conformity, compliance and obedience. Unit 6 Social Judgement, Social Identity and Inter-Group Relations Social judgement – meaning, frame of reference, stereotyping; The judgement of attitude models; Attribution – meaning, theories; Rational decision making; Social identify – meaning, types; assessment; Groups – meaning, types, group processes; sustainability of groups; Inter group processes and theories social learning
Practical	➤ Understanding perception – Attentional Blink and Repetition Blindness exercise ➤ Understanding attention - Testing selective attention capacity and skills and processing speed ability through Stroop test ➤ Hands-on experience in the techniques for assessing creative thinking – divergent and convergent thinking ➤ Lab exercise in applying Maslow’s need hierarchy to assess motivation ➤ Learning - Classical conditioning and operant conditioning ➤ Assessing learning styles through Barsch and Kolb inventories ➤ Practical experience in building self-esteem ➤ Assessment of emotional intelligence ➤ Exercises in problem solving ➤ Exercises in visual perception ➤ Measuring self-concept using psychometric tools ➤ Experiment on factors influencing information processing



	➤ Assessment of attitudes ➤ Hands on experience in methods of persuasion ➤ Field experience in assessing social judgement ➤ Simulation exercise to understand decision-making under different situations ➤ Exercise in rational decision-making.
Course Outcomes	CO1- Explain major theories, models, and principles of applied behavior change. CO2- Identify social, psychological, cultural, and environmental factors influencing human behavior. CO3- Design appropriate behavior change interventions and communication strategies for developmental issues. CO4- Evaluate the impact and effectiveness of behavior change programs using suitable assessment methods.
Suggested Readings	1. Eiser J, Richard. 2011. Social Psychology: Attitudes, Cognition and Social Behaviour. Cambridge: Cambridge University Press.(First Edition, 1986)) Eysenck MW and Keane M T. 2010. 2. Cognitive psychology: A student's handbook. Sixth Edition, Hove: Psychology Press. Feldman RS. 2008. Essentials of understanding psychology (7th ed.). Boston: McGraw-Hill. Gilovich T, Keltner D, and Nisbett RE. 2011. 3. Social psychology. New York: W.W. Norton & Co. Moreno R. 2010. Educational Psychology. Hoboken, NJ: John Wiley & Sons Inc. Nevid JS. 2012. 4. Essentials of psychology: Concepts and applications Belmont, CA: Wadsworth, Cengage Learning. Rachlin H. 1989. Judgment, decision, and choice: A cognitive/behavioral synthesis. New York: W.H. Freeman.



Prerequisite	Basic understanding of management principles, human behavior, communication, and organizational systems.
Rationale	The course provides advanced knowledge of individual and group behavior within organizations and develops competencies in organizational development strategies for improving effectiveness, productivity, and workplace relationships.
Course Title	Organisational Behavior and Development
Credits	3 (2+1)
Objectives of the course	1. To understand theories and concepts related to organizational behaviour and development. 2. To analyse individual, group, and organizational dynamics influencing workplace performance. 3. To develop skills in leadership, motivation, team building, conflict management, and organizational change. 4. To enhance competencies in designing organizational development interventions for improving organizational effectiveness.
Syllabus	
Theory	Unit 1 Basics of Organization Introduction to organizations-concept and characteristics of organizations; Typology of organizations; Theories of organizations: nature of organizational theory, Classical theories, Modern management theories, System Theory - Criticisms and lessons learnt/analysis. Unit 2 Basics of Organizational Behaviour Concepts of Organisational Behaviour, Scope, Importance, Models of OB. Unit 3 Individual Behaviour in Organizations Introduction, Self-awareness, Perception and Attribution, Learning, Systems approach to studying organization needs and motives – attitude, values and ethical behavior, Personality, Motivation-Concept & Theories, Managing motivation in organizations. Unit 4 Group Behaviour in Organization Foundations of group, group behaviour and group dynamics, Group Development and Cohesiveness, Group Performance and Decision Making, Intergroup Relations; Teams in Organizations-Team building experiential exercises, Interpersonal Communication and Group; Leadership: Meaning, types, Theories and Perspectives on Effective Leadership, Power and Influence, managing Conflict and Negotiation skills, Job/ stress management, decision-making, problem-solving techniques. Unit 5 Productive Behaviour and Occupational Stress Productive behaviour - Meaning, dimension; Job analysis and Job performance meaning, dimensions, determinants and measurement; Job satisfaction and



	organizational commitment - meaning, dimensions and measures roles and role clarity; Occupational stress – meaning, sources, theories and models, effects, coping mechanism, effects and management; Occupational stress in farming, farmer groups/ organizations, research and extension organizations. Unit 6 Organizational System Organizations Structure- Need and Types, Line & staff, functional, committee, project structure organizations, centralization & decentralization, Different stages of growth and designing the organizational structure; Organizational Design Parameters of Organizational Design, Organization and Environment, Organizational Strategy, Organization and Technology, Power and Conflicts in Organizations, Organizational Decision-Making; Organizational Culture vs Climate; Organizational Change; Organizational Learning and Transformation. Unit 7 Overview of Organizational Development Concept of OD, Importance and Characteristics, Objectives of OD, History and Evolution of OD, Implications of OD Values. Unit 8 Managing the Organizational Development Process Basic Component of OD Program-Diagnosis-contracting and diagnosing the problem, Diagnostic models, open systems, individual level group level and organizational level diagnosis; Action-collection and analysis for diagnostic information, feeding back the diagnosed information and interventions; Program Management- entering OD relationship, contracting, diagnosis, feedback, planned change, intervention, evaluation. Unit 9 Organizational Development Interventions Meaning, Importance, Characteristics of Organization development Interventions, Classification of OD Interventions-Interpersonal interventions, Team Interventions, Structural Interventions, Comprehensive Interventions. Unit 10 Organizational Development Practitioner or Consultant Who is OD consultant? Types of OD consultants and their advantages, qualifications, Comparison of traditional consultants Vs. OD consultants, Organizational Development process by the practitioners skills and activities.
Practical	➤ Case Analysis of organization in terms of process – attitudes and values, motivation, leadership. ➤ Simulation exercises on problem-solving – study of organizational climate in different organizations. ➤ Study of organizational structure of development departments, study of departmentalization, span of control, delegation of authority, decision-making patterns. ➤ Study of individual and group behaviour at work in an organization.



	➤ Conflicts and their management in an organization. ➤ Comparative study of functional and nonfunctional organizations and drawing factors for organizational effectiveness. ➤ Exercise on OD interventions (Interpersonal, Team, Structural, Comprehensive) with its procedure to conduct in an organization
Course Outcomes	CO1: Explain major theories and concepts of organizational behavior and organizational development. CO2: Analyze the influence of individual and group behavior on organizational performance and culture. CO3: Apply leadership, communication, motivation, and conflict management strategies in organizational settings. CO4: Design and implement organizational development interventions for enhancing effectiveness and adaptability.
Suggested Readings	➤ Bhattacharyya DK. 2011. Organizational Change and Development, Oxford University Press. Hellriegel D, Slocum JW and Woodman. 2001. ➤ Organizational Behaviour. Cincinnati, Ohio: South-Western College Pub. Luthans F. 2002. Organizational Behaviour. Tata McGraw-Hill, New York Newstrom JW and Davis K. 2002. ➤ Organizational Behaviour: Human behaviour at Work. Tata McGraw Hill, New Delhi. Peter MS. 1998. ➤ The Fifth Discipline: The Art and Practice of Learning Organization. Random House, London. Pradip NK. 1992. ➤ Organizational Designs for Excellence. Tata McGraw Hill, New Delhi. Shukla, Madhukar. 1996. ➤ Understanding Organizations. Prentice Hall of India, New Delhi. Stephens PR and Timothy AJ. 2006. ➤ Organizational Behaviour, 12th Edition. Prentice Hall Pub. Thomas GC and Christopher GW. 2013. ➤ Organizational development and change, 10th edition, South-Western college publishing. Wendell LF and Cecil HB. 1999. ➤ Organizational Development: Behavioural science interventions for organization improvement, Pearson. 368 pp.



Prerequisite	Basic understanding of agricultural extension, social science research, and elementary statistics.
Rationale	The course equips students with theoretical and practical knowledge of research methods, tools, and techniques used in extension research for generating scientific evidence and addressing agricultural and rural development issues.
Course Title	Research Methodology in Extension
Credits	3 (2+1)
Objectives of the course	1. To understand the concepts, approaches, and types of research in extension education. 2. To develop competencies in formulating research problems, objectives, hypotheses, and research designs. 3. To enhance skills in sampling, data collection, analysis, and interpretation using appropriate research methods. 4. To strengthen abilities in scientific report writing and dissemination of research findings.
Syllabus	
Theory	UNIT I Nature of Behavioural Research: Methods of knowing; Science and scientific method; Behavioural research – Concept, aim, goals and objectives; Characteristics and Paradigms of research; Types of behavioural research based on applications, objectives and inquiry; Types of knowledge generated through research – historical, biological, theoretical and conceptual knowledge, prior research studies, reviews and academic debate; Role of behavioural research in extension; Careers in behavioural research. UNIT II The Behavioural Research Process: Basic steps in behavioural research – Formulating a Research Problem; Reviewing the Literature; Identifying the variables and hypotheses; Formulating research designs, methods and tools; Selecting sample; Collecting data; Analyzing and Interpreting the Data; Reporting and Evaluating Research; Skills needed to design and conduct research; Writing research proposals. UNIT III Formulating a Research Problem: The research problem and research topic - definitions; Importance of formulating a research problem; Sources of research problems; Characteristics of a good research problem; Research problems in quantitative and qualitative research; Steps in formulating a research problem; Strategies for writing research problem statement; Research purpose statement; Research questions – Types, Criteria for selecting research questions, techniques for narrowing a problem into a research question; Objectives - Meaning, types and criteria for judging the objectives. UNIT IV Reviewing the Literature: Review-meaning and importance; Types of literature review – Context, Historical, Integrative, methodological, self-



study and theoretical; Literature review for quantitative and qualitative studies; Steps in conducting literature review – Identify key terms, locate literature, critical evaluation and selection; organising literature.

UNIT V

Identifying Variables and Hypotheses: Developing theoretical, conceptual, empirical frameworks; Approaches for identifying concepts, constructs and variables; Role of theory in behavioural research; Steps in identifying variables – Domain, Concepts, Constructs, Dimensions; Indicators; Variables, Definitions, premises, propositions and hypotheses; Techniques of identifying concepts, constructs and variables - Types of concepts; Types of variables—causal relationship, the study design; and the unit of measurement; Types of definitions-Types of propositions and hypotheses. Characteristics of good hypotheses; Measurement – Meaning, levels of measurement – nominal, ordinal, interval and ratio; Criteria for choosing measurement levels for variables.

UNIT VI

Formulating Research Designs, Methods and Tools: Research designs – Definition, purpose and functions; Research Design as Variance Control - MAXMINCON Principle; Criteria for selecting a suitable Research Design; Classification of research designs: Quantitative designs - experimental, descriptive, comparative, correlational, survey, ex-post-facto and secondary data analysis; Qualitative designs - ethnographic, grounded theory, phenomenological and Narrative research; Mixed method designs – Action research design; Translational research; Elements of research design - Research strategies, Extent of researcher interference, Study setting, Unit of analysis and Time horizon. Sources of errors while specifying research designs. Internal and external validity; Choosing right research design; Triangulation - Importance in behavioural research, Types of triangulations. Research methods: Designing research Instruments – questionnaires, interview schedules; tests – knowledge tests, behaviour performance tests; scales–scales and indexes, checklists, focus groups; Steps in developing and using research methods and tools; participatory rural appraisal.

UNIT VII

Sampling - population, element, sample, sampling unit, and subject; Sampling strategies for quantitative and qualitative research; Principles of sampling; Factors affecting the inferences drawn from a sample; Types of sampling, Methods of drawing a random sample, Sampling with or without replacement, Types of sampling- Probability Sampling - Simple random sampling, Cluster sampling, Systematic sampling, Stratified random sampling and Unequal probability Sampling; Non- probability Sampling - Reliance of available subjects, Purposive or judgmental sampling, accidental sampling, expert sampling, Snowball sampling, and Quota sampling; Sample size requirements for quantitative and qualitative studies. Methods for estimating sample size; Generalisation – Importance, Types of generalisations.



	UNIT VIII Collecting Data: The process of collecting data – Selection, training, supervision, and evaluation of field investigators; Online data collection; Errors and biases during data collection. Testing goodness of measures through item analysis - Reliability and validity; Types of validity – Content validity: Face and content validity, Criterion-related validity: concurrent and predictive validity, Construct validity: convergent, and discriminant validity, factorial validity, and nomological validity; Types of reliability– Test-Retest, Parallel forms, Inter-item consistency reliability, Split-half reliability. Factors affecting the validity and reliability of research instruments, Strategies for enhancing validity and reliability of measures. Validity and reliability in qualitative research. UNIT IX Analyzing and Interpreting the Data: Data coding, exploration and editing; Methods of data processing in quantitative and qualitative studies; Quantitative data analysis - parametric and non-parametric statistical analyses; Parametric analysis – Descriptive and inferential statistics, Hypothesis testing - Type I and Type II errors. Concepts in hypothesis testing - Effect Size, α, $\hat{\alpha}$, and Power, P Value; Multivariate data analysis – regression, factor analysis, cluster analysis, logistic regression and structural equation modelling. Guidelines for choosing appropriate statistical analysis; Statistical packages for data analysis; Methods of interpreting data and drawing inferences - The Ladder of Inference; Methods of communicating and displaying analysed data. UNIT X Reporting and Evaluating Research: Writing reports and research publications; Evaluation Methodology
Practical	➤ Selecting a research problem and writing problem statement ➤ Narrowing down research problem to purpose, research questions and objectives ➤ Choosing, evaluating and reviewing research literature ➤ Selection of variables through construct conceptualization and defining variables ➤ Choosing research design based on research problem ➤ Choosing right sampling method and estimating sample size ➤ Developing research methods and tools – questionnaires, interview schedule, check lists and focus group guides ➤ Writing a research proposal ➤ Field data collection using research methods and tools ➤ Testing reliability and validity of research instruments ➤ Hands on experience in using SPSS for coding, data exploration, editing, analysis and interpretation Formulation of secondary tables based on objectives of research ➤ Writing report, writing of thesis and research articles ➤ Presentation of reports



Course Outcomes	CO1: Explain the principles, methods, and applications of research in extension education. CO2: Formulate research problems and design suitable research methodologies for extension studies. CO3: Apply appropriate tools and techniques for data collection, analysis, and interpretation. CO4: Prepare scientific research reports and communicate research findings effectively.
Suggested Readings	➤ Babbie E. 2008. The basics of social research. 4th ed. Belmont, CA, USA; Thompson Wordsworth. Creswell JW. 2009. Research design: Qualitative, quantitative, and mixed methods approaches. Third edition. Thousand Oaks: Sage Publications. ➤ Creswell JW. 2012. Educational research: Planning, conducting, and evaluating quantitative and qualitative research. Fourth edition. Boston, MA: Pearson. ➤ Kerlinger FN and Lee HB. 2000. Foundations of Behavioral Research. Orlando, FL: Harcourt College Publishers. ➤ Kumar R. 2014. Research Methodology: A Step- by- Step Guide for Beginners. Fourth. Edition. Thousand Oaks, California: Sage Publications. ➤ Malhotra NK. 2010. Marketing research: An applied orientation. Sixth Edition. Upper Saddle River, NJ: Prentice Hall. ➤ Neuman WL. 2006. Social Research Methods: Qualitative and Quantitative Approaches. Toronto: Pearson. ➤ Sekaran U and Bougie R. 2013. Research Methods for Business A Skill-Building Approach. 6th Edition, Wiley, New York.



Prerequisite	Basic understanding of agricultural extension, organizational behavior, management principles, and rural development systems.
Rationale	The course provides knowledge and managerial competencies required for planning, organizing, coordinating, and leading extension organizations effectively to enhance agricultural and rural development outcomes.
Course Title	Managing Extension Organizations
Credits	3 (2+1)
Objectives of the course	1. To understand the structure, functions, and management principles of extension organizations. 2. To develop skills in planning, leadership, coordination, and decision-making within extension systems. 3. To analyze human resource, financial, and communication management practices in extension organizations. 2. To enhance competencies in managing organizational change, performance, and innovation in extension services.
Syllabus	
Theory	UNIT I Management- An Over view: Management and importance; Extension management – Meaning, concept, nature and and importance; and theories of management. Management, administration and supervision - meaning, definition and scope; Approaches to management, Principles, functions and levels of management; Qualities and skills of a manager; Interpersonal relations in the organization; Reporting and budgeting UNIT II Extension Management in public, private sector and other sectors: Extension management (POSDCORB) in public sector, Department of Agriculture, Agricultural Technology Management Agency (ATMA), Krishi Vigyan Kendra (KVK), SAUs, ICAR Institutes, Private sector, Cooperatives, NGOs, FPOs etc. Organisational Structure, Relations between different units- Challenges in management. Decision making – Concept, Types of decisions, Styles and techniques of decision making, Steps in DM Process, Guidelines for making effective decisions; Human Resource Management: Manpower planning, Recruitment, Selection, Placement and Orientation, Training and Development; Dealing with fund and staff shortages in different extension organizations (KVK, ATMA etc.); Leadership – Concept, Characteristics, Functions, Approaches to leadership, Leadership styles; Authority and responsibility, Delegation and decentralization, line and staff relations; Challenges of co-ordination in extension organizations; Managing interdepartmental coordination and convergence between KVK, ATMA and line departments; Coordinating pluralism in extension services; Challenges in managing public-private partnerships (PPPs) at different levels in agricultural development in general and extension in particular; Performance appraisal – Meaning, Concept, Methods. UNIT III Motivation and Communication: Managing work motivation – Concept,



	Motivation and Performance, Approaches to motivation, team building; Organizational Communication – Concept, Process, Types, Networks, Barriers to Communication; Mentoring, Time management, Team work and team-building strategies; Modernization of information handling UNIT IV Supervision and Control: Supervision – Meaning, Responsibilities, Qualities and functions of supervision, Essentials of effective supervision; Managerial Control – Nature, Process, Types, Techniques of Control, Observation, PERT and CPM, Management Information Systems (MIS): Concept, tools and techniques, MIS in extension organizations.
Practical	➤ Simulated exercises on techniques of decision making ➤ Study the structure and function of agro-enterprises, Designing organizational structure/ organograms. ➤ Group activity on leadership development skills ➤ Simulated exercise to understand management processes ➤ Field visit to extension organizations (ATARI, KVKs, NGOs), FPOs, dairy cooperatives to understand the functions of management ➤ Practical exercises on PERT & CPM ➤ Group exercise on development of short term and long-term plans for agro- enterprises ➤ Developing model agriculture-based projects including feasibility study, financial planning and cost-benefit analysis
Course Outcomes	CO1: Explain the structure, functions, and management processes of extension organizations. CO2: Apply managerial principles and leadership skills for effective functioning of extension systems. CO3: Analyze organizational issues related to human resources, communication, finance, and coordination. CO4: Design strategies for improving organizational effectiveness, innovation, and service delivery in extension organizations.
Suggested Readings	➤ Chand S. 2017. Modern Management Theory: Quantitative, System and Contingency Approaches to Management. ➤ Daniel RG, James AFS, Freeman RE.2003. Management (6th Edition). Pearson India. Fahimifard S.M. and Kehkha A.A. 2009. Application of Project Scheduling in Agriculture (Case Study: Grape Garden Stabilization) American-Eurasian J. Agric. & Environ. Sci., 5 (3): 313-321, 2009 ➤ Gabathuler E, Bachmann F, Klay A. 2011. Reshaping Rural Extension Learning for Sustainability: An integrated and learning based advisory approach for rural extension with small scale farmers-Chapter 4. Margraf Publishesrs, Kanalstr. ➤ GFRAS 2017. Module 3: Agricultural Extension Programme Management, The New Extensionist Learning Kit, Global Forum for Rural Advisory Services (GFRAS) ➤ Gupta CB. 2001. Management Theory and Practice. Sultan Chand & Sons. New Delhi Hoffmann V, Gerster BM, Christnick A, Lemma M.



Prerequisite	Students should possess basic knowledge of computer operations, digital devices, and fundamental concepts of information technology. Familiarity with internet usage and office automation tools will support better understanding of management information systems and e-business applications.
Rationale	This course is designed to provide foundational and applied knowledge of computer systems, information technology, and management information systems relevant to modern organizations and agribusiness sectors. It enables students to understand the role of information systems in decision-making, business communication, and e-commerce environments. The course also introduces emerging technologies such as Artificial Intelligence, cloud computing, and cybersecurity issues to prepare learners for the digital transformation of business and agriculture.
Course Title	Computer Applications for Agri Business
Credits	3 (3+0)
Objectives of the course	1. To develop understanding of computer fundamentals, software systems, and operating environments. 2. To familiarize students with office automation tools, database management systems, and business applications of information technology. 3. To explain the role of internet technologies, e-commerce, cybersecurity, and ethical practices in organizations. 4. To introduce concepts and applications of Management Information Systems, Artificial Intelligence, and e-business in agribusiness management.
Syllabus	
Theory	Block 1: Basics Of Computers Unit I: Concept of Computers- Brief History of Computers, Generation and Its Evolution, Characteristics of Computers, Main Areas of Computers and their Applications; Classification of Computers, Input-Output Devices, Memory Types (Cache, RAM, ROM), Memory Units, Unit-II: System Software and Application Software, Open source software, introduction to computer languages, Introduction to Operating Systems – Functions, Features and Types., MS Windows and LINUX. Data Base Management System, MS Office (MS Word, MS Power Point, MS Excel, MS-Access and use of various management software Like SPSS, SAS etc. Block 2: Business Value Of Internet Unit III: The business value of internet, Intranet, extranet and Internet, Introduction to Web page design using HTML, Cloud Computing, Security and ethical challenges: Computer crime – Hacking, cyber theft, unauthorized use at work. Piracy – software and intellectual property. Health and Social Issues, Ergonomics and cyber terrorism. Block 3: Management Information System Unit IV: The concept of MIS–Definition, importance, Course Objective, prerequisites, advantages and challenges; Information Needs of



	organization, MIS and Decision – Making. Types/Classification of Information System for organizations; Introduction to Artificial Intelligence (AI), Neural Networks, Fuzzy logical control systems. Unit V: e-business/ e-commerce: e-business models, e-commerce processes, electronic paymentsystems, e-commerce trends with special reference to agri business. Applications of MIS in the areas of Human Resource Management, Financial Management, Production/Operations Management, Materials Management, Marketing Management.
Practical	-
Course Outcomes	CO1: Explain the fundamental concepts of computers, memory systems, input-output devices, and classifications of computer systems. CO2: Demonstrate the use of operating systems, office automation software, database management systems, and management software applications for business operations. CO3: Analyze the business applications of internet technologies, cloud computing, web design, cybersecurity, and ethical issues in information systems. CO4: Evaluate the role and applications of Management Information Systems, Artificial Intelligence, and e-business models in organizational and agribusiness decision-making processes.
Suggested Readings	1. Laudon KC and Laudon JP. 2016. <i>Management Information Systems- Managingthe digital Firm</i>, 14h Edition, Pearson India 2. Turban, Volonino, Woods. Wali OP. 2015. <i>Information Technology for Management, Advancing Sustainable, Profitable Business Growth</i>, Wiley 3. Jaiswal M and Mittal M. 2005. <i>Management Information System</i>, Oxford.



Prerequisite	Students should possess basic knowledge of academic communication, computer applications, and information technology. Familiarity with internet usage and fundamental research practices will help learners effectively utilize library and information resources for academic and research purposes.
Rationale	The course is designed to develop students' competencies in accessing, organizing, evaluating, and utilizing scientific and technical information effectively. It provides essential knowledge about library systems, information sources, citation practices, and digital information retrieval tools. The course also enhances research aptitude by introducing literature survey methods, bibliographic techniques, and e-resource access systems necessary for higher education and research activities.
Course Title	Library and Information Services
Credits	1 (0+1)
Objectives of the course	1. To familiarize students with the organization, functions, and services of academic and research libraries. 2. To develop the ability to identify and utilize various sources of scientific and technical information. 3. To impart skills in literature survey, citation techniques, bibliography preparation, and information retrieval. 4. To enhance competency in the use of digital library resources, online databases, internet search tools, and e-resource access methods.
Syllabus	
Theory	-
Practical	Introduction to library and its services; Role of libraries in education, research and technology transfer; Classification systems and organization of library; Sources of information- Primary Sources, Secondary Sources and Tertiary Sources; Intricacies of abstracting and indexing services (Science Citation Index, Biological Abstracts, Chemical Abstracts, CABI Abstracts, etc.); Tracing information from reference sources; Literature survey; Citation techniques/ Preparation of bibliography; Use of CD-ROM Databases, Online Public Access Catalogue and other computerized library services; Use of Internet including search engines and its resources; resources access methods.
Course Outcomes	CO1: Explain the role, organization, and services of libraries in education, research, and technology transfer. CO2: Classify and differentiate various sources of information, abstracting services, indexing systems, and reference resources used in academic research. CO3: Apply literature survey methods, citation techniques, and bibliography preparation skills for academic and research documentation. CO4: Demonstrate the use of digital library tools, online databases, internet search engines, OPAC systems, and e-resource access methods for efficient information retrieval.
Suggested Readings	-



Prerequisite	Students should possess basic knowledge of general science, laboratory practices, and elementary chemistry/biology concepts. Familiarity with fundamental laboratory instruments and safe handling of chemicals will support effective understanding of practical procedures and experimental techniques.
Rationale	This course is designed to develop essential laboratory competencies required in agricultural and biological sciences. It provides hands-on training in laboratory safety, preparation and handling of chemical solutions, sterilization techniques, and operation of scientific instruments. The course also enhances practical understanding of plant tissue culture, viability testing, and botanical description, thereby preparing students for advanced laboratory work, research activities, and field applications in agriculture and allied sciences.
Course Title	Basic Concepts in Laboratory Techniques
Credits	1 (0+1)
Objectives of the course	1. To develop awareness regarding laboratory safety measures and proper handling of chemicals, instruments, and glassware. 2. To impart practical skills in preparation, dilution, and application of chemical solutions, buffers, and agro-chemical doses. 3. To train students in the use, maintenance, and operation of common laboratory equipment and sterilization techniques. 4. To enhance practical knowledge in seed and pollen viability testing, tissue culture techniques, and botanical description of flowering plants.
Syllabus	
Theory	-
Practical	➤ Safety measures while in Lab; ➤ Handling of chemical substances; ➤ Use of burettes, pipettes, measuring cylinders, flasks, separatory funnel, condensers, micropipettes and vaccumets; ➤ Washing, drying and sterilization of glassware; ➤ Drying of solvents/ chemicals; Weighing and preparation of solutions of different strengths and their dilution; ➤ Handling techniques of solutions; Preparation of different agro-chemical doses in field and pot applications; ➤ Preparation of solutions of acids; Neutralisation of acid and bases; ➤ Preparation of buffers of different strengths and pH values; ➤ Use and handling of microscope, laminar flow, vacuum pumps, viscometer, thermometer, magnetic stirrer, micro-ovens, incubators, sandbath, waterbath, oilbath; ➤ Electric wiring and earthing; Preparation of media and methods of sterilization; Seed viability testing, testing of pollen viability; Tissue culture of crop plants; ➤ Description of flowering plants in botanical terms in relation to taxonomy.
Course	CO1: Explain laboratory safety measures, chemical handling



Outcomes	procedures, and methods of sterilization used in scientific laboratories. CO2: Demonstrate the preparation, dilution, neutralization, and handling of chemical solutions, buffers, and agro-chemical doses for laboratory and field applications. CO3: Apply operational techniques for laboratory instruments and equipment such as microscopes, laminar flow units, incubators, and measuring devices in experimental work. CO4: Analyze seed and pollen viability, perform basic tissue culture techniques, and classify flowering plants using standard botanical terminology related to taxonomy.
Suggested Readings	1. Furr AK. 2000. <i>CRC Hand Book of Laboratory Safety</i>. CRC Press. 2. Gabb MH and Latchem WE. 1968. <i>A Handbook of Laboratory Solutions</i>. Chemical Publ. Co.