VOL. 2

Azadi Ka Amrit Mahotsav

Agriculture and Allied Sciences

# Restructured and Revised Syllabi of Post-graduate Programmes

- Physical Sciences
- Biotechnology & Bioinformatics
- Social Sciences
- Statistical Sciences
- Basic Sciences

भाकृअनुप
ICAR

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Indian Council of Agricultural Research
New Delhi

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Restructured and Revised
Syllabi of Post-graduate Programmes

Vol. 2

# Social Sciences
## – Agricultural Extension Education

# Acknowledgements

Curriculum reform essentially means bringing about changes to the subject content, delivery, and assessment of a curriculum. In the field of agricultural extension, curriculum reforms are important for several reasons. Firstly, farmers face several new challenges related to changing climate, uncertain markets and deteriorating and declining natural resource which sustain agriculture. These challenges mean that extension today needs to tackle an increased diversity of objectives that not only include but also go beyond transfer of new technology and increasing production. While some of these roles still continue to be important, extension services are required to play an increasingly important intermediation and facilitation role to support application of new knowledge.

Agriculture extension is no longer only a public sector phenomenon. It now involves a more complex range of actors providing a wide range of services, together bracketed as EAS. These include organizations in the private sector dealing with agriculture inputs, agribusiness, and financial services; non-governmental organizations (NGOs) (international as well as local); producer groups, cooperatives and associations; consultants (independent as well as associated with or employed by agri-business/ producer associations) and information and communication technology (ICT)-based services. The job market for extension professionals has thus changed and now demands quite different competencies than what the current curricula tries to provide.

Moreover, the theory and practice of extension has evolved considerably in the recent past based on new research in the area of diffusion, innovation and communication studies. These new insights are important tools in any effort to reinvent extension to meet the evolving needs of stakeholders in the Agricultural Innovation Systems (AIS).

The sub-committee on Agricultural Extension constituted by ICAR (under the ICAR Broad Subject Matter Area (BSMA) for Social Sciences) has kept above development in view while revising the PG and Ph.D. Curricula in Agricultural Extension. We also addressed the issue of repetitions of content at different levels and in this process, and considered the Fifth Dean Committee report and the earlier under-graduate curricula in extension. Moreover, student's prior knowledge is critical for learning any discipline and therefore identified first the core competencies that are required at the different levels and worked backwards based on the areas and organizing them into courses.

We are also recommending internship at the Master's level for 5 credits and Teaching Assistantship at the Ph.D. level for 5 credits. We believe this will help the students to have more relevant practical experience and this will boost their job prospects. The committee also discussed about the need for organizing exposure visit for PG/Ph.D. students to universities abroad (student exchange).

We have organized the curricula under different block and units and each course has an introduction explicitly stating the purpose of this course (why this course?), aim of the course (what it tries to provide?) and learning outcomes. Several new and relevant references including appropriate web links to different resources are also provided at the end of each course. The committee strongly proposes training programmes in collaboration with the

concerned organizations for the teachers of Agrl Extension of all SAUs to gear them up for dealing the new revised courses effectively.

The report is based on several rounds of stakeholders meeting and consultation with extension professionals representing different universities, ICAR institutions, NGOs etc. involved in teaching and training in extension . The first such workshop was at Hyderabad on 12 July 2018. Our sincere thanks to Dr R.K. Samantha, Former VC, BCKV, Mohanpur, West Bengal; Dr Raji Reddy, Director of Extension, PJTSAU, Hyderbabad; Dr Biswanath Sadangi, Former Head, ICAR-CIWA, Bhubaneswar; Dr Mahesh Chander, Head, Division of Extension Education, ICAR-IVRI, Izatnagar; Dr Debabrata Basu, Porfessor and HoD, BCKV, Nadia; Dr R.N. Padaria, Principal Scientist (Extension) IARI, New Delhi; Dr K. Ponnusamy, Principal Scientist, NDRI, Karnal; Dr Sreenath Dixit, Head, ICRISAT; Dr Basavaprabhu Jirli, Professor (Extension), I.A.S, BHU, Varanasi; Dr D. Sandhya Shenoy, Principal Scientist (Extension), ICAR-NAARM, Hyderbabad; Dr Bharat S. Sontaki, Principal Scientist, ICAR-NAARM, Hyderbabad; Dr Rasheed Sulaiman, Director, CRISP, Hyderbabad; Dr Sarvanan Raj, Director (Agriculture Extension), MANAGE, Hyderbabad; Dr P.V.K. Sasidhar, Professor and Director, SOEDS, IGNOU, New Delhi; Dr P. Amala Kumari, Professor (Retd.), College of Home Science, Hyderbabad; Dr Srinivas Surisetti, Professor, TISS, Hyderbabad; Dr V. Sudha Rani, Professor and Head, Dr G. Samuel, Professor, Dr A. Sailaja, Professor, Dr M. Sreenivasulu, Professor, Ms Aruna, Assistant Professor from the Department of Agricultural Extension, College of Agriculture, Hyderbabad; Prof. K. Madhu Babu, Director, Prof. B. Jamuna, Prof. S. Chandra Shekar, Prof. R. Vasantha. Prof. M.Preethi, Prof. M. Prasuna, Extension Education Institute, Hyderbabad; Prof. Ch. Venugopal Reddy, PAIO; Dr V. Ravinder Naik, Senior Scientist, Agricultural Information and Communication Centre, PJTSAU, Hyderbabad; Dr P. Prashanth, Scientist, Electronic wing, PJTSAU, Hyderbabad; Dr B. Savitha, Assistant Director of Extension, PJTSAU, Hyderbabad; Dr P. Archana, Scientist (ToT), DAATTC, Mahboobnagar, Dr K. Madan Mohan Reddy, Scientist (ToT), DAATTC, Karimnagar, Dr R. Vishwatej, S.M.S (Agriculture Extension), KVK, Bhadradri, Kothagudem for their valuable inputs which paved way for right direction to identify the lacunae in the existing curricula and to prepare the revised curricula.

The committee also interacted closely with the Sub-Committee constituted by the National Institute of Agricultural Extension Management (MANAGE) for development of Extension curricula and this joint effort of two committees represents a much wider number of extension professionals.

Our special thanks to Ms V. Usha Rani, IAS, Director General, MANAGE and all the sub-committee members of MANAGE Sub-Committte on Extension Curricula Reforms (Dr Saravanan Raj, MANAGE, Dr Rasheed Sulaiman, CRISP-AESA, Dr P.S. Sivakumar, ICAR-CTCRI, Dr Mahesh Chander, ICAR-IVRI, Dr M. Chandragowda, ICAR-ATARI, Dr M.A. Ansari, GBPUAT, Dr P.V.K. Sasidhar, IGNOU, Dr P.S. Ananthan, ICAR-CIFE, Dr Ritu Chakravarty, ICAR-NDRI, Dr Sagar Wadkar, VAMNICOM and Dr Souvik Ghosh, Visva Bharati University) for their specific contributions to development of this revised curricula. The two days joint consultation and brain storming on each of the courses, the two committees organized together at Hyderabad on 28-29 September 2018 helped us in development of this final output. Our special thanks to Dr Onima, V.T., Research Officer, Centre for Research on Innovation and Science Policy (CRISP) for supporting this exercise both intellectually and operationally.

The committee organized third BSMA (Social Sciences) meeting on 28-01-2019 at Institute of Agricultural Sciences, BHU, Varanasi for reviewing the final drafts of three

disciplines of social Sciences. Our sincere thanks to Dr Basavaprabhu Jirli, Professor and Head, Prof. A.K. Singh and Prof. Kalyan Ghadee from the Department of Extension Education, I.A.S, BHU, Varanasi for their critical comments and suggestions with regard to revised curricula.

The suggestions at National Core Group review on April 24, 2019 were valuable and incorporated in the report. The detailed insights and advice from Dr N.S. Rathore as Chairman of the Special Meeting of BSMA on May 10, 2019 were crucial in shaping of final report.

Our sincere gratitude and thanks to all the members of BSMA Committee for Social Sciences namely Dr Rakesh Singh, Professor, Dept. of Agricultural Economics, IAS, BHU, Varanasi, Dr S. Mahapatra, Professor and Head, Agri Business Management, OUAT, Bhubaneswar, and Dr Aditi Mathur, Professor, Institute of Agri Business Management, Swami Keshwanand Rajasthan Agricultural University, Bikaner for their continuous support, encouragement and suggestive nature throughout the journey of final draft preparation.

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Finally, we thank profusely Dr N.S. Rathore, Former Deputy Director General (Education), and Dr R.C. Agrawal, Current Deputy Director General (Education) ICAR, New Delhi for constituting the BSMA for undertaking curricula revision of PG and Ph.D. in Social Sciences and for their valuable guidance and support in this regard.

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# Preamble

Justification for modification of Present Courses and recommendation of New Courses Innovativeness in the present curricula development:

- The developed curricula is the result of sincere and coordinated effort of multi-stakeholders and experts in the discipline of Extension Education with a aim to enhance the value of the discipline, relevance to field and develop the graduates with multi core competencies to face the challenges in TOT.
- The content of the courses are perfectly related to the present changes and scenario in the Ecosystem of Extension Education at National and Global level.
- The practical content coverage will give multiple opportunities to the graduates to have hands on experience and demonstrate what they learn in variety of contexts i.e. various extension teaching methods, Big data, IOTs, project development and evaluation, organizations of groups/FPOs, etc.
- The recommended curricula is perfect match and having high relevancy to the developments and innovations in the field.
- The curricula is developed by benchmarking the core competencies that are expected from the Extension graduates, thus the approach is bottom-up.
- The recommended Extension Research methodology courses will help the students to identify the contemporary problems and their solving could lead to develop quality extension models for effective TOT and policy making.
- The recommended Internships and Teaching assistantships will help the students to have more relevant practical experience and this will boost their job prospects.

# Course Title with Credit Load
# M.Sc. in Agricultural Extension Education

**Major Courses 20**

| Course Code | Course Title | Credit Hours |
|---|---|---|
| EXT-501* | Extension Landscape | 2(2+0) |
| EXT-502* | Applied Behaviour Change | 3(2+1) |
| EXT-503* | Organisational Behaviour and Development | 3(2+1) |
| EXT-504* | Research Methodology in Extension | 3(2+1) |
| EXT-505* | Capacity Development | 3(2+1) |
| EXT-506* | ICTs for Agricultural Extension and Advisory Services | 3(2+1) |
| EXT-507* | Evaluation and Impact Assessment | 3(2+1) |

**Minor Courses 08**

a. It is suggested the student may choose at least two out of three courses listed below as part of minor courses as these are related to policy advocacy and aim to build larger understanding of the subject.
b. Further, it is suggested that the student may choose the remaining Courses from any other discipline including the disciplines of Agrl. Economics/ABM and are related to the research problem selected by the student.
c. The final choice of the minor courses should be mandatorily approved by the Student Advisory committee/HoD.

| | | |
|---|---|---|
| EXT-508 | Managing Extension Organisations | 3(2+1) |
| EXT-509 | Enabling Innovation | 2(1+1) |
| EXT-510 | Gender Mainstreaming | 3(2+1) |

**Supporting Courses 06**

| | | |
|---|---|---|
| STAT | Statistical Methods for Applied/ Social Sciences | 3(2+1) |
| STAT/COMP | Computer Applications for Agricultural Extension Research | 3(2+1) |

It is suggested that the student may choose the Supporting Courses other than the listed courses, provided the opted courses are related to the research problem selected by the student and be mandatorily approved by the Student Advisory committee/HoD".

**Common Courses 05**

1. Technical Writing and Communications Skills
2. Intellectual Property and its management in Agriculture
3. Agricultural Research, Research Ethics and Rural Development Programmes

Some of these courses are already in the form of e-courses/ MOOCs. The students may be allowed to register these courses/ similar courses on these aspects, if available online on

SWAYAM or any other platform. If a student has already completed any of these courses during UG, he/ she may be permitted to register for other related courses with the prior approval of the HoD/BoS.

| | | |
|---|---|---|
| EXT-591 | Master's Seminar | **01** |
| | Thesis/Research | 30 |
| | Total | 70 |

# Course Contents
# M.Sc. in Agricultural Extension Education

**I. Course Title : Extension Landscape**
**II. Course Code : EXT 501**
**III. Credit Hours : 2+0**

**IV. Why this course?**

Extension and advisory services (EAS) need to support farmers to deal with several new challenges they face currently. To effectively support farmers, EAS should perform several new functions and it should have capacities to perform these functions. EAS have evolved considerably especially during the last 3 decades. Several new approaches have emerged and many new funding and delivery models emerged in response to reforms (economic policies and new governance structure) implemented in several countries. Apart from these, new insights from communication and innovation studies have also started to influence the practice of extension. There is a lot of interest globally in strengthening pluralistic EAS and enhancing its contribution towards development of an effective Agricultural Innovation System (AIS). Keeping these in view, there is a need to orient students of extension on how extension is shaped globally and the policy level challenges it faces so that the extension students fit well to the global demand for competent extension professionals who can appreciate and understand this changing context.

**V. Aim of the course**

The aim of this course is to introduce the new challenges before extension and how extension is evolving globally. It presents the new capacities that are needed by EAS providers to provide a much wider support to farmers and it orient students to the new insights from communication and innovation studies that are influencing the practice of extension globally. The course also help students to appreciate the process and the impact of extension reforms implemented in many countries, the new approaches that are evolving globally in different regions and the policy challenges in managing a pluralistic extension system.

The course is organized as follows:

| No | Blocks | Units |
|---|---|---|
| 1 | Globally, What is new in Extension? | 1. Challenges Before Extension and Advisory Services<br>2. New Functions and New Capacities<br>3. Pluralism in EAS |
| 2. | Insights from Communication & Innovation Studies & New Extension Approaches | 1. From the Linear Paradigm To Systems Paradigm<br>2. Evolving Extension Approaches |
| 3 | Extension Reforms And Policy Challenges | 1. Changes In Governance, Funding and Delivery of EAS<br>2. Challenges In Managing Pluralistic EAS |

## VI. Learning outcome

After successful completion of this course, the students are expected to be able to:

- Appreciate the changing global extension landscape
- Broaden their understanding on the role of EAS in agricultural innovation system
- Critically evaluate the reforms in extension and the evolving approaches in extension
- Analyse the policy level challenges in extension funding and delivery

### Block 1: Globally, What Is New In Extension?

### Unit 1: Challenges before Extension and Advisory Services (EAS)

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 agripreneurship 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 2: New Functions and New Capacities

Beyond transfer of technology: Performing new functions to deal with new challenges; Organising 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 3: Pluralism in EAS

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

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.

**Block 2: Insights From Innovation Studies and New Extension Approaches**

**Unit 1: From the Linear Paradigm to Systems Paradigm**

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 2: Evolving Extension Approaches**

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.

**Block 3: Extension Reforms and Policy Challenges**

**Unit 1: Changes in Governance, Funding and Delivery**

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; Decentralisation of extension services; Examples/ Cases; Lessons from extension reforms in different countries; Extension and Sustainable Development Goals (SDGs).

**Unit 2: Challenges in Managing Pluralistic Extension Systems**

Pluralism: Managing pluralism and Co-ordination of pluralistic extension provision; Public private partnerships in extension (including the role of local governments/ panchayats and producer organisations); Examples, challenges in co-ordination; Achieving convergence in extension planning and delivery, Financing Extension: Mobilising 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.

**VII. Teaching methods/activities**

- Lecture
- Assignment (Reading/Writing)
- Book Review by students
- Student presentation
- Group Work

## VIII. Suggested Reading


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**Websites**

- **AESA**- Agricultural Extension in South Asia http://www.aesanetwork.org/
- **FAO**- Food and Agricultural Organisation (Research and Extension) http://www.fao.org/research-and-extension/en/
- **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/agricultural-extension
- **KIT**- Royal Tropical Institute (KIT)-Sustainable Economic Development https://www.kit.nl/sed/
- **WUR**- Wageningen University and Research Research (Knowledge, Technology and Innovation Group (KTI)) https://www.wur.nl/en/Research-Results/Chair-groups/Social-Sciences/KnowledgeTechnology-and-Innovation-Group.htm

**I. Course Title : Applied Behaviour Change**

**II. Course Code : EXT 502**

**III. Credit Hours : 2+1**

**IV. Why this course?**

The behavioural change of the stakeholders is the key objective in extension profession, which is reflected through their enhanced capacity, attitude change, modification of perceptions and beliefs, improved understanding of a system,

adoption of improved technologies, empowerment, and resilience to adverse phenomenon and improved decision-making. Irrespective of their role and profession, all the key stakeholders in agriculture like farmers, extension agents, scientists/ academicians, development managers and policy makers are human beings, whose behaviour is the product of internal psychological processes influenced by external environment. Since human behaviour is a psychological phenomenon, expressed through interaction of internal psychological processes, social systems and external environment, there is an essential need to understand how these psychological processes guide the behavioural change. These psychological processes may be expressed at individual, group, community and organisational level involving human learning, choices, judgement and decisions about an extension intervention.

## V. Aim of the course

This course aims to build capacities of students to understand the fundamental psychological processes which guide human behaviour at individual, group and community levels in specific contexts, to develop sound extension strategies.
The course is organized as follows:

| No | Blocks | Units |
|---|---|---|
| 1 | Foundations of Behaviour Change | 1. Foundations of Human Behaviour |
| 2 | Cognitive Processes and Learning | 1. Cognitive Processes affecting Human Behaviour<br>2. Information Processing<br>3. Learning<br>4. Judgement, Choice and Decision-making |
| 3 | Human Behaviour in the Society | 1. Attitudes and Influence<br>2. Social Judgement, Social Identity and Inter-Group Relations |

## VI. Theory

### Block 1: Foundations of Behaviour Change

### 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.

### Block 2: Cognitive Processes And Learning

### Unit 1: 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 2: 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: Judgement, Choice and Decision-making**

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.

**Block 3: Human Behaviour in the Society**

**Unit 1: 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 2: 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.

**VII. Practicals**

- 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.

**Teaching methods/activities**

– Lecture cum discussion
– Class exercises
– Group Presentation

**Learning outcome**

The students should:

- Understand the biological and cognitive processes determining human behaviour
- Understand the process of learning under different context
- Develop competencies in influencing the human decision process in various contexts
- Design effective strategies to influence attitude and behaviour

**Suggested Reading**

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. *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. *Social psychology*. New York: W.W. Norton & Co.

Moreno R. 2010. *Educational Psychology*. Hoboken, NJ: John Wiley & Sons Inc.

Nevid JS. 2012. *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.

**I. Course Title : Organisational Behavior and Development**

**II. Course Code : EXT 503**

**III. Credit Hours : 2+1**

**IV. Why this course?**

In changing and competitive world, the survival of any organization is dependent on its ability to adjust to the new challenges, adapt its structure and develop the competencies needed among its staff. This course is designed to understand the theory and practice relating to the processes of organizational behavior, development and change. It attempts to bring about change in the different levels of the organization (the individual, group and organization) using a wide variety of interventions.

**V. Aim of the course**

- To understand the theory and practice relating to the processes of organizational behavior, development and change.
- To develop insight and competence in diagnostic and intervention processes and

skills for initiating and facilitating change in organizations.

- To gain necessary self-insight, skills in facilitation, organizational development (OD) skills, group process and techniques, to become an effective change agents and OD consultants.
- To understand the behavior of individuals and small groups in organization with special focus on beliefs, attitudes and values, human inference - attribution, self-concept, motivation, active listening, interpersonal communication, conflicts management.

The course is organized as follows:

| No | Blocks | Units |
|---|---|---|
| 1. | Organisational Behaviour | 1. Basics of Organisation<br>2. Basics of Organisational Behaviour<br>3. Individual Behaviour in Organizations<br>4. Group Behaviour in Organizations<br>5. Productive Behaviour and Occupational Stress<br>6. Organisational Systems |
| 2. | Organisational Development | 1. Overview of Organisational Development<br>2. Managing the Organisational Development Process<br>3. Organisational Development Interventions<br>4. Organisational Development Practitioner or Consultant |

## VI. Theory

### Block 1: Organizational Behavior

#### 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.

**Block 2: Organisational Development**

**Unit 1: Overview of Organizational Development**

Concept of OD, Importance and Characteristics, Objectives of OD, History and Evolution of OD, Implications of OD Values.

**Unit 2: 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 3: Organizational Development Interventions**

Meaning, Importance, Characteristics of Organization development Interventions, Classification of OD Interventions-Interpersonal interventions, Team Interventions, Structural Interventions, Comprehensive Interventions.

**Unit 4: 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.

**VII. Practicals**

- 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

**VIII. Teaching methods/activities**

– Lecture cum discussion
– Cases
– Class exercises
– Group Presentation

**IX. Learning outcome**

This course will equip the students to become potential change agents and OD practitioners. They should be able to learn how to improve individual, group/team and organizational performance through the use of OD techniques or interventions.

**X. Suggested Reading**

Bhattacharyya DK. 2011. *Organizational Change and Development*, Oxford University Press.
Hellriegel D, Sloccum 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.

**I. Course Title : Research Methodology in Extension**
**II. Course Code : EXT 504**
**III. Credit Hours : 2+1**

**IV. Why this course?**

Growth of any discipline is directly proportional to the creation of knowledge in that discipline. Extension research is the backbone of extension discipline. Extension research is a unique social science inquiry where research ideas are gathered from the field problems and put through a systematic cycle of objective investigations that result in significant solutions. Apart from developing theories and models that advance scientific knowledge, extension research should also provide new insights for improving extension policy and practice. As extension is a field oriented discipline seeking to improve the welfare of its stakeholders, the extension professionals require critical competencies in conducting empirical research for developing sound extension models, methods and tools.

**V. Aim of the course**

This course aimed to create a workforce which has sound fundamental knowledge

and critical competencies in planning, conducting and applying behavioural research for developing quality extension models, methods and tools.
The course is organized as follows:

| No. | Blocks | Units |
|---|---|---|
| 1. | Introduction to behavioural research | 1. Nature of Behavioural Research<br>2. The Behavioural Research Process |
| 2. | Steps in behavioural research process | 1. Formulating a Research Problem<br>2. Reviewing the Literature<br>3. Identifying Variables and Hypotheses<br>4. Formulating Research Designs, Methods and Tools<br>5. Selecting Sample<br>6. Collecting Data<br>7. Analysing and Interpreting the Data<br>8. Reporting and Evaluating Research |

## VI. Theory

### Block 1: Introduction To Behavioural Research

#### Unit 1: 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, axiological, theoretical and conceptual knowledge, prior research studies, reviews and academic debate; Role of behavioural research in extension; Careers in behavioural research.

#### Unit 2: 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.

### Block 2: Steps in Behavioural Research Process

#### Unit 1: 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 2: 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

and writing literature review.

**Unit 3: 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 4: 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 triangulation. 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 5: Selecting Sample**

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 6: 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 7: 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, á, â, 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 8: Reporting and Evaluating Research**

Writing reports and research publications; Evaluation Methodology

## VII. Practicals

- 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 conceptualisation 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

## VIII. Teaching methods/activities

- Lecture cum discussion
- Class exercises
- Assignment(Reading/Writing)
- Student's Book/Publication Review
- Student presentation
- Group Work
- Research Report

## IX. Learning outcome

- Understand the concepts, paradigms, approaches and strategies of behavioural research
- Enable to choose research design, methods and tools suitable for the research problem
- Design research instruments skilfully and conduct research in an objective and unbiased way

– Analyse the data through appropriate analytical methods and tools and derive meaningful interpretations

## X. Suggested Reading


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.

NeumanWL. 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.

Sendhil R, Kumar A, Singh S, Verma A, Venkatesh K and Gupta V. 2017. *Data Analysis Tools and Approaches (DATA) in Agricultural Sciences*. e-Compendium of Training-cum-Workshop organised at the ICAR-IIWBR during March 22-24, 2017. pp 1-126.

Sivakumar PS, Sontakki BS, Sulaiman RV, Saravanan R and Mittal N. (eds). 2017. *Good Practices in Agricultural extension Research*. Manual on Good Practices in Extension Research and Evaluation. Agricultural Extension in South Asia. Centre for Research on Innovation and Science and Policy (CRISP), Hyderabad. India.

Sivakumar PS and Sulaiman RV. 2015. *Extension Research in India-Current Status and Future Strategies*. AESA Working Paper 2. Agricultural Extension in South Asia.http://www.aesanetwork.org/aesa-working-paper-2-on-extension-research-in-india-current-status-and-future-strategies-p-sethurman-sivakumar-and-rasheed-sulaiman-v-december-2015/


**I. Course Title : Capacity Development**

**II. Course Code : EXT 505**

**III. Credit Hours : 2+1**

## IV. Why this course?

Competent and skilful extension professionals are not naturally born. Their capacities need to be improved primarily at three different levels:

1. Pre-service capacity development – Under graduation and post-graduation studies
2. Induction capacity development – Just before job entry
3. In-service capacity development – During job

If undergone appropriately, pre-service studies help extension professionals to mainly acquire knowledge related to development. However, they are not fully ready for development work with required attitude and skills needed by an organisation. Properly planned and organized induction / in-service capacity building programmes help them to use development concepts, apply methods, exhibit attitude and skills required for development work at different levels. In short, the essence of this course is to make you understand these notions and help you to think up, manage, put into practice and evaluate capacity development programmes.

## V. Aim of the course

- To understand the concepts of training, capacity building, capacity development and human resource development in the context of roles and responsibilities of extension professionals
- To discuss capacity development- approaches, strategies, needs assessment and methods / tolls
- To help you devise, organize, implement and evaluate capacity development programmes

The course is organized as follows:

| No | Blocks | Units |
|---|---|---|
| 1. | Introduction to Capacity Development | 1. Capacity Development - An Overview<br>2. Capacity Development - Approaches and Strategies<br>3. Planning and Organization of Capacity Development Programmes |
| 2. | Capacity Development Needs Assessment | 1. Capacity Development Needs Assessment - An Overview<br>2. Capacity Development Needs Assessment Methods |
| 3. | Capacity Development Institutions and Management | 1. Capacity Development Institutions<br>2. Capacity Development Project Formulation |
| 4. | Capacity Development Process and HRD | 1. Capacity Development Methods and Tools<br>2. Evaluation<br>3. Impact Assessment<br>4. Human Resource Development |

## VI. Theory

### Block 1: Introduction to Capacity Development

#### Unit 1: Capacity Development–An Overview

Training, capacity building, capacity development and HRD-Meaning and differences; Need and principles of capacity development; Types and levels of capacities - Institutional capacities (include the rules, regulations and practices that set the overarching contextual environment), Organisational capacities (how various actors come together to perform given tasks), Individual capacities (technical, functional and leadership skills). Types of capacity building - Based on structure (structured, semi-structured &unstructured), Based on context (orientation, induction and refresher), and other categories (online, Webinar, distance etc.). Components of capacity development; Capacity development cycle.

#### Unit 2: Capacity Development- Approaches and Strategies

Capacity Development Dilemma- Theory versus Practice, Trainee versus Task, Structured versus Unstructured, Generic and Specific; Approaches in Capacity Development -Informative approach, Participatory approach, Experimental approach/ Experiential, Performance based approach; Capacity Development Strategies - Academic strategy, Laboratory strategy, Activity strategy, Action strategy, Personal development strategy, Organizational development strategy.

**Unit 3: Planning and Organization of Capacity Development Programmes**

Steps in Designing and Planning of Capacity Development- Step 1. Select the participants, Step 2. Determine the participants' needs, Step 3. Formulate goal and objectives, Step 4. Outline the content, Step 5. Develop instructional activities, Step 6. Prepare the design, Step 7. Prepare evaluation form, Step 8. Determine follow-up activities; Organising capacity development programme; Operational arrangements at different stages- Before the programme, During the programme, Middle of the programme, At the end of the programme, After the programme, Follow up; Stakeholders' responsibilities.

**Block 2: Capacity Development Needs Assessment**

**Unit 1: Planning and Organization of Capacity Development Programmes**

Concept of Need Assessment; Approaches in Need Analysis- Performance Analysis, Task Analysis, Competency Study; Needs Survey.

**Unit 2: Capacity Development Needs Assessment Methods**

Data Collection Methods in Identifying Needs - Rational Methods (Observation, Informal talks, Complaints, Comparison, Analysis of report, Opinion poll, Buzz session, Analysis of the new programme), Empirical Methods (Job analysis, Performance evaluation, Checklist or Questionnaire Method, Tests, Critical Incident Technique, Card Sort Method, Focus Group Discussion, Interview, SWOT Analysis); Information and Skills required in Need Analysis; Identification of Needs through Task Analysis - Task identification, Task Analysis, Gap Analysis.

**Block 3: Capacity Development Institutions and Management**

**Unit 1: Capacity Development Institutions**

Capacity Developer (Trainer): Meaning and concept; Types of Capacity Developers (regular, *ad-hoc*, part time, guest and consultants); Roles of Capacity Developer (explainer, clarifier, supporter, confronter, role model, linker, motivator, translator/ interpreter, change agent); Good Capacity Developer – Qualities, skills and roles Qualities, Skills (Intrapersonal & Inter personal), Roles (Manager, Strategist, Task Analyst, Media Specialist, Instructional Writer, Marketer, Facilitator, Instructor, Counsellor, Transfer Agent, Evaluator); Capacity Development Centres and Locations; Organisation's Role in Capacity Development.

**Unit 2: Capacity Development Project Formulation**

Project Proposal: Concept and Meaning; Steps in Project Formulation- Review of past proposals, Consulting experts, consultants, and previous organizers, Review past project evaluation reports, Interact with the prospective beneficiaries; Format for Writing Project Proposal (LFA).

**Block 4: Capacity Development Process and HRD**

**Unit 1: Capacity Development Methods and Tools**

Capacity Development Methods –Lecture, Discussion, Syndicate, Seminars, Conference, Symposium, Role Play, Case study, Programmed Instruction, T - group/ Laboratory methods; Factors Determining Selection of Methods - Capacity development objectives, subject matter, categories of participants, and the available resources like time, location, budget; Capacity Development Aids.

**Unit 2: Evaluation**

Capacity Development Programme Evaluation - Meaning & Importance; Purpose of Evaluation; Principles of Evaluation; Types of Evaluation – Formative, Summative, Kirkpatrick's four levels of evaluation; Process of Evaluation- Evaluation at the beginning, Evaluation during the programme, Evaluation at the end; Use of evaluation findings; Statistical Tools for evaluation.

**Unit 3: Impact Assessment**

Impact Assessment- Meaning, Need, Features, Benefits, Concepts; Indicators for Impact Assessment - Direct indicators, Indirect or proxy indicators, Quantitative indicators, Qualitative indicators, Result chain / hierarchy of indicators; Methods of Impact Evaluation- Learning retention of participants (KOSA), Impact on the job performance, Impact on organizational effectiveness, Impact on stakeholder's competency.

**Unit 4: Human Resource Development**

HRD: Meaning, Importance and Benefits; Types of HRD Systems & Sub-systems Career system (Manpower planning, Recruitment, Career planning, Succession planning, Retention), Work system (Role analysis, Role efficacy, Performance plan, Performance feedback and guidance, Performance appraisal, Promotion, Job rotation, Reward), Development system (Induction, Training, Job enrichment, Self-learning mechanisms, Potential appraisal, Succession development, Counselling, Mentor system), Self-renewal system (Survey, Action research, Organisational development interventions), Culture system (Vision, mission and goals, Values, Communication, Get together and celebrations, Task force, Small groups); Components of HRD System - Performance Appraisal, Potential Appraisal, Task System, Development System, Socialisation System, Governance; Functions of HRD-Organisational Development, Career Development, Capacity Development.

**VII. Practicals**

- Capacity development needs assessment exercise
- Capacity development project formulation exercise
- Planning organizing and conducting an extension capacity development programme
- Designing a programme
- Writing learning objectives
- Developing objectives into curriculum
- Training plan
- Organizing capacity development workshop
- Evaluation with pre- and post-training tests
- Training methods – Practicing each method mentioned in contents as group exercise

**VIII. Teaching methods/activities**

- Lecture
- Assignment (Reading/Writing)
- Student's Book/Publication Review
- Student presentation
- Group work
- Case Analysis
- Guest Lectures
- Review of training manuals and training evaluation studies
- Short attachments to a nearby training institute.

## IX. Learning outcome

After successful completion of this course, the students are expected to be able to:

- Differentiate between training, capacity building, capacity development and human resource development
- Explain different levels of capacities, needs assessment approaches & methods, capacity development methods and tools
- Formulate, implement and evaluate need based capacity development programmes

## X. Suggested Reading


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TAP–Tropical Agriculture Platform for Capacity Development– https://www.tapipedia.org/

FAO–FAO Capacity Development– http://www.fao.org/capacity-development/en/

GFRAS–Global Forum for Rural Advisory Services– http://www.g-fras.org/en/

AESA–Agricultural Extension in South Asia– http://www.aesanetwork.org/

**I. Course Title : ICTs for Agricultural Extension and Advisory Services**

**II. Course Code : EXT 506**

**III. Credit Hours : 2+1**

**IV. Why this course?**

Information and Communication Technologies (ICTs) are continuously evolving. More ICT applications having better relevance to extension and advisory services (EAS) are currently available considering the human and other resource constrains faced by EAS, ICTs can supplement and complement EAS extension efforts in a cost-effective way. Extension professionals should have sound knowledge of ICTs and comprehensive understanding on its various applications for effectively deploying these in EAS provision. This course will provide knowledge and hands-on-experience on ICT applications relevant for EAS.

**V. Aim of the course**

- To discuss different ICT initiatives, knowledge management process and application aspects

- To orient students on advances in smart/ disruptive technologies and data analytics
- Hands on experience in navigating ICTs

The course is organized as follows:

| No | Blocks | Units |
|---|---|---|
| 1. | Introduction to Information and Communication Technologies (ICTS) and e-Extension | 1. ICTs- Concepts and Status<br>2. ICTs in Knowledge Management<br>3. e-Extension initiatives in Agriculture and allied sectors |
| 2. | Application of ICTs in Extension and advisory services | 1. ICT Applications<br>2. ICT Expert Systems<br>3. ICT Networks |
| 3. | Knowledge management and Standards | 1. Policies in Knowledge Management<br>2. Web Standards<br>3. Social Media Applications to engage audience |
| 4. | Smart and disruptive Technologies and advanced analytics for agricultural extension | 1. Smart Technologies<br>2. Human Computer Interactions |

## VI. Theory

### Block 1: Introduction to Information and Communication Technologies (ICTs) and E-extension

#### Unit 1: ICTs- Concepts and Status

ICTs- meaning, concepts, basics of ICTs, global and national status, types and functions of ICTs, innovations, meaning of e-Governance, e-learning, mLearning, advantages and limitations of ICTs.

#### Unit 2: ICTs in Knowledge Management

Knowledge management-meaning, approaches and tools. Role of ICTs in Agricultural Knowledge Management.

#### Unit 3: e-Extension initiatives in Agriculture and allied sectors

e-Extension, overview on Global and national e-extension initiatives, Inventory of e-Extension initiatives in Agriculture and allied sectors from Central and State governments, ICAR, SAUs, private sector and NGO initiatives in India.

### Block 2: Application of ICTs in Extension and Advisory Services

#### Unit 1: ICT Applications

Knowledge centres (tele centres), digital kiosks, websites and web portals, community radio, farmers call centres, mobile phone based advisory services and mobile applications (mExtension, mLearning), Self-learning CDs on Package of practices, social media, digital videos, Market Intelligence and Information Systems- ICT enabled Supply-Chains and Value-Chains/ e-Marketing (e-NAM, Agmarknet, *etc.*).

#### Unit 2: ICT Expert Systems

Expert System/ Decision Support System/ Management Information Systems, Farm Health Management & Intelligence System for Plant Health, Animal Health, Soil Health, Fishery, Water, Weather, etc.

**Unit 3: ICT Networks**

Global and regional knowledge networks, international information management systems, e-Learning platforms (MOOCS, Course CCRA, EduEx, *etc*), e-Governance Systems; digital networks among extension personnel, Farmer Producers Organisations (FPOs)/ SHGs/ Farmers Groups.

**Block 3: Knowledge Management and Standards**

**Unit 1: Policies in Knowledge Management**

Global policy/ Standards on e-Governance, National policy on e-governance, Open Data / Open Gov Standards and Open Source etc; Language Technology Applications; National e-Agriculture policy/ Strategies/ guidelines.

**Unit 2: Web Standards**

Web standards, creating and writing for webportals, development of mobile applications, developing digital videos- story board- video recording- video editing, types of blogs and writing guidelines.

**Unit 3: Social Media Applications to engage audience**

Video conference, live streaming and webinars, types and functions of social media applications, guidelines for preparing social media content, engaging audience and data-analytics.

**Block 4: Smart and Disruptive Technologies and Advanced Analytics for Agricultural Extension**

**Unit 1: Smart Technologies**

Open technology computing facilities, System for data analytics/ mining/ modelling/ Development of Agricultural simulations; Remote Sensing, GIS, GPS, Information Utility (AIU); disruptive technologies- Analysis; Internet of Things (IoTs), Drones, Artificial intelligence (AI), block chain technology, social media and Big Data analytics for extension.

**Unit 2: Human Computer Interactions**

Human Centered Learning/Ergonomics/ Human Computer Interactions-Meaning; Theories of multimedia learning - Sweller's cognitive load theory, Mayer's cognitive theory of multimedia learning, Schnotz's integrative model of text and picture comprehension, van Merriënboer's four-component instructional design model for multimedia learning; Basic Principles of Multimedia Learning - Split-attention, Modality, Redundancy, Coherence, Signaling, segmenting, pre-training, personalisation, voice embodiment; Advanced principles - Guided discovery, worked examples, Self-explanation, drawing, feedback, multiple representation, Learner control, animation, collaboration, prior knowledge, and working memory. Designing ICT gadgets based on human interaction principles - Interactive design-Meaning, importance; Approaches of interactive design - user-centered design, activity-centered design, systems design, and genius design; Methods of interactive design - Usability testing methods.

**VII. Practicals**

- Content and client engagement analysis
- Designing extension content for ICTs
- Creating and designing web portals, blogs, social media pages
- Developing digital videos

- Live streaming extension programmes and organising webinars
- Working with Farmers call centres
- Engaging with professional digital networks
- Writing for digital media

**VIII. Teaching methods/activities**

- Lecture
- Guest Lectures
- Assignment (Reading/Writing/ developing mApps/ media management/Social media initiatives)
- Student's Book/Publication Review
- Student presentation
- Group Work
- Student's interview of ICT practitioners/ champions
- Documenting good practices and case studies
- Review of ICT policy documents and guidelines/ standards
- Short internship with ICT projects

**IX. Learning outcome**

After successful completion of this course, the students are expected to be able to:

- Appreciate the importance of the ICTs in EAS
- Understand the ICT application aspects
- Critically evaluate ICT initiatives and smart/disruptive technologies
- To execute extension functions by applying ICTs and
- Engage stakeholders in knowledge management process

**X. Suggested Reading**

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**FAO**–Food and Agricultural Organisation (Research and Extension) http://www.fao.org/research-and-extension/en/

**CTA–**The Technical Centre for Agricultural and Rural Cooperation: Digitalization– https://www.cta.int/en/channel/digitalisation-sid05951b8c7-e611-4f34-9ae6-8c0fc0c822bc

**GFRAS**–Global Forum for Rural Advisory Services– http://www.g-fras.org/en/

**AESA**–Agricultural Extension in South Asia– http://www.aesanetwork.org/

**I. Course Title : Evaluation and Impact Assessment**

**II. Course Code : EXT 507**

**III. Credit Hours : 2+1**

**IV. Why this course?**

Many organizations now look for experts to evaluate development projects and developmental interventions. It is now required that impact be assessed whenever any development programme is implemented. Thus, the extension professionals need to have good understanding of the theory and practice of programme evaluation and impact assessment. This course, thus, has been designed to help students develop as extension professionals who can plan and conduct systematic assessments of the results and impacts of extension programmes.

**V. Aim of the course**

- To orient students on the importance of evaluation and impact assessment
- To develop capacities for evaluation and impact assessment
- Discuss ways of conducting evaluations and impact assessment

The course is organized as follows:

| No | Blocks | Units |
|---|---|---|
| 1. | Programme Evaluation | 1. Introduction to Evaluation<br>2. Evaluation Theories |
| 2. | Evaluation Process | 1. How to Conduct Evaluation<br>2. Evaluating the Evaluation |

| No | Blocks | Units |
|---|---|---|
| 3. | Programme Management Techniques | 1. SWOT Analysis and Bar Charts<br>2. Networks |
| 4. | Programme Evaluation Tools | 1. Bennett's Hierarchy of Evaluation<br>2. Logic Framework Approach |
| 5. | Impact Assessment | 1. Introduction to Impact Assessment<br>2. Impact Assessment Indicators<br>3. Approaches to Impact Assessment<br>4. Environment Impact Assessment |

## VI. Theory

### Block 1: Programme Evaluation

#### Unit 1: Introduction to Evaluation

Concept of Evaluation: Meaning and concept in different contexts; Why Evaluation is Done and When? Programme planning, analyse programme effectiveness, decision making, accountability, impact assessment, policy advocacy; Objectives, types, criteria and approaches of programme evaluation, evaluation principles; the context of program evaluation in agricultural extension; Role and Credibility of Evaluator: Role as educator, facilitator, consultant, interpreter, mediator and change agent. Competency and credibility of evaluator.

#### Unit 2: Evaluation Theories

Evaluation theory vs. practice – synergistic role between practice and theory in evaluation; Evaluation theories - Three broad categories of theories that evaluators use in their works - programme theory, social science theory, and evaluation theory (other theories/ approaches - Utilization-Focused Evaluation & Utilization-Focused Evaluation (U-FE) Checklist, Values Engaged Evaluation, Empowerment Evaluation, Theory-Driven Evaluation). Integration between theory and practice of evaluation: –evaluation forums, workshops, conferences and apprenticeship/ internship.

### Block 2: Evaluation Process

#### Unit 1: How to Conduct Evaluation

**Ten Steps in programme evaluation:** (1) Identify and describe programme you want to evaluate (2) Identify the phase of the programme(design, start-up, on-going, wrap-up, follow-up) and type of evaluation study needed (needs assessment, baseline, formative, summative, follow-up) (3) Assess the feasibility of implementing an evaluation (4) Identify and consult key stakeholders (5) Identify approaches to data collection (quantitative, qualitative, mixed) (6) Select data collection techniques (survey interviews and questionnaires with different types) (7) Identify population and select sample (sampling for evaluation, sample size, errors, sampling techniques (8) Collect, analyse and interpret data (qualitative and quantitative evaluation data analysis) (9) Communicate findings (reporting plan, evaluation report types, reporting results, reporting tips, reporting negative findings (10) Apply and use findings (programme continuation/ discontinuation, improve on-going programme, plan future programmes and inform programme stakeholders).

#### Unit 2: Evaluating the Evaluation

Evaluating the Evaluation - 10 Steps as above with focus on conceptual clarity,

representation of programme components and stakeholders, sensitivity, representativeness of needs, sample and data, technical adequacy, methods used for data collection and analysis, costs, recommendations and reports.

**Block 3: Programme Management Techniques**

**Unit 1: SWOT Analysis and Bar Charts**

SWOT Analysis – Concept, origin and evolution; SWOT As a Programme Management Tool; Conducting SWOT Analysis - Common Questions in SWOT Analysis; Advantages and Disadvantages of SWOT; Bar Charts (Gantt Charts and Milestone Charts) - Characteristics, advantages and limitations.

**Unit 2: Networks**

Networks – Introduction, origin and widely used networks (Programme Evaluation and Review Technique (PERT) and Critical Path Method (CPM), differences between PERT and CPM, advantages and disadvantages. Networks Terminology – Activity, Dummy activity, Event (predecessor event, successor event, burst event, merge event, critical event), Earliest Start Time (EST), Latest Start Time (LST), Critical Path, Critical Activity, Optimistic time ($T_o$), Pessimistic time ($P_o$), Most likely time ($T_M$), Expected time ($T_E$), Float or Slack, Event Slack, Lead time, Lag time, Fast tracking, Crashing critical path, Acclivity Table, Danglers, Normal Time. Rules for Preparation of Networks and Steps in Network Preparation with example.

**Block 4: Programme Evaluation Tools**

**Unit 1: Bennett's Hierarchy of Evaluation**

Introduction to Bennett's hierarchy – Background and description; Relation between programme objectives & outcomes at 7 levels of Bennett's hierarchy – Inputs, activities, participation, reactions, KASA changes, practice and behaviour changes, end results. Advantages and Disadvantages of Bennett's hierarchy

**Unit 2: Logic Framework Approach (LFA)**

Introduction to LFA – Background and description; Variations of LFA - Goal Oriented Project Planning (GOPP) or Objectives Oriented Project Planning (OOPP); LFA Four-by-Four Grid – Rows from bottom to top (Activities, Outputs, Purpose and Goal & Columns representing types of information about the events (Narrative description, Objectively Verifiable Indicators (OVIs) of these events taking place, Means of Verification (MoV) where information will be available on the OVIs, and Assumptions). Advantages and Disadvantages of LFA.

**Block 5: Impact Assessment**

**Unit 1: Introduction to Impact Assessment**

Concept of Impact Assessment: Meaning, concept and purpose in different contexts; Impact Assessment Framework: Meaning of inputs, outputs, outcomes, impacts and their relation with monitoring, evaluation and impact assessment.

**Unit 2: Impact Assessment Indicators**

Indicators for impact assessment – meaning and concept; Selecting impact indicators; Types of impact indicators for technology and extension advisory services - social and behavioral indicators, socio-cultural indicators, technology level indicators, environmental impact assessment indicators and institutional impact assessment indicators.

**Unit 3: Approaches for Impact Assessment**

Impact assessment approaches – Quantitative, qualitative, participatory and mixed methods with their advantages and disadvantages; Quantitative Impact Assessment Types – Based on Time of Assessment (Ex-ante and ex-post), Based on Research Design (Experimental, quasi experimental, Non-experimental). Econometric Impact Assessment: - (Partial Budgeting Technique, Net Present Value, Benefit Cost Ratio, Internal Rate of Return, Adoption Quotient, *etc*). Qualitative and Participatory Impact Assessment Methods.

**Unit 4: Environment Impact Assessment (EIA)**

Concept of EIA – Introduction, What it is? Who does it? Why it is conducted? How it is done?; Benefits and important aspects of EIA-risk assessment, environmental management and post product monitoring. Environmental Components of EIA – air, noise, water, biological, land; Composition of the expert committees and Steps in EIA process - screening, scoping, collection of baseline data, impact prediction, mitigation measures and EIA report, public hearing, decision making, monitoring and implementation of environmental management plan, assessment of alternatives, delineation of mitigation measures and EIA report; Salient Features of 2006 Amendment to EIA Notification - Environmental Clearance/Rejection, participants of EIA; Shortcomings of EIA and How to improve EIA process?

**VII. Practicals**

- Search the literature using web / printed resources and identify evaluation indicators for the following:
  - Utilization-Focused Evaluation
  - Values Engaged Evaluation
  - Empowerment Evaluation
  - Theory-Driven Evaluation
- Visit Directorate of Extension in your university and enquire about extension programmes being implemented / coordinated by Directorate. Develop an evaluation proposal of any one programme using 'Ten Steps in Programme Evaluation' discussed in the theory class.
- Review any comprehensive programme evaluation report from published sources. Evaluate the report and write your observations following the 'Evaluating the Evaluation' approach.
- Identify at least four agriculture development programmes and their objectives being implemented in your state. Write two attributes each on Strengths, Weaknesses, Opportunities and Threats related to the identified programme objectives in the SWOT grid.
- Identify an on-going development programme and make-out 6 activities from the programme.
- Draw a Gantt chart for 12 months programme activities.
- Write a report on evaluation hierarchy levels and indicators as per Bennett's hierarchy of evaluation for any development programme or project.
- Develop LFA four-by-four grid for any development programme or project with activities, outputs, purpose and goal and objectively verifiable indicators, means of verification & assumptions.
- Visit a nearby KVKs / ATIC. Select any agriculture technology with package of practices and extension advisory services promoted by KVK / ATIC. Identify impact assessment indicators for social and behavioral indicators, socio-cultural indicators,

technology level indicators, environmental impact assessment indicators and institutional impact assessment indicators.

- Refer any Environment Impact Assessment report and analyse steps in EIA. Write your observations.

## VIII. Teaching methods/activities

- Lecture
- Assignment (Reading/Writing)
- Student's Book/Publication Review
- Student presentation
- Group Work
- Guest Lectures

## IX. Learning outcome

After successful completion of this course, the students are expected to be able to: Develop competencies in the areas of evaluation planning, indicator development, conducting evaluation and impact assessment and writing reports.

## X. Suggested Reading

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TAP– Tropical Agriculture Platform: Monitoring and Evaluation - www.tapipedia.org

GFRAS– Global Forum for Rural Advisory Services http://www.g-fras.org/en/

AESA– Agricultural Extension in South Asia http://www.aesanetwork.org/
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**I. Course Title : Managing Extension Organizations**
**II. Course Code : EXT 508**
**III. Credit Hours : 2+1**

**IV. Why this course?**

Organizations need to follow management principles, objectives and organizational processes. The extension organizations including management of agricultural extension services need to be managed for effectiveness and efficiency. This calls for key business management skills to be learnt by the students so that they can run extension organizations, and extension and advisory services efficiently using the principles, practices, knowledge and skills required for effective management.

**V. Aim of the course**

- To orient students on the importance of knowledge and skills on various management functions, as applicable to extension organizations
- Discuss ways of running extension services as managers of agri-ventures
- To develop capacities for becoming effective managers of agri-ventures

The course is organized as follows:

| No | Blocks | Units |
|---|---|---|
| 1. | Basics of Management | 1. Management- An Over view |
| 2. | Management in different types of Extension organizations | 1. Extension Management in public, private sector and other sectors<br>2. Concepts in Management |
| 3 | Motivation and Organizational Communication | 1. Motivation and Communication<br>2. Supervision and Control |

**VI. Theory**

**Block 1: Basics of Management**

**Unit 1: Management- An Over view**

Management and Extension management – Meaning, concept, nature 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

**Block 2: Management in different types of Extension Organizations**

**Unit 1: 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

**Unit 2: Concepts 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.

**Block 3: Motivation and Organizational Communication**

**Unit 1: 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 2: 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.

## VII. Practicals

- 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

## VIII. Teaching methods/activities

– Lecture
– Assignment (Reading/Writing)
– Student's Book/Publication Review
– Student presentation
– Group Work
– Student's interview of officers engaged in EAS
– Short attachments

## IX. Learning outcome

After successful completion of this course, the students are expected to be able to:

- Turn good managers of extension and advisory services including agri-ventures, FPOs, cooperatives etc.
- understand the key business skills needed for managing agribusinesses and managing the value chains
- critically evaluate the Management functions to make extension systems efficient by applying management principles and good practices of effective management
- engage in management of extension organizations

## X. Suggested Reading


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*Why are some leaders successful, while others fail?* https://www.mindtools.com/pages/article/leadership-theories.htm

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**I. Course Title : Enabling Innovation**

**II. Course code : EXT 509**

**III. Credit Hours : 1+1**

**IV. Why this course?**

An effective process of agricultural innovation is a pre-condition for meeting the global challenge of feeding the growing world population and reducing poverty. Ideas about innovation have evolved considerably over the past 4 decades. A frequently used term in the discussions around innovation in agriculture is 'Agricultural Innovation Systems' (AIS). The AIS is increasingly recognized as a useful framework to diagnose innovation capacity, design investment and organise scaling up interventions. Extension and Advisory Services (EAS) are integral to AIS. Extension professionals should have sound knowledge on how to scale up new knowledge and thereby enabling innovation and impact and their roles in strengthening AIS. This course aims to provide these perspectives.

**V. Aim of the course**

The aim of this course is to introduce the new perspectives related to "innovation" and help learners to apply the AIS framework especially in dealing with scaling up knowledge. It discusses the different ways to explore AIS including the roles of different actors and the enabling environment (including institutions and policies) in enabling innovation. The course also aims to broaden the understanding of students in scaling up knowledge and orient students to varied tools and approaches to scaling up

The course is organized as follows:

| No | Blocks | Units |
|---|---|---|
| 1 | Agricultural Innovation Systems | 1. Agricultural Innovation Systems: Concepts and Elements |
| | | 2. Enabling Innovation |
| 2 | Scaling Up Knowledge for Innovation | 1. Scaling Up: Tools, Approaches and Pathways |

**VI. Theory**

**Block 1: Agricultural Innovation Systems**

**Unit 1: Agricultural Innovation Systems: Concepts and Elements**

Origins of the innovation systems concept-Innovation vs Invention; Agricultural Innovation System (AIS) -ToT, FSR, AKIS and AIS compared, Key insights from AIS: How Innovation takes place; Role of different actors in AIS; Importance of interaction and knowledge flows among different actors, Role of Communication in Innovation Process; Role of Extension in AIS, Different views to analyze AIS: structural view, functional view, process view and capacity view.

**Unit 2: Enabling Innovation**

Role of enabling environment: Policies and institutions in enabling innovation; Role of Government-Innovation Policy: Achieving coordination and policy coherence;

Innovation Platforms; Role of Innovation Brokers, Methodologies for AIS Diagnosis: Typologies of existing methodologies-strengths and limitations; Assessing Extension and Advisory Services within AIS; Capacity Development in AIS: Strengthening capacities to innovate.

**Block 2: Scaling Up Knowledge for Innovation**

**Unit 1: Scaling Up: Tools, Approaches and Pathways**

Scaling Up: Definitions; Changing views on scaling up: Approaches to Scaling Up: Push, pull, plant, probe: Scaling up pathways: Drivers and spaces for scaling up; Framework and Tools for Scaling up: Planning and implementing a scaling up pathways; Scalability assessment tools; Role of policies in scaling up: Influencing policies for scaling up; Innovation Management for scaling up knowledge and implications for Extension and Advisory Services.

## VII. Practical

- Identify one crop/commodity sector and use AIS framework to diagnose actors and their roles, patterns of interaction, institutions determining interaction and the enabling policy environment and develop a AIS Diagnosis Report (Review and Key informant interviews)
- Undertake a case study on a successful case of scaling up knowledge and identify factors that contributed to its success
- Identify one specific knowledge (a technology, an approach) that has been recently introduced and develop an Up scaling Strategy

## VIII. Teaching methods/activities

– Lecture
– Assignment (Reading/Writing)
– Student's Book/Publication Review
– Student presentation
– Group Work

## IX. Learning outcome

After successful completion of this course, the students are expected to be able to:
– Appreciate and apply AIS framework in different contexts
– Enhance their knowledge and skills related to enabling innovation
– Diagnose AIS and design interventions for improvement and
– Design scaling up strategies to achieve innovation and impact

## X. Suggested Reading

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## Websites

**AESA**- Agricultural Extension in South Asia– http://www.aesanetwork.org/

**FAO**- Food and Agricultural Organisation (Research and Extension)– http://www.fao.org/research-and-extension/en/

**GFRAS**- Global Forum for Rural Advisory Services– http://www.g-fras.org/en/

**KIT**- Royal Tropical Institute (KIT)-Sustainable Economic Development– https://www.kit.nl/sed/

**TAPipedia** - Tropical Agriculture Platform– https://www.tapipedia.org/

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**I. Course Title : Gender Mainstreaming**

**II. Course Code : EXT 510**

**III. Credit Hours : 2+1**

**IV. Why this course?**

Gender as a concept has gained well deserved attention globally. Development planners and policy makers have realized that gender implications need to be considered while planning and implementing programmes and projects for their desired impacts. Conversely, the impacts of programmes on men and women also vary due to their different socially ascribed roles and responsibilities. Extension professionals need to understand the concept of gender and its implications on agricultural and rural development and their skills need to be built for critically identifying and analysing gender implications. This course is designed to meet these requirements.

**V. Aim of the course**

- To orient students on the importance of "Gender mainstreaming" as well as the other concepts related to gender. The students will be able to understand the gender roles and responsibilities and how in the present times, the roles may be shifting
- To discuss ways and various techniques for conducting gender analysis theoretically and practically as well as the prerequisites for gender analysis
- To develop capacities for identifying and addressing gender implications in all development programmes related to agriculture and allied sectors, climate change adaptation and livelihood security, as well as addressing gender issues through application of extension methods including PRA and PLA

The course is organized as follows:

| No | Blocks | Units |
|---|---|---|
| 1. | Why Gender Matters | 1. Historical Perspective of Gender<br>2. Agrarian Importance of Gender |
| 2. | Gender Related Concepts, Analysis, Gender and Technology | 1. Gender Related Concepts and Divides<br>2. Gender Analysis<br>3. Gender and Technology |
| 3. | Gender Mainstreaming and Women Empowerment | 1. Gender Mainstreaming<br>2. Women Empowerment<br>3. Global Best Practices, Policies and Frameworks<br>4. Entrepreneurship Development for Women |

**VI. Theory**

**Block 1: Why Gender Matters?**

**Unit 1: Historical Perspective of Gender**

Historical perspective of gender: Feminism and emergence of gender as a concept, Scope of gender studies in agriculture and rural development

**Unit 2: Agrarian Importance of Gender**

Agrarian Importance of Gender: Understanding the importance of gender in national and global agriculture-Key gender issues and challenges in agriculture - Gender and value chain- Global actions to address gender-needs and strategies to address gender and women empowerment.

**Block 2: Gender Related Concepts, Analysis, Gender and Technology**

**Unit 1: Gender Related Concepts and Divides**

Gender related concepts and divides: Understanding of the concepts of gender, gender equality and equity, gender balance, gender blindness, gender relations, gender neutrality, gender bias and discrimination, gender rights, gender roles and responsibilities. Gender budgeting, Gender divides and their implications such as gender digital divide, gender access to resources and inputs divide, gender mobility divide, gender wage divide, Gender needs: practical and strategic.

**Unit 2: Gender Analysis**

Gender analysis: Importance, usage, prerequisites, techniques of gender analysis-Tools for gender analysis.

**Unit 3: Gender and Technology**

Gender and technology: How gender and technology impact each other, Gender neutral technology, Gender sensitive technology, Gender supportive assistance in technology adoption-Gender in agricultural research and extension.

**Block 3: Gender Mainstreaming and Women Empowerment**

**Unit 1: Gender Mainstreaming**

Gender mainstreaming: Importance of gender mainstreaming in agriculture, Extension strategies to address gender issues such as gender and health, nutrition, gender in agricultural value chains, gender and climate change adaptation, gender and globalization& liberalization for mainstreaming gender concerns into the national programmes and policies.

**Unit 2: Women Empowerment**

Women Empowerment: Importance of women empowerment, Current national women empowerment and gender indices. Women empowerment approaches (technological, organizational, political, financial, social, legal and psychological), Case studies based on experiences and learning from various development and rural development programmes.

**Unit 3: Global Best Practices, Policies and Frameworks**

Global Best Practices, Policies and Frameworks: Global best practices, women empowerment and gender mainstreaming models and frameworks for addressing gender concerns in agriculture, approaches of various organizations: gender mainstreaming and special women focused programmes in agriculture and rural development.

**Unit 4: Entrepreneurship Development for Women**

Entrepreneurship development for women: Women entrepreneurship development in agriculture and agro processing: current status, women led enterprises, supporting organizations and schemes, Govt. policies, entrepreneurship development programme and process for women in agriculture.

## VII. Practicals

- Visit to a village for understanding rural gender roles and responsibilities as groups, followed by class presentation by groups
- Exercise for capturing shifts in gender roles and responsibilities
- Conducting gender analysis in a village using gender analysis techniques
- Visit to agencies supporting women empowerment followed by report presentation. Each student to visit a different organization such as State Rural Livelihood Mission, Women Development Corporation, Department of Agriculture, Important NGOs working for women empowerment
- Exercise for identification and prioritization of issues affecting/needs for women empowerment
- Interaction with a successful women entrepreneur/ SHG

## VIII. Teaching methods/activities

- Lecture
- Assignment (Reading/Writing)
- Student's Book/Publication Review
- Student presentation
- Group Work
- Student's interview of key policy makers
- Case Analysis
- Guest Lectures
- Review of policy documents
- Short attachments

## IX. Learning outcome

After successful completion of this course, the students are expected to be able to:

- Appreciate the importance of addressing agrarian gender concerns in the context of sustainable livelihoods and national development
- Understand the various concepts related to gender and the application of these concepts for women empowerment and gender mainstreaming
- Critically evaluate the various agricultural development, rural development programmes, schemes, policies and strategies for women empowerment within the context of achieving gender equity
- How to engage in gender analysis and collect and analyse sex-disaggregated data for developing strategies for women empowerment and gender mainstreaming

## X. Suggested Reading

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Christine J, Nafisa F and Taylor DS. 2014. *Gender and Inclusion Toolbox: Participatory Research in Climate Change and Agriculture.* Global Forum for Rural Advisory Services, Switzerland. http://www.gfras.org/en/component/phocadownload/category/17-gender.html?download=456:gender-and-inclusion-toolbox-participatory-research-in-climate-change-and-agriculture

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Liz P. 2018. *Implementing Gender Transformative Approaches (GTAs) in Agricultural Initiatives.* IGENAES and USAID. https://ingenaes.illinois.edu/wp-content/uploads/ING-DP-2018_06-Gender-Transformative-Approaches-in-Agricultural-Initiatives-Poulsen.pdf

Michele MT and Kathleen C. 2014. *Increasing access to agricultural extension and advisory services: How effective are new approaches in reaching women farmers in rural areas?* International Livestock Research Institute. http://www.gfras.org/en/component/phocadownload/category/17-gender.html?download=183:increasing-access-to-agricultural-extension-and-advisory-services-how-effective-are-new-approaches-in-reaching-women-farmers-in-rural-areas

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Sinha K. 2000. *Empowerment of Women in South Asia*. Association of Management Development Institute in South Asia, Hyderabad.

## Websites

**AESA**- Agricultural Extension in South Asia– http://www.aesanetwork.org/

**GFRAS**- Global Forum for Rural Advisory Services– http://www.g-fras.org/en/

**INGENAES**- Integrating Gender and Nutrition within Agricultural Extension Services– https://www.agrilinks.org/activities/ingenaes-integrating-gender-and-nutrition-within-agricultural-extension-services

**RRW-** Reaching Rural Women– http://www.reachingruralwomen.org/

**UN WOMEN**– http://www.unwomen.org/en

# Course Title with Credit Load
# Ph.D. in Agricultural Extension Education

**Major Courses 12**

| Course Code | Title of Course | Credit Hours |
|---|---|---|
| EXT-601* | Policy Engagement and Extension | 2+1 |
| EXT-602* | Methodologies for Social and Behavioural Sciences | 2+1 |
| EXT-603* | Technology Commercialization and Incubation | 2+1 |
| EXT-604* | Educational Technology and Instructional Design | 2+1 |

**Minor Courses 06**

a. It is suggested the student may choose at least one out of three courses listed below as part of minor courses as these are related to policy advocacy and bring in global perspectives with an aim to build a larger understanding of the subject to the student.
b. Further, it is suggested that the student may choose the remaining Courses from any other discipline including the disciplines of Agrl. Economics/ABM and are related to the research problem selected by the student.
c. The final choice of the minor courses should be mandatorily approved by the Student Advisory committee/HOD.

| | | |
|---|---|---|
| EXT-605 | Risk Management and Climate Change Adaptation | 2+1 |
| EXT-606 | Livelihood Development | 1+1 |
| EXT-607 | Facilitation for People centric Development | 2+1 |

**Supporting Courses 05**

| | | |
|---|---|---|
| STAT | Multivariate Statistical Methods for Extension Research | 2+1 |
| COM | Multimedia and Applications | 1+1 |

It is suggested that the student may choose the Supporting Courses other than the listed courses, provided the opted courses are related to the research problem selected by the student and be mandatorily approved by the Student Advisory committee/HOD".

**Seminars 2**

| | | |
|---|---|---|
| EXT-691 | Doctoral Seminar-I | 1+0 |
| EXT-692 | Doctoral Seminar-II | 1+0 |
| | ii. Thesis / Research | 75 |
| | Total | 100 |

# Course Contents
# Ph.D. in Agricultural Extension Education

**I. Course Title : Policy Engagement and Extension**
**II. Course Code : EXT 601**
**III. Credit Hours : 2+1**

**IV. Why this course?**

Extension's performance in any country to a large extent is dependent on the wider policy and institutional context prevailing at the national level. At the organizational level, extension should have capacities to influence policies that affect their performance. To effectively influence policies, extension professionals need to generate not only sound evidence of its impact, but also capacities to engage with policy relevant actors especially at various levels. While few countries have developed specific extension policies, there has been very limited success in translating these policies into programmes and operational guidelines. Lack of policy relevant research to generate evidence on extension's impact; poor documentation of successful initiatives, and lack of training on engaging with policy relevant actors have all contributed to this. Extension professionals, often encounter situations where existing policy constraints development interventions or where new policies could better support development. This course is aimed at developing these capacities to successfully engage with policy actors and bringing about desirable policy changes to strengthen extension.

**V. Aim of the course**

- To orient students on the importance of policies in shaping extension's performance
- To discuss ways of generating policy relevant evidence to influence policies
- To develop capacities to engage with policy actors and the policy development process

The course is organized as follows:

| No | Blocks | Units |
|---|---|---|
| 1. | Why policies matter? | 1. Understanding Policy<br>2. Policy Advocacy and Tools<br>3. Policy Analysis<br>4. Policy Development Process |
| 2. | Using evidence to influence Policy Change | 1. Influencing Policy Change<br>2. Global Experience with Extension Policy |

**VI. Theory**

**Block 1: Why Policies Matter?**

**Unit 1: Understanding Policy**

Why policies are important for extension? Role in providing structure, ensure funding and framework for providing functions-examples; Policy: definitions and

types: Is policy a product or a process or both? Policies and institutions-How these influence defining organisational roles and performance in extension organizations-Role of policies in upscaling knowledge-Role of extension in influencing policies to enable innovation.

**Unit 2: Policy Advocacy and Tools**

Definition of advocacy, Approaches to policy advocacy-Advising, Media campaigning, Lobbying, Activism, Information Education Communication (IEC) and Behavior Change Communication (BCC); Advocacy for Rural Advisory Services (RAS); Policy advocacy strategy

**Unit 3: Policy Analysis**

Explain the meaning and use of policy analysis in decision- making; Describe different types of policy analysis- empirical, evaluative or normative policy analysis, retrospective/ prospective policy analysis, predictive/prescriptive/descriptive policy analysis; How to do policy analysis? - understand the process of policy analysis, highlight the different methods and techniques used in policy analysis, doing ethical policy analysis; Tools for policy impact- research tools, context assessment tools, communication tools, policy influence tools

**Unit 4: Policy Development Process**

Policy development process: Who drives policy change?: National Governments, Donors, Civil Society-varied experiences: Understanding the environment and key actors in policy space- problem identification-policy adoption, implementation and evaluation; stakeholder mapping, identifying opportunities and barriers, mobilising financial resources; Dealing with policy incoherence: identifying contradictions and challenges in policy implementation

**Block 2: Using Evidence to Influence Policy Change**

**Unit 1: Influencing Policy Change**

Generating evidence: Role of policy research; analyzing the usefulness and appropriateness of the evidence; Using evidence in policy advocacy; Understanding your audience: analyzing channels of influence; creating alliances; identifying policy champions; Defining goals and objectives; Developing advocacy messages: Policy papers, Policy briefs, good practice notes, *etc*.: Good practices in influencing policies Organising policy dialogues: Policy engagement strategy-Engaging with policy makers: GO and NGO experiences; Policy working groups; advisory panels; use of committees: Use of media including ICTs and social media for influencing policies.

**Unit 2: Global Experience with Extension Policy**

Extension policy in different countries: Explicit extension policy Vs extension as part of Agriculture Policy, Challenges in policy implementation: lack of capacities, financial resources, ownership, lack of stakeholder consultations: Strengthening capacities in extension to influence policies: Global Forum for Rural Advisory Services (GFRAS)'s efforts in strengthening extension policy advocacy: policy compendium, training modules, training for strengthening capacities to influence policies.

**VII. Practicals**

- Analysis of country/state level agricultural/extension policy to understand the policy intentions from strengthening EAS

- Analysis of extension policy of other countries: policy intentions, processes adopted in development of the policy and mechanisms of policy implementation
- Interview key policy actors in EAS arena at the state/national level (eg: Director of Agriculture, Director of Extension in SAU, Chairman/Managing Director of Commodity Board. Member Agriculture, State Planning Board) to explore policy level challenges in EAS
- Identify what evidence policy makers look for from extension research? Is the evidence available? If so what form? (Reports, Briefs etc), If not, develop a plan
- Explore how different stakeholders influence policies (eg: policy advocacy of prominent NGOs, private sector and public sector) -What mechanisms and tools they use
- Identify policy level bottlenecks that constrain effective EAS delivery at the district level- Eg: Issues around linkages between KVK and ATMA; inter-departmental collaboration; public private partnerships; joint action etc.

## VIII. Teaching methods/activities

– Lecture
– Assignment (Reading/Writing)
– Student's Book/Publication Review
– Student presentation
– Group Work
– Student's interview of key policy makers
– Case Analysis
– Guest Lectures
– Review of policy documents
– Short attachments

## IX. Learning outcome

After successful completion of this course, the students are expected to be able to:
– Appreciate the role of policies in shaping performance of extension
– Understand how to generate and communicate policy relevant evidence
– Critically evaluate extension policies in different countries
– How to engage in policy advocacy.

## X. Suggested Reading

AEPF. 2015. *Report on the Policy Forum by Ghana Directorate of Agricultural Extension Services,* Ministry of Food and Agriculture; Modernizing Extension and Advisory Services and Agriculture Policy Support Project, Ghana. http://www.g-fras.org/en/knowledge/documents/category/18-policy.html?download=490:report-on-the-ghana-agricultural-extension-policy-forum-2015

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The Policy Project. 1999. *Networking for Policy Change An Advocacy Training Manual.* The Futures Group International, Research Triangle Institute (RTI) and The Centre for Development and Population Activities (CEDPA). http://www.policyproject.com/pubs/AdvocacyManual.pdf

**I. Course Title : Methodologies for Social and Behavioural Research**

**II. Course Code : EXT 602**

**III. Credit Hours : 2+1**

**IV. Why this course?**

In general, social and behavioural science research plays a crucial role in the professional development in a subject domain, through advancing knowledge and developing working modalities and standards. Precisely, the empirical research helps to develop robust and outcome focused working strategies, processes and models to enable the professionals to maximise their efficiency. This course on advanced social science research caters to the need to equipping the scholars with essential skills in conducting high quality research which helps them to design working strategies, processes and models for professional development.

**V. Aim of the course**

This course aims to equip the doctoral students to conduct outcome-oriented social and behavioural science research and to develop sound field focused extension strategies and models with adequate replicability, while advancing knowledge on processes governing success of those strategies. The focus of the course is on equipping the scholars with advanced capacities in conducting systematic, objective and outcome oriented research by applying state-of-art methods and tools at every stage of research from planning to publishing.

The course is organized as follows:

| No | Blocks | Units |
|---|---|---|
| 1. | Advanced methods for improving quality of research data | 1. Measurement Properties of Research Instruments<br>2. Threats to Data Quality |
| 2. | Scales, indexes and tests | 1. Scales, Indexes and Tests-1<br>2. Scales, Indexes and Tests-2 |

| No | Blocks | Units |
|---|---|---|
| 3. | Emerging research approaches and designs | 1. Qualitative Research Methods<br>2. Emerging Approaches |
| 4. | Utilising research outputs | 1. Publishing Research<br>2. Ethics in Extension Research |

## VI. Theory

### Block 1: Advanced Methods for Improving Quality of Research Data

#### Unit 1: Measurement Properties of Research Instruments

Measurement properties – Dimensionality, reliability and validity; Dimensionality – Unidimensionality and multidimensionality, Methods of assessing dimensionality, Formative and reflective constructs; Validity - Importance, Internal validity - face validity; content validity, Substantive Validity, Structural Validity; External validity - Convergent and Discriminant Validity, known-group validity, Criterion-Related Validity, Consequential Validity, nomological validity; Methods of assessing various forms of validities – Judges rating, Lawshe's Content Validity Ratio, Item-objective congruence index; latent variable method; Reliability - Internal consistency reliability – Split-Half, Cronbach alpha; Temporal Stability reliability - test-retest method; Interrater Consistency and Consensus – inter rater reliability and interrater agreement; Alternative Forms or parallel forms reliability – Reliability of difference - Factors Affecting the Validity and Reliability of Test Scores; Generalizability Theory

#### Unit 2: Threats to Data Quality

Errors and biases; Errors – Meaning and sources; Types - Sampling error, Non-sampling or measurement error and Processing error – Meaning, causes; Effects of errors and biases on data quality; Bias in behavioural research – Meaning, causes, Types – Respondent and researcher biases; Methods of reducing errors and biases in surveys, questionnaires, personal interviews, focus groups and online methods

### Block 2: Scales, Indexes and Tests

#### Unit 1: Scales, Indexes and Tests-1

Approaches to measurement and scale development - Classical test theory. Formative or index models, The C–OAR–SE approach and Item Response Theory; Item analysis in Classical test theory – item difficulty and item discrimination; Scoring performance in scales and tests – meaning, types and methods; Scale development strategies – deductive and empirical; Stimulus-centred scales – method of equally appearing intervals, paired comparison, Person scaling – Q methodology; Subject-centre scales – The Likert scale and Semantic Differential

#### Unit 2: Scales, Indexes and Tests-2

Steps in constructing a multi-dimensional scale using confirmatory factor analysis,; Response scales - Guttman's scalogram analysis and The Rasch method; Indexes –Meaning, types, importance; Similarities and differences with scales, Methods of constructing indexes; Common indexes used in extension. Measurement invariance –Meaning, types, methods of assessing measurement invariance. Tests – meaning, types, importance; steps in conducting various tests – knowledge test

**Block 3: Emerging Research Approaches and Designs**

**Unit 1: Qualitative Research Methods**

Qualitative methods – Meaning; Types – Ethnography, Grounded theory, Phenomenology, Ecological psychology, Discourse Analysis; Observational research; Case study research – Sampling and sample size; Data collection methods - In-depth interviews, Focus groups, Direct observation, Record review; Content analysis; Unobtrusive Measures; Projective and semi-projective techniques; Selecting right qualitative method – Strengths and limitations of qualitative research; Analysis and interpretation of qualitative research data; Research synthesis – meaning, importance, methods; Systematic reviews and meta analysis – meaning, steps, and applications; Policy research

**Unit 2: Emerging Approaches**

Mixed methods research – meaning, purpose, types and applications; Participatory research – Meaning, importance, types, methods and tools and applications; Action research – Meaning, importance, Principles, Types, Steps in conducting action research, application in behavioural sciences. Social Network Analysis – Meaning, importance, types, steps in social network analysis, applications; Advanced methods of measuring perception and beliefs. Multi criteria decision making, analytical hierarchy approach

**Block 4: Utilising Research Outputs**

**Unit 1: Publishing Research**

Scholarly communication process; Research reports – Meaning, types, contents; Presentations – Meaning, types, principles of good presentation - Tell 'Em" and KISS 'Em" principles; Research publications – meaning, importance, types; Guidelines for preparing research papers - Peer review process, citation styles; Open access publishing; Publishing in social media. Software in academic writing

**Unit 2: Ethics in Extension Research**

Ethics in conducting behavioural research; Human subject research – Meaning, history, and ethical guidelines; Ethical aspects of collecting and using Indigenous knowledge and farmers technologies; Ethical practices in publishing; Plagiarism – meaning, sources, Identifying and correcting plagiarism in a research paper using anti-plagiarism software

**VII. Practicals**

- Practice in developing research instruments
- Methods of assessing measurement properties of research instruments - dimensionality, reliability and validity
- Hands-on exercise in minimising errors and biases
- Hands-on experience in constructing tests, scale and indexes
- Practice in summated scale development using confirmatory factor analysis
- Hands on experience in assessing measurement invariance
- Practicing and collecting data using participatory tools and techniques, analyzing and interpreting qualitative data
- Hands-on experience in writing systematic review using meta-analysis
- Field practice in conducting action research
- Practical experience in writing research paper
- Hands on exercises using software for qualitative data analysis
- Practice in detecting and correcting plagiarism using software

**VIII. Teaching methods/activities**

- Lecture
- Assignment (Reading/Writing)
- Student presentation
- Group Work
- Guest Lectures
- Research Report (Writing)

**IX. Learning outcome**

- The scholars should develop critical skills in conducting systematic and objective research by using robust methods while minimising biases and errors
- The students should intelligently choose and apply advanced methods and tools at every stage of research and execute them in a objective way by managing the actors and processes effectively
- The students should develop expertise in designing tests, scales and indexes along with other tools to measure the socio-psychological processes at individual, group and community levels

**X. Suggested Reading**

Berg B. 2009. *Qualitative Research. Methods for the Social Sciences.* Boston: Allyn& Bacon.

Creswell JW .2007. *Qualitative inquiry and research design: Choosing among five approaches* (2nd ed.). Thousand Oaks, CA: SAGE Pub.

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Nunnally, JC, and Bernstein IH. 1994. *Psychometric theory* (3rd ed.). New York, NY: McGraw-Hill

Rao, C.R. and Sinharay S. 2007. *Handbook of Statistics, Vol. 26: Psychometrics,* The Netherlands; Elsevier Science B.V.

Raykov T and Marcoulides GA. 2010. *Introduction to Psychometric Theory*. New York, NY: Taylor & Francis

Scott J and Carrington PJ. 2011. *The SAGE handbook of social network analysis*. London: SAGE.

Sekaran U and Bougie R. 2013. *Research Methods for Business A Skill-Building Approach.* 6th Edition, Wiley, New York.

Sivakumar PS, Sontakki BS, Sulaiman RV, Saravanan R and Mittal N. (eds). 2017. *Good Practices in Agricultural extension Research. Manual on Good Practices in Extension Research and Evaluation.* Agricultural Extension in South Asia. Centre for research on innovation and science and policy (CRISP), Hyderabad. India. http://www.aesanetwork.org/wp-content/uploads/2018/07/6.pdf

**I. Course Title : Technology Commercialisation And Incubation**

**II. Course Code : EXT 603**

**III. Credit Hours : 2+1**

**IV. Why this course?**

The technology commercialisation and incubation is an emerging area which links

technology development, transfer and commercialisation processes with entrepreneurship development. Technology commercialisation aims to realize the value of agricultural technologies developed at the research establishments, by maximising their utility to stakeholders. With the increasing awareness of protecting and commercialising the Intellectual Property Resources (IPR) in the free market economy, there is a need to understand the organic relationship between protection and commercialisation IPR, and entrepreneurship development.

**V. Aim of the course**

This course is aimed to develop a critical understanding among extension students about how the technology commercialisation process is linked to IPR management and entrepreneurship development.

The course is organized as follows:

| No | Blocks | Units |
|---|---|---|
| 1. | Technology commercialisation and the modern context | 1. Basics of Technology Commercialisation<br>2. Nature of Agricultural Technology<br>3. Basics of Technology Transfer and Commercialisation |
| 2. | Intellectual Property Resources (IPR) Management | 1. Overview of Intellectual Property Resources<br>2. Systems for protecting IP<br>3. Management of IPR<br>4. Protection and Management of Biological Resources<br>5. Protection, Management and Commercialisation of Grass root and Farmers Innovations, Traditional and Indigenous Knowledge<br>6. Geographical Indications (GI) and Appellation of Origin<br>7. Genetically Modified Organisms (GMO), Agriculture and Biosafety |
| 3. | Technology commercialisation | 1. Technology Assessment and Refinement<br>2. Technology Valuation<br>3. Technology Commercialisation Strategies<br>4. Scaling up of Technologies<br>5. Technology Licensing<br>6. Technology Takers and Entrepreneurship<br>7. Policy Support for Technology Commercialisation and Entrepreneurship Development |
| 4. | Technology Incubation | 1. Basics of Technology Incubation<br>2. Technology Incubation in India |
| 5. | Technology promotion and essential skills for technology commercialisation | 1. Technology Promotion<br>2. Dealing with Entrepreneurs, Agripreneurs and Other Stakeholders |
| 6. | Emerging approaches in technology commercialisation and incubation | 1. Technology Scouting |

## VI. Theory

### Block 1: Technology Commercialisation and the Modern Context

#### Unit 1: Basics of technology commercialisation

Technology - Definition, functions, process of technological advancement – invention, discovery, innovation and technology; types of innovation - Basic research, Breakthrough innovation, Disruptive Innovation and Sustaining Innovation; Technology transfer and commercialisation

#### Unit 2: Nature of Agricultural Technology

Agricultural technology – meaning, types; technology generation system; technology life cycle

#### Unit 3: Basics of Technology transfer and commercialisation

Technology transfer Vs Commercialisation; Technology commercialisation process – elements, models, systems and processes; Technology transfer model – research, disclosure, development and commercialisation

### Block 2: Intellectual Property Resources (Ipr) Management

#### Unit 1: Overview of Intellectual Property Resources

Introduction to IPR; Overview & Importance; Genesis; IPR in India and IPR abroad; Patents, copyrights, trademarks & trade secrets, geographical indication, industrial design; Emergence of IPR Regimes and Governance Frameworks - Trade-Related Aspects of Intellectual Property Rights (TRIPS), Convention on Biological Diversity (CBD), Cartagena Protocol, International Union for Protection of New Plant Varieties (UPOV), and BIMSTEC.

#### Unit 2: Systems for Protecting IP

IPR protection laws and systems – National IPR Policy; and IPR laws; procedures for filing IP protection; Systems of IP protection and management in agricultural universities and research institutions and also by stakeholders

#### Unit 3: Management of IPR

Mechanisms of IPR Management – Institutional arrangement, IP Management processes – invention disclosure; IP portfolio management; Infringement management

#### Unit 4: Protection and Management of Biological Resources

Introduction; National Biodiversity Act (2002); Protection of Plant Varieties and Farmers Rights Act (2001); Guidelines for registration and transfer of biological resources; Farmers rights; Mechanisms of documenting/ collecting, protecting and commercialising farmers varieties and other biological resources; National Biodiversity Authority, PPVFRA and other agencies involved in management of biological resources in India. Access to Genetic Resources and Sharing of Benefits

#### Unit 5: Protection, Management and Commercialisation of Grassrootand Farmers Innovations, Traditional and Indigenous Knowledge

Traditional and Indigenous Knowledge, Grassroot and Farmers Innovations – Meaning, forms and importance; Systems of documentation, registration, protection and commercialisation. Documentation of traditional indigenous knowledge - Traditional Knowledge Digital Library (TKDL), Community Biodiversity Registers

(CBRs), People's Biodiversity Registers (PBRs), Plant Biodiversity Register, and Honeybee Network.

**Unit 6: Geographical Indications (GI) and Appellation of Origin**

Geographical indications and appellation of origin – meaning, origin; Geographical Indications of Goods (Registration and Protection) Act (1999); Documentation, registration and commercialisation of GI protected materials and processes.

**Unit 7: Genetically Modified Organisms (GMO), Agriculture and Biosafety**

The Global Concerns on Use of Genetically Modified Organisms in Food and Agriculture; The Cartagena Protocol on Bio-safety; Regulation of GMO in India - Recombinant DNA Advisory Committee (RDAC), Institutional Bio-safety Committee (IBSC), Review Committee on Genetic Manipulation (RCGM), Genetic Engineering Approval Committee (GEAC), State Bio-safety Coordination Committee (SBCC) and District Level Committee (DLC). Laws and Acts for regulation of GMO - Guidelines for Research in Transgenic Plants, 1998; Seed Policy, 2002; Plant Quarantine Order, 2003; Regulation for Import of GM Products Under Foreign Trade Policy, 2006; National Environment Policy, 2006

**Block 3: Technology Commercialisation**

**Unit 1: Technology Assessment and Refinement**

Meaning; Importance; Approaches and methods of assessment and refinement of various technologies – stakeholder oriented approaches including participatory technology assessment and refinement; assessment and refinement of traditional and indigenous knowledge and grassroot innovations

**Unit 2: Technology Valuation**

Returns to investment; IP Valuation-Oxford context, IP Valuation methods - Cost approach; Income approach - Discounted Cash Flow, Risk-Adjusted Net Present Value, Net Present Value with Monte Carlo Simulation and Real Options Theory; Market approach - Industry Standards Method, Rating/Ranking Method, Rules of Thumb Approach and Auction Method; Hybrid approaches; Royalty rate method

**Unit 3: Technology Commercialisation Strategies**

Meaning- approaches for technology commercialisation – technology scaling up, technology licensing, handholding, agripreneur development, technology business incubation

**Unit 4: Scaling up of Technologies**

Meaning, types and stages of technology scaling up; mechanisms

**Unit 5: Technology Licensing**

Meaning and types - Procedures of licensing, preparing licensing documents; Management of technology licensing process

**Unit 6: Technology Takers and Entrepreneurship**

Meaning; types of technology takers; Technology Taking as a Strategy; Types of entrepreneurship – agripreneurs, startups, small businesses, Producer Organizations, Self Help Groups, Clusters and other forms of entrepreneurship

**Unit 7: Policy support for Technology Commercialisation and Entrepreneurship Development**

Policy support for entrepreneurship development in India - National Policy on Skill

Development and Entrepreneurship and other polices; Government of India Support for Innovation and Entrepreneurship – Startup India, Make in India, Digital India, Atal Innovation Mission and others; Entrepreneurship policy and schemes at different states of India; Organisations promoting entrepreneurship in India

**Block 4: Technology Incubation**

**Unit 1: Basics of Technology Incubation**

Meaning, functions and types; stakeholder oriented incubation process – Livelihood incubation, village incubators

**Unit 2: Technology Incubation in India**

System of technology incubation- incubation process; its effectiveness; Managing profit oriented and non-profit incubators; Schemes for promoting incubators in India

**Block 5: Technology Promotion And Essential Skills For Technology Commercialisation**

**Unit 1: Technology Promotion**

Technology promotion – meaning, types, business meetings, scientist-industry/ entrepreneur meets, technology conclave, business plan competition, farmers fairs, technology shows

**Unit 2: Dealing with Entrepreneurs, Agripreneurs and Other Stakeholders**

Business communication; Business Etiquette; business networking

**Block 6: Emerging Approaches in Technology Commercialisation and Incubation**

**Unit 1: Technology Scouting**

Technology Scouting and Innovations in technology incubation

**VII. Practicals**

- Understanding the technology commercialisation process – Visit to Technology Commercialisation Unit of ICAR Institute/ Agricultural University
- Understanding the IPR protection practices – Visit to Patent Attorney office
- Hands-on experience in drafting IPR application – Patent/Copyright/ Trademark
- Understanding protection of biological resources including plant varieties – Visit to PPVFRA Branch office/ ICAR Institute or Agricultural University involved in plant variety protection
- Documenting Traditional and indigenous knowledge – Field experience in using various protocols of using traditional and indigenous knowledge
- Protecting unique local goods through Geographical Indications – Hands on experiences in documenting and registering Geographical indications
- Technology assessment/ validation of traditional and indigenous knowledge – QuIK and other methods
- Hands on experience in technology valuation
- Hands on experience in technology licensing process including drafting agreements
- Understanding the Technology Business Incubation – Visit to Agri Business Incubator or Technology Business incubator
- Hands on experience in planning and organising technology promotion events

- Hands on experience in various techniques in business communication and Business etiquette

**VIII. Teaching methods/activities**

- Lecture cum discussion
- Cases
- Class exercises
- Assignment (Reading/Writing)
- Student's Book/Publication Review
- Group Presentation

**IX. Learning outcome**

At the end of the course the students are expected to develop competencies in:

- Enabling stakeholders to protect and manage their IPR
- Managing IPR to maximise their value realisation through commercialisation, and
- Providing mentoring and handholding support to agripreneurs, rural entrepreneurs, start-ups, Farmer Organisations and other forms of entrepreneurs through incubation

**X. Suggested Reading**

Bandopadhyay D. 2018. *Securing Our Natural Wealth: A Policy Agenda for Sustainable Development in India and for Its Neighbouring Countries.* Singapore; Springer.

Ghosh, S. and Joshi, A. 2017. *Handbook for Non-Profit Incubator Managers.* New Delhi: Deutsche Gesellschaftfür Internationale.

Gupta AK. 2016. *Grassroots Innovation: Minds on the margin are not marginal minds.* Gurgaon: Penguin Books.

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Pandey N and Dharni K. 2014. *Intellectual Property Rights.* Delhi. PHI Learning Pvt. Ltd.

Sharma G and Kumar H. 2018. *Intellectual property rights and informal sector innovations: Exploring grassroots innovations in India*. The Journal of World Intellectual Property. 1-17. DOI: https://doi.org/10.1111/jwip.12097.

Stevens AJ. 2016. *Intellectual property valuation manual for academic institutions* (Report No. CDIP/17/INF/4). Geneva: Committee on Development and Intellectual Property (CDIP).

WIPO and ITC. 2010. *Exchanging Value – Negotiating Technology Licenses, A Training Manual*. World Intellectual Property Organization (WIPO).

**I. Course Title : Educational Technology and Instructional Design**

**II. Course Code : EXT 604**

**III. Credit Hours : 2+1**

**IV. Why this course?**

Technology, digital media and mobile access have drastically changed how people learn. And the field of education is rapidly becoming a dynamic opportunity for interactive instruction. Today's curriculum developers and instruction designers, especially in the extension and RAS ecosystem, need to equip themselves with the continuous developments in both theory and practice of instructional design so as to create satisfying learning experiences. Similarly, knowledge and skilful use of social media and disruptive technologies like internet of things (IOT), augmented reality, artificial intelligence, etc. makes this course essential for extension professionals who are expected to act as harbingers of change.

## V. Aim of the course

The aim is to develop knowledgeable, responsive and effective teachers committed to educating diverse group of learners in a dynamic extension landscape. This course will help the learners to appreciate the role of technology in learning and how it can be integrated into instructional design to create engaging learning experience in both classroom and online learning environment. The course also aims to prepare the students as competent professionals employable in the extension and RAS providers both as specialised researchers as well as designers.

The course is organized as follows:

| No | Blocks | Units |
|---|---|---|
| 1. | Educational Technology | 1. The Landscape of Educational Technology and Instructional Design<br>2. Theories of learning<br>3. Technology Enabled Learning |
| 2 | Instructional Design | 1. Theories of Instruction<br>2. Creating Instruction<br>3. Instructional Strategies<br>4. Evaluating Instruction<br>5. Trends in Instructional Design |

## VI. Theory

### Block 1: Educational Technology

#### Unit 1: The Landscape of Educational Technology and Instructional Design

Understanding various terms - educational technology, instructional design, instructional systems design, curriculum design, pedagogy, andragogy; Brief overview of the origin and evolution of ET and ID as theory and practice; what is the relevance of ET and ID relevant in extension and rural advisory services? Extensional professionals as instructional designers and architects of the learning experience

#### Unit 2: Theories of Learning

What is learning? Critical overview of Behaviorism, Cognitivism, Constructivism and Complex learning theories; instructional designers and learning theories; Types of learning or learning domains- Bloom's taxonomy of the cognitive domain, Krathwohl and Bloom's affective domain and Simpson's psychomotor domain

#### Unit 3: Technology Enabled Learning

What is the role of technology in education? Digital media, new tools and technology; Open and distance Learning (ODL); Online Education - Synchronous and Asynchronous learning models; eLearning, Massive Open Online Courses - SWAYAM, Open Education Resources (OERs), Course CERA, EduEx, CoL, RLOs; digital education and its applications in higher agricultural education; Smart classrooms and Campuses, Web-based remote laboratory (WBRL); Integrating media and digital tools into ID; types and implications of disruptive technologies for higher education and extension; Augmented learning; Adaptive learning; meaning, features and good practices in using open source Learning Management Systems (Moodle); Quality assurance and certification in e-learning.

**Block 2: Instructional Design**

**Unit 1: Theories and Models of Instruction**

Howard Gardner's Theory of Multiple Intelligences, David Kolb's Experiential Learning Cycle, Albert Bandura's Social Learning Theory, Rand Spiro's Cognitive Flexibility Theory and Its Application In eLearning, Wlodkowski's Motivational Framework for Culturally Responsive Adult Learning; ADDIE Model, Dick and Carey Model, SAM Model, Bloom's Taxonomy; integrating the theories of instruction into the practice of ID in extension and RAS ecosystem.

**Unit 2: Creating Instruction**

Overview of planning, designing and implementing the curricula and learning experiences; Needs Analysis - meaning, approaches and steps; Task and content analysis - meaning, approaches, steps and techniques (topic analysis, procedural analysis, and the critical incident method); Learner analysis – meaning, importance and approaches, relevance of Maslow's Hierarchy of Needs and learning styles, Captive Audience vs. Willing Volunteers, Universal vs. user-centered design, Learner Analysis Procedures; Writing learning objectives: Meaning of Learning Goal and Learning Objectives; ABCDs of well-stated objectives; Setting goals, translating goals into objectives; Contextualising ADDIE process within the Extension learning environment

**Unit 3: Instructional Strategies**

Organizing content and learning activities - scope and sequence of instruction; Posner's levels of organizing (Macro, Micro, Vertical, and Horizontal) and structures of organizing (content vs. media) instruction, Gagne's events of instruction, Edgar Dale's Cone of Experience; Methods of Delivery- classroom teaching, programmed instruction, synchronous and asynchronous modes of distance education; Changing role of a teacher in classroom and teaching competencies

**Unit 4: Evaluating Instruction**

Meaning of Assessment, Measurement and Evaluation; Developing learner evaluations and their reliability & validity; assessment techniques for measuring change in knowledge, skill and attitude of learners - Objective Test Items, Constructed-Response Tests, Direct Testing, Performance Ratings, Observations and Anecdotal Records, Rubrics, Portfolios, Surveys and Questionnaires, Self-Reporting Inventories, Interviews; Conducting learner evaluation pre-, during and post-instruction; Formative and Summative Evaluation- meaning, approaches and steps; Evaluating Learner Achievement and the Instructional Design Process; Evaluating the success of instruction; Performance appraisal of teachers

**Unit 5: Trends in Instructional Design**

Alternatives to ADDIE model - Rapid prototyping and constructivist ID, reflections on instructional design as science and as an art; Relating ID models and process in extension learning environment; political economy of higher education in developed and developing countries; University assessment and rating methods, returns from agricultural higher education; research in education and instructional design.

**VII. Practicals**

- Exercises on preparation of the Analysis Report that includes the task/content

analysis and learner analysis and the Design Plan includes learning objectives and corresponding instructional strategies and assessment items

- Prepare course outline and lesson plan with an appreciation for diverse learning styles based on temperament, gender, and cultural/ethnic differences and deliver a lecture for UG/PG students
- Assessing learning styles through Barsch and Kolb inventories
- Development and testing of survey instruments for evaluating learning outcomes/ competencies of students
- Development and testing of survey instruments for performance appraisal / competency assessment of teachers.
- Design an online e-learning module on a topic of interest as a capstone project - integrate and apply the knowledge and skills gained from the course for creating an effective learning experience for a target audience
- Designing and developing a theme based knowledge portals
- Exercises on designing an online course using open source LMS like moodle or EdX
- Select and evaluate or design for social al media
- Prepare a short research paper on recent theories and models of instructional design
- Interview an instructional designer of your choice and prepare a synthesis report about what job roles he/she perform, What ID processes does he or she use, challenges faced
- Develop a prototype for one of the lessons in your design plan using PowerPoint or a website builder such as Weebly to create the screens integrating multimedia content and various functionalities
- Field visit to a virtual learning / augmented learning labs, e-learning labs, distance learning centres, etc.
- Hands-on practice with video-editing software, web conferencing and video conferencing solutions

**VIII. Teaching methods/activities**

- Lectures & Videos
- Individual and group assignments
- Group discussion and debating
- Enactive learning exercises
- Case studies / Case analysis
- Storyboarding
- Guest Lectures
- Field Visits
- Capstone Project
- Prototype development

**IX. Learning outcome**

After successful completion of this course, the students are expected to be able to:

- Develop a critical understanding of concepts of learning and education within the context of agricultural development
- Relate and apply learning theories and models to the development, design and evaluation of courses utilizing educational technology and instructional design
- Hone their skills to take up research work in analysing and evaluating different

learning systems, teaching-learning environments, competencies and learning outcomes

– Find placement opportunities in the industry for job profiles such as e-learning specialist, training officer, curriculum developer, instructional designer, education consultant, etc.

## X. Suggested Reading


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Allen M. 2013. *Leaving ADDIE for SAM: An Agile Model for Developing the Best Learning Experiences*
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Bandura A. 1977. *Social learning theory*. Englewood's Cliffs, NJ: Prentice-Hall

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Kolb D. 2014**.** *Experiential learning: Experience as the source of learning and development* (2nd ed.). Upper Saddle River, NJ: Prentice Hall

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Merrill MD, Drake L, Lacy M J and Pratt J. 1996. *Reclaiming instructional design* (PDF). Educational Technology. 36 (5): 5–7. Archived (PDF) from the original on 2012-04-26.

Parrish PE. 2007. *Aesthetic principles for instructional design,* Education Technology Research

and Development, DOI 10.1007/s11423-007-9060-7
Parrish PE. 2005. *Embracing the aesthetics of instructional design.* Educational Technology, 45(2), 16–25.
Reiser RA, Mackal M, and Sachs SG . 2005. *Textbooks used in graduate programs in instructional design and technology: Changes over the past twelve years.* Educational Technology, 45(5), 53-61.
Reiser RA. 2001. *A History of Instructional Design and Technology: Part I: A History of Instructional Media.* Educational Technology Research and Development, 49 (1), 53-64.
Reiser RA. 2001. *A History of Instructional Design and Technology: Part II: A History of Instructional Design.* Educational Technology Research and Development, 49 (2), 57-67.
Spector JM, Merrill MD, Elen J and Bishop MJ. (Eds.), 2014. *Handbook of research on educational communications and technology* (4th ed.). New York: Springer.
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https://postgutenberg.typepad.com/newgutenbergrevolution/?utm_campaign=elearningindustry.com&utm_source=%2Fcognitive-flexibility-theory&utm_medium=link
Tennyson R, Dijkstra S, Schott F and Norbert S. 1997. *Instructional Design: International Perspectives. Theory, Research, And Models.* Vol. 1. Mahwah, NJ: Lawrence Erlbaum Associates, Inc. p. 42. ISBN 0805814000.
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http://ekladata.com/iJLoOLufKEurVuG5mA2Ke1rJ5dQ/-Raymond_J._Wlodkowski-_Enhancing_adult_ motivation-Bokos-Z1-.pdf

**Websites**

e-Learning Industry– https://elearningindustry.com/
Instructional Design Central– https://www.instructionaldesigncentral.com/
Instructional Design– http://www.instructionaldesign.org/theories/
International Society for Educational Technology– https://www.isfet.org/courses/
Educational Technology– https://educationaltechnology.net/
AESA-Agricultural Extension in South Asia– http://www.aesanetwork.org/
GFRAS-Global Forum for Rural Advisory Services– http://www.g-fras.org/en/

**I. Course Title : Risk Management and Climate Change Adaptation**
**II. Course Code : EXT 605**
**III. Credit Hours : 2+1**

**IV. Why this course?**

Present agriculture and allied sectors India face tremendous challenges on multiple fronts. Agrarian distress and the climate change impacts together pose grave dangers to food, nutritional and ecological security. As change agents, extensional professionals in particular and agricultural graduates in general need to quip themselves with knowledge and skill sets required to navigate the climate change scenario so as to help reduce risk and vulnerability. Hence, this customised course.

**V. Aim of the course**

The course is designed to provide both basic and applied knowledge on the subjects of risks management and climate change adaptation with reference to Indian agriculture. This course will approach the subjects from a multidisciplinary

perspective - technical, socio-economic, political, financial, and regulatory. It aims to equip students to identify, evaluate and evolve ways to address (mitigate and manage) risks and climate change.
The course is organized as follows:

| No | Blocks | Units |
|---|---|---|
| 1 | Risk Management in Agriculture | 1. Understanding Risk and Distress<br>2. Managing Risk and Distress in Agriculture<br>3. Extension Professionals and Risk management |
| 2 | Adapting to Climate Change | 1. Introduction to Climate Change Science<br>2. Introduction to Climate Change Adaptation and Mitigation<br>3. Climate Smart Agriculture and Extension Advisory Services |

**VI. Thory**

**Block 1: Risk Management in Agriculture**

**Unit 1: Understanding Risk and Distress**

Introduction to risk, risk management, uncertainty, sensitivity and distress, General risk theory, Risk analysis methods, Risk perception and decision making, Indicators of risk and distress in agriculture – identification, selection and assessment, Understanding the agrarian distress in Indian agriculture, Sources of distress in Indian farming -changing farm size, land use, cropping patterns, pricing policy, markets and terms of trade, Typology of crisis in agriculture; Droughts, floods and Indian agriculture, Distress and farmer suicides - causes and socio-economic consequences

**Unit 2: Managing Risk and Distress**

Ways to reducing/managing risk and distress in Indian agriculture; crop and life insurance; Developing support systems; Planning, implementation and evaluation of risk/distress management programs; Institutional frameworks for risk and disaster management - NDMA & SDMAs; Developing District Agriculture Contingency Plans; Risk management by diversification; Good practices and lessons from other countries; Responses of government, non-government and extension system to agrarian crisis; National Farmers Policy.

**Unit 3: Extension Professionals and Risk management**

Understanding social-psychological and behavioural dimensions of farmers under risk/distress; Risk perception and communication; Helping farmers manage farm level risks - mobilising resources, linking with markets, strengthening capacities; Working with village level risk management committees; Operational skills for preparing contingency and disaster management plans; Institutional and extension innovations in managing risk and distress; Policy and technological preferences for dealing with drought and flood.

**Block 2: Adapting to Climate Change**

**Unit 1: Introduction to Climate Change Science**

Basic concepts of and terms in climate change science; impacts of climate change;

anthropogenic drivers of climate change, Climate change and Indian agriculture; climate adaptation vs. disaster risk reduction; anticipated costs of adaptation; climate change and poor; Overview of UNFCCC framework and institutions, Kyoto Protocol and beyond; India's National Action Plan on Climate Change and National Mission on Strategic Knowledge on Climate Change; National Coastal Mission, Institutional arrangements for managing climate change agenda.

**Unit 2: Introduction to Climate Change Adaptation and Mitigation**

Introduction to Climate Change Adaptation, Conducting a vulnerability assessment (CVI and SEVI frameworks), Identifying and selecting adaptation options; Global, national and state level initiatives and plans to support climate change adaptation, private sector and civil society initiatives and activities; Mainstreaming climate change adaptation into development planning, Financing climate adaptation and budgetary allocations for programmes, Gender and climate change adaptation, Agricultural development programmes and strategies towards climate change adaptation and mitigation, Community based and Ecosystem based adaptation strategies, preparing evidence based intervention plans for vulnerability reduction at micro and macro-levels.

**Unit3: Climate Smart Agriculture (CSA) and Extension &Advisory Services**

Climate smart agriculture; Developing climate smart and climate resilient villages; Stakeholders and determinants involved in climate smart agriculture; Climate smart agriculture and EAS; Innovative extension approaches used in CSA; Climate information services, Farmers perceptions about climate change; Farm and household level manifestations and adaptation strategies; Barriers and limits to adaptation; Farmers feedback on performance of extension methods; Skills, competencies and tools required for extension professionals at different levels and development departments in up scaling CSA.

## VII. Practicals

- Hands-on practice in using risk assessment/analysis tools
- Case studies on risk / distress assessment in agriculture -Indian and global
- Lessons / Experiences from NICRA Project in agriculture and allied sectors
- Developing criteria, indicators and indices for assessment of risk, vulnerability and resilience
- Hands on practice on use of vulnerability and risk assessment tools and techniques
- Case studies on success stories of climate change adaptation and community based initiatives
- Developing district and village level intervention plans for climate change adaptation
- Field Visits to State Disaster Management Authority
- Case studies on climate smart agriculture / villages from India and world
- Case studies on impact assessment of crop insurance programs, disaster management programs
- Capstone project on documenting ITKs and local practices related to reducing risk / climate resilience agriculture

## VIII. Teaching methods/activities

- Lecture
- Assignment (Reading/Writing)
- Student's Book/Publication Review

- Student presentation
- Group Work
- Student's interview of key policy makers
- Case Analysis and case studies Guest Lectures
- Review of policy documents

## IX. Learning outcome

After successful completion of this course, the students are expected to be able to:

- Appreciate the scientific foundation of risk management and climate change science and relate the key learning to the job of an extension professional
- Utilise methods and tools for risk and climate related vulnerability assessments and adaptation strategies in the context of Indian agriculture / farming scenario
- Utilise material in scientific publications relevant for risk management and climate change adaptation and critically reflect on their benefits and limitations for decision making

## X. Suggested Reading


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## Websites

**CSA-**Centre for Sustainable Agriculture– http://csa-india.org/

**GFRAS-**Global Forum for Rural Advisory Services– http://www.g-fras.org/en/

**AESA-**Agricultural Extension in South Asia– http://www.aesanetwork.org/

**NICRA-**National Innovations in Climate Resilient Agriculture– http://www.nicra-icar.in/nicrarevised/

**CRIDA-**Central Research Institute for Dryland Agriculture– http://www.crida.in/

**UNCC: Learn**- UN Climate Change Learning Partnership– https://www.uncclearn.org/

**DST-** Department of Science and Technology- Climate Change Programme, GoI– http://www.dst.gov.in/climate-change-programme

**I. Course Title : Livelihood Development**

**II. Course Code : EXT 606**

**III. Credit Hours : 1+1**

**IV. Why this course?**

One of the aims of extension work is to enhance and expand the sustainable livelihood opportunities for individuals in a society. For this a thorough understanding of the different aspects of livelihood and its interface with nature becomes imperative. Resource poor farmers and the socially and politically weaker sections of the society currently face several challenges in expanding their livelihoods. Keeping these in view, the course has been designed to provide a theoretical framework for understanding of the basic concepts, definitions and approaches related to 'livelihood', 'vulnerability' 'institutional processes', and 'development and policies' pertaining to livelihood development in India.

**V. Aim of the course**

- To develop an understanding on the concept of livelihood and its various forms
- To acquaint the students regarding the various alternative approaches that has been adopted to support livelihoods
- To familiarize the students to some of the methods, tools and techniques they can utilize to design livelihood interventions
- To expose the students to the context, especially the economic models and policy environment that guides the livelihood choices
- To equip students to work in multidisciplinary teams and engage at multiple levels on livelihood issues

The course is organized as follows:

| No | Blocks | Units |
|---|---|---|
| 1. | Understanding of Livelihood | 1. Concept of Livelihoods<br>2. Livelihood Challenges |
| 2. | Livelihood Analysis | 1. Livelihood Frameworks<br>2. Designing Livelihood Intervention and Promotion |
| 3. | Livelihood Augmentation | 1. Pathways for LA |

**VI. Theory**

**Block 1: Understanding of Livelihood**

**Unit 1: Concept of Livelihoods**

Basic concepts of livelihood and Development, Types of development-Immanent/ inherent and interventionist/ intentional; Why promote livelihood; Livelihood intervention: definition, types-Spatial, segmental, sector –sub-sector; Systemic view of Livelihoods, Understanding Rural Livelihoods-Farm, Non-Farm, and off farm; Linkages with Farm and Off-farm Livelihoods; Economic Models

**Unit 2: Livelihood Challenges**

Livelihood Challenge- Political economy of Livelihoods, Issues of access to farm and non-farm livelihoods; Livelihoods from a Gender Perspective-Feminization of agriculture/ poverty, women in the unorganized sector, the issue of unpaid and

informal work; Livelihood Coping Mechanism- Climate Change and Livelihoods; Livelihoods and Disasters

**Block 2: Livelihood Analysis**

**Unit 1: Livelihood Frameworks**

Sustainable Livelihoods Approaches (SLAs)-Definition and origins of SLA; Assets or capitals and capabilities in SLA and its linkage to the other capitals: Physical, Social, Economic, Human, Natural; Vulnerability Assessment- Shocks, trends, seasonality; Policies, institutional context and processes; Conceptual Frameworks-DFID, CARE, UNDP, OXFAM, BASIX livelihood triad, Nine square Mandala or Rural Livelihood System's Framework, etc.; Past, Present and possibilities for the future of the SLA, critiques of the approach

**Unit 2: Designing Livelihood Intervention and Promotion**

Designing a suitable livelihood intervention-Observing and Understanding the Local Economy; Selecting livelihood activities suitable for the poor in the area; Deciding on the interventions. Livelihood promotion approaches-Poverty and livelihood: Approaches and programs in India; Livelihood and a Rights Based Approach-MGNREGA and its critique; Livelihood and a Social Capital based approach: NRLM

**Block 3: Livelihood Augmentation (LA)**

**Unit 1: Pathways for LA**

Basic concepts; Pathways: a) Entrepreneurial strategies for LA; b) NRM based intervention; c) Market based interventions including Value-chain analysis; d) ICT based interventions; e) Livelihood and allied agriculture (dairy, poultry, Goatery, etc.) based livelihood; f) Forest based Livelihoods vis a vis Livelihood Protection and Promotion: Contribution of NTFP in supporting rural livelihoods

Note: Block 'A' and 'B' is theoretical; Block 'C' should be covered in the form practical's supported by few classroom discussion through cases

## VII. Practicals

- Village stays to understand the livelihood pattern of villagers and how the other socio-economic factors affect the livelihood of people
- Visit to institutes/ universities adopted and/or nearby villages to experience the life and natural resources in rural communities-understanding of village culture, evolution, social structure, livelihood pattern, trends, governance arrangements, and the natural context (landscape layout, land use, vegetation types etc)
- Application of participatory rural appraisal skills for understanding village context; Engagement of working with rural communities and their grass-root institutions, understanding dynamics of working in a group
- Visit to different agri-business models as mentioned in the Block 'C'. Group assignments may be given to document the field experience in the form of case study of an enterprise/ entrepreneur/ members and other related stakeholders

## VIII. Teaching methods/activities

– Interactive Lectures – by sharing in advance a reading material
– Analysis of case studies
– Audio-visual of successful/ failure models of agribusiness firms
– Guest session by field practitioners, if possible

– Group presentations by the students
– Field visit and field based individual or group assignments

**IX. Learning outcome**

This course will equip students with perspectives, knowledge and skills to develop a comprehensive understanding of the livelihood concepts, various forms, approaches, tools and techniques to analyze existing livelihood pattern and strategies the sustainable livelihood intervention in the rural areas.

**X. Suggested Reading**

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**I. Course Title : Facilitation for People Centric Development**

**II. Course Code : EXT 607**

**III. Credit Hours : 2+1**

**IV. Why this course?**

The prime aim of the agricultural extension professionals is to influence development change among the stakeholders with whom they work. In the Agricultural Innovation Systems (AIS) context, this change will happen when good relationships, networks and partnerships are formed. A new extension approach that aims at participatory and group learning as well as networking, where the extensionist acts as a facilitator is needed. It is important to inculcate the good facilitation skills by the extension professional to increase the effectiveness and impact among the agricultural extension and advisory services stakeholders.

**V. Aim of the course**

- To orient students on the importance facilitation
- To inspires students to understand facilitation tools to influence change at the individual, group and organisational levels
- To develop capacities in multi-stakeholder engagement, facilitation and networking

The course is organized as follows:

| No | Blocks | Units |
|---|---|---|
| 1. | Introduction to Facilitation for Development | 1. Facilitation for Development in the AIS<br>2. Principles, Attributes and Skills for Facilitation for Development |
| 2. | Facilitating change in individuals, groups and organizations | 1. Realise Potential- Self-Discovery<br>2. Group Dynamics and Working Together<br>3. Organizational Change Process |
| 3. | Facilitating operational level multi-stakeholder engagements | 1. Multi-Stakeholder Interactions<br>2. Innovation and Policy Engagement Platforms |
| 4. | Brokering strategic partnerships, networking and facilitation | 1. Linkages, Partnerships, Alliances and Networking<br>2. Facilitating Capacity Development |

**VI. Theory**

**Block 1: Introduction to Facilitation for Development**

**Unit 1: Facilitation for development in the AIS**

Facilitation for development in the AIS; Understanding facilitation for development; Importance of facilitation as a core function of extension within the Agricultural Innovation Systems (AIS)

**Unit 2: Principles, Attributes and Skills for Facilitation for Development**

Basic principles of facilitation for development; Desired attributes of facilitator for development- Cognitive attributes, Emotional attributes (Emotional intelligence), Social, behavioural and attitudinal attributes; Technical skills of a facilitator for development- Design processes, Facilitation techniques and tools, the art of questioning and probing, Process observation and documentation, Visualisation

**Block 2: Facilitating Change in Individuals, Groups and Organisations**

**Unit 1: Realise Potential- Self-Discovery**

Self-discovery to realise our potentials, Tools for self-discovery, formulating a personal vision, Taking responsibility for your own development

**Unit 2: Group Dynamics and Working Together**

Understanding the dynamics of human interaction, Group dynamics and power relations, Managing relationships, Shared vision and collective action, Tools for team building

**Unit 3: Organizational Change Process**

Organizational change process, Organizational learning to adapt to changing environments, Enhancing performance of organizations, Leadership development, Tools for organizational change

**Block 3: Facilitating Operational Level Multi-stakeholder Engagements**

**Unit 1: Multi-Stakeholder Interactions**

Defining stakeholders, Development of collective and shared goals, Building trust and accountability, Tools for stakeholder identification and visioning

**Unit 2: Innovation and Policy engagement Platforms**

Visualising innovation platforms (IPs), Why are IPs important?, Different models of IPs for multi-stakeholder engagement, policy engagement platforms, Generating issues and evidence for policy action, Advocacy for responsive policy processes

**Block 4: Brokering Strategic Partnerships, Networking And Facilitation**

**Unit 1: Linkages, Partnerships, Alliances and Networking**

Brokering linkages and strategic partnerships, Identification of critical links, Knowledge brokering, Creating linkages with markets, Learning alliances and networking, Coordination of pluralistic service provision within the AIS, The concept of action learning and reflective practitioners, Networking

**Unit 2: Facilitating Capacity Development**

Facilitating Capacity Development-Facilitate participation and learning in development programs and projects. Virtual platforms- skills for strengthening dialogue, collaboration, shared commitment amongst diverse actors and stakeholders

**VII. Practicals**

- Practicing facilitation techniques,
- Self discovery exercises,
- Working together and interaction (task based),
- Arrangement for multi-stakeholder interactions,
- Understanding organisational change process tools and techniques,
- Case analysis on organisational change process,
- Participating with innovation platforms,
- Policy engagement platforms,
- Stakeholder analysis mapping,
- Exercise on networking skills,
- Facilitating capacity building programmes
- Facilitating virtual platforms
- Filed visit to multi-stakeholder partnership projects

**VIII. Teaching methods/activities**

- Lecture
- Assignment (Reading/Writing)
- Student's Book/Facilitation Manual/Publication Review
- Student presentation
- Group Work
- Student's interview with facilitators
- Case Analysis
- Guest Lectures
- Review of facilitation methodologies
- Short internships

**IX. Learning outcome**

After successful completion of this course, the students are expected to be able to:

- Appreciate the importance of facilitation skills and tools
- Understand facilitation and networking techniques
- Critically evaluate strategic partnerships and linkages
- How to manage group dynamics and engage multi-stakeholders and virtual platforms

## X. Suggested Reading


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**Websites**

- **MSU**–Michigan State University Extension Facilitation– https://www.canr.msu.edu/facilitation/
- **TAPipedia**– Tropical Agriculture Platform– https://www.tapipedia.org/
- **CGSpace**- A Repository of Agricultural Research Outputs by CGIAR– https://cgspace.cgiar.org/handle/10568/33667
- **UMaine**– The University of Maine– https://extension.umaine.edu/community/strengthening-your-facilitation-skills/
- **GFRAS**– Global Forum for Rural Advisory Services– http://www.g-fras.org/en/

**I. Course Title : Multivariate Statistical Methods For Extension Research**

**II. Course Code : STAT**

**III. Credit Hours : 2+1**

**IV. Why this course?**

With increasing complexity in agricultural systems, research problems in extension are becoming multi-dimensional and often influenced by the composite of biological, social and economical factors. Such complex problems require advanced analytical methods and tools derived from statistical and other decision sciences.

**V. Aim of the course**

This course aims to equip the students with critical skills in choosing appropriate analytical tools and interpreting the results for solving complex and multidimensional extension research problems.

The course is organized as follows:

| No | Blocks | Units |
|---|---|---|
| 1. | Overview of Multivariate Statistical Methods | 1. Basics of Multivariate Statistical Methods (MVSM)<br>2. Classification and Types of MVSM<br>3. Selecting Appropriate MVSM<br>4. A structured Approach for Building Multivariate Statistical Models<br>5. Basic Econometric Methods-1<br>6. Basic Econometric Methods-2 |
| 2. | Data preparation and cleaning | 1. Missing Data Analysis and Outlier Management<br>2. Testing Assumptions of MVSM and Data Transformation |
| 3. | Methods for assessing human choice/ preferences and decision-making | 1. Assessing Human Preference Structures Using Conjoint Analysis<br>2. Assessment of Adoption of Agricultural Technologies Using Limited Dependent Variable Models<br>3. Multidimensional Scaling<br>4. Multi-criteria Decision-making |
| 4. | Methods of assessing association and causality | 1. Multiple Correlation and Multiple Regression<br>2. Discriminant Analysis |
| 5 | Methods of grouping objects/ variables based on latent variables | 1. Principal Component Analysis (PCA) and Common Factor Analysis<br>2. Structural Equation Modeling (SEM)–Two units<br>3. Cluster Analysis |
| 6 | Emerging MV statistical methods | 1. Emerging MV Statistical Methods |

## VI. Learning outcome

At the end of this course, the students will be able – To choose appropriate multivariate statistical methods based on research problem/ situation – To design, implement and interpret in a skilful way using SPSS

## VII. Theory

### Block 1: Overview of Multivariate Statistical Methods

### Unit 1: Basics of Multivariate Statistical Methods (MVSM)

What is multivariate data analysis; Basic concepts in MV – variate, measurement error; Power analysis and effect size; SPSS software

### Unit 2: Classification and Types of MVSM

Independence and dependence techniques; Factor analysis – principal component, exploratory factor analysis; Multiple correlation and multiple regression; Discriminant analysis; Logistic regression; Cluster analysis; Conjoint analysis; Multi Dimensional Scaling/ Perceptual mapping; Correspondence analysis; Structural equation model

### Unit 3: Selecting Appropriate MVSM

Selection based on purpose - Dimension reduction, identifying latent variables,

strength of relationship among multiple dependent/ independent variables, identifying choice and estimating their utility; etc and type of variables – metric and non-metric

**Unit 4: A Structured Approach for Building Multivariate Statistical Models**

Steps in planning and conducing MVSM

**Unit 5: Basic Econometric Methods-1**

Nature of regression analysis; Two variable and multivariable regression models; Linear and non-linear regression models; Estimation methods

**Unit 6: Basic Econometric Methods-2**

Simultaneous-equation models; Panel data models; **Forecasting** - Time series and other models

**Block 2: Data Preparation and Cleaning**

**Unit 1: Missing Data Analysis and Outlier Management**

Missing data - Meaning, types, methods of missing data processing, advantages and limitations, **Outliers-** Meaning, types, methods for identifying and managing outliers

**Unit 2: Testing Assumptions of MVSM and Data Transformation**

Testing assumption of parametric analyses – normality, linearity, multicollinearity; Data transformation methods

**Block 3: Methods for Assessing Human Choice/ Preferences and Decision-making**

**Unit 1: Assessing Human Preference Structures Using Conjoint Analysis**

Meaning- Importance, guidelines for selecting variables, steps in designing a conjoint experiment – objectives, design, data collection and analysis. Applications in extension

**Unit 2: Assessment of Adoption of Agricultural Technologies Using Limited Dependent Variable Models**

Meaning, importance, types – logit, probit and tobit and their variations; steps in analysis and interpretation of results, applications in extension

**Unit 3: Multidimensional Scaling**

Meaning, importance and types, steps and applications in extension

**Unit 4: Multi-criteria decision-making**

Meaning, importance, methods – analytical hierarchy process, Applications in extension

**Block 4: Methods of Assessing Association and Causality**

**Unit 1: Multiple Correlations and Multiple Regressions**

Meaning, importance, types, methods of estimation, analysis and interpretation of results, application sin extension

**Unit 2: Discriminant Analysis**

Meaning, types, steps in conducting discriminant analysis, Applications in extension

**Block 5: Methods Of Grouping Objects/ Variables Based On Latent Variables**

**Unit 1: Principal Component Analysis (PCA) and Common Factor Analysis**

Meaning, importance, types of factor analysis, difference between types, steps in conducting PCA/ Common Factor Analysis, applications in extension

**Unit 2: Structural Equation Modelling (SEM) – Two units**

Meaning, importance, types – confirmatory factor analysis and structural model; steps in conducting SEM, Applications in extension

**Unit 3: Cluster Analysis**

Meaning, importance, types – Steps; Applications in extension

**Block 6: Emerging MV Statistical Methods**

**Unit 1: Emerging MV Statistical Methods**

Canonical correlation, partial least square (PLS)

## VIII. Practicals

- Hands on experience of following methods using SPSS/ AMOS software
- Selecting appropriate MVSM
- Missing data analysis and outlier management
- Testing assumptions of MVSM and data transformation
- Assessing human preference structures using conjoint analysis
- Assessment of adoption of agricultural technologies using limited dependent variable models – logit, probit and tobit.
- Multidimensional scaling
- Multiple correlation and multiple regression
- Discriminant analysis
- Principal Component Analysis (PCA) and Common Factor Analysis
- Structural Equation Modeling (SEM)
- Cluster analysis

## IX. Teaching methods/activities

- Lecture
- Assignment (Reading/Writing)
- Student presentation
- Group Work
- Guest Lectures

## X. Suggested Reading

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