NMV UNIVERSITY
INSTITUTE OF AGRICULTURE RESEARCH & TECHNOLOGY
Established under Tamil Nadu Private Universities Act, 2019

Muthuramalingapuram, Aruppukottai, Virudhunagar, Tamil Nadu, India– 626 105

DEPARTMENT OF AGRICULTURAL EXTENSION

Academic Regulations and Syllabi

MASTER OF SCIENCE IN AGRICULTURAL EXTENSION EDUCATION

Under Choice Based Credit System (CBCS) with Outcome Based Education

2023-24 Onwards

Regulation for M.Sc. (Ag.) in Agricultural Extension Education program offered by IART
(*With effect from 2023-24*)

1. Short Title and Commencement

1.1 These rules and regulations shall govern the post graduate studies leading to the award of degree of M.Sc. (Ag.) in IART.

1.2 They shall come into force with effect from the academic year 2023 – 24.

2. Academic Year and Registration

2.1 An academic year shall be normally from July to June of the following calendar year otherwise required under special situations. It shall be divided into two academic terms known as semesters. The academic calendar will be developed by the University from time to time and notified accordingly by the Registrar in advance.

2.2 An orientation program shall be organized by the Dean, IART for the benefit of the newly admitted students immediately after commencement of the semester.

2.3 On successful completion of a semester, the continuing students shall register for subsequent semester on the date specified in the academic/semester calendar or specifically notified separately. Every enrolled student shall be required to register at the beginning of each semester till the completion of his/ her degree programs.

3. Registration Card

3.1 A student shall register the courses offered in a semester by writing all the courses in registration card in quadruplicate.

3.2 The Chairperson, PG coordinator and Head of the Department are responsible to furnish the registration particulars of the students with their signature and also the concerned course teacher signature in the registration card to the Dean, IART.

3.3 The Dean shall approve the registration card.

3.4 The approved registration card shall be maintained by the Dean, Head of the Department, Chairperson and the student concerned.

3.5 The list of courses registered by the students in each semester shall be sent by the Head of the Department to the Controller of Examinations/University for preparation of report cards through Dean.

4. Definitions

4.1 **Semester** means an academic term consisting of 110 working days including final theory examinations.

4.2 **Subject** means a unit of instruction to be covered in a semester having specific number, title and credits.

4.3 Credit hour means, one hour lecture plus two hours of library or homework in a semester.

4.4 Grade Point of a subject means the value obtained by dividing the percentage of mark earned in a subject by 10 and the grade point is expressed on a 10 point scale.

4.5 Credit Point means the grade point multiplied by credit hours.

4.6 Grade Point Average (GPA) means the quotient of the total credit points obtained by a student in various subjects at the end of each semester, divided by the total credit hours taken by the student in that semester. The grading is done on a 10 point scale and the GPA has to be corrected to two decimals.

4.7 Overall Grade Point Average (OGPA) means the quotient of cumulative credit points obtained by a student in all the subjects taken from the beginning of the first semester of the year divided by the total credit hours of all the subjects which he/she had completed up to the end of a specified semester and determines the overall performance of a student in all subjects during the period covering more than one semester. The OGPA has to be arrived at the second decimal place.

5. Program offered

M.Sc. (Ag.) Agricultural Extension Education

6. Eligibility for Admission

Candidates for admission to the M.Sc. (Ag.) program should satisfy the following requirements.

6.1. Candidates seeking admission to the M.Sc. (Ag.) Degree program should have completed any one of the following four year degree programs from Universities/Colleges.

Program of study	Eligibility
M.Sc. (Ag.) Agricultural Extension Education	B.Sc. (Hons) Agriculture / B.Sc. (Hons) Horticulture/ B.Sc. (Ag.)/ B.Sc. (Hort.)/ Forestry/ Sericulture of four years duration.

6.2. The candidates under 4 point grade systems should possess a minimum OGPA of 2.5 out of 4.00 and 2.75 out of 4.00 in the subject concerned. For those under 10 point system a minimum OGPA of 7.00 out of 10.00 and 6.50 out of 10.00 in the subject concerned is required.

6.3. An entrance test will be held separately for the degree program. Selection of candidates shall be based on OGPA, subject OGPA, entrance test and interview.

7. Program Requirements

7.1. Residential Requirements

The duration for the M.Sc. (Ag.) be of two years with four semesters. A student registered for M.Sc. (Ag.) should complete the course within four academic years from the date of his/her admission. In case a student fails to complete the degree program within the maximum duration of residential requirement, his/ her admission shall stand cancelled.

7.2. Credit Grade Point Requirements

A student enrolled for the Master's degree program to earn eligibility for the degree is required to complete 70 credits as detailed below.

Course work	Credit
Major Courses	20
Minor Courses	08
Supporting Courses	06
Common Courses	05
Seminar	01
Thesis Research	30
Total credits	**70**

7.3 Major Course: From the Discipline in which a student takes admission among the listed courses, the core courses compulsorily to be taken will be given *mark

7.4 Minor Course: From the courses closely related to a student's major subject, minor courses shall be chosen by the students in consultation with the Head of the Department and the Chairperson based on their research specialization.

7.5 Supporting Courses: The subjects not related to the major subject. It could be any subject considered relevant for student's research work (such as Statistical Methods, Design of Experiments, etc.) or necessary for building his/ her overall competence.

a. List of supporting courses for M.Sc. (Ag.) Agricultural Extension Education,
   1. STA 502 Statistical Methods for Social Sciences 3 (2+1)
   2. COM 502 Computer Application for Agricultural Extension Research 3 (2+1)

7.6 Common Courses: There will be five common courses (one credit each) will be offered to all students undergoing Master's degree program. Among the five common courses, the following four courses will be offered in the Master's degree program:

1. PGS 501- Agricultural Research, Research Ethics and Rural Development Programs (1+0)
2. PGS 502 - Technical Writing and Communications Skills(0+1)
3. PGS 504- Library and Information Services (0+1)
4. PGS505- Intellectual Property and its Management in Agriculture (1+0)

The fifth common course for Master's degree program in M.Sc. (Ag.) Agricultural Extension Education will be

- PGS 503– Laboratory Techniques for Audio and Video Production (0+1)

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 Head of Department (HoD)/ Board of Studies (BoS).

7.7 Value Added Course

A student can register VAC in third semester only. A student cannot register for a Value Added Course offered by his/her parent Department. Choose the Department offering the VAC and the VAC course title only from the VAC listed by the university.

7.8 Minimum Grade Point Requirement

A post-graduate student should maintain a minimum Grade Point of 7.00 out of 10 to secure a pass in a subject. In the subjects in which a student fails, he/she has to reappear for the examination to get a pass in that subject.

8. Attendance Requirement

8.1. One hundred per cent attendance is expected of each student. A student, who fails to secure a minimum of **80 per cent** of attendance in each subject separately for theory and practical, shall not be permitted to appear for the final examination in that subject and will be required to repeat the subject when ever offered. In case of new admission, who are permitted to join late due to administrative reasons, the attendance will be calculated from the date of joining of the student. However, for genuine reasons, condonation of attendance deficiency may be considered by the Vice-Chancellor on the recommendation of the Head of the Department and the Dean, IART on payment of condonation fee prescribed by the University.

8.2. Students absenting from the classes with prior permission of the Head of the Department and Dean, IART on official University business shall be given due consideration in computing attendance.

9. Advisory Committee

Each post-graduate student shall have an Advisory Committee to guide him/her in person or through hybrid mode in carrying out the research program. The advisory committee shall comprise a Major Advisor from internal (Chairperson) and external member. The Advisory Committee shall be constituted within two weeks from the date of commencement of the first semester.

9.1. For interdisciplinary research requiring expertise from teaching staff of other faculties, due permission need to be obtained from the Dean, IART to nominate them as Technical advisors. An official letter in this regard needs to be communicated to the individual concerned through the respective Head of the Department and Dean.

9.2. Major Advisor (Chairperson)

Every student shall have a Major Advisor who will be from his/her major field of studies. The appointment of Major Advisor (Chairperson) shall be made by the Head of the Department concerned. The chairperson in consultation with the Head of the Department will nominate the other members. In the event of the Major Advisor being away on other duty/leave for a period of more than three months, the member of the Advisory Committee from the same Department will officiate as the Major Advisor.

9.3 Advisor/ Co-guide/ Member, Advisory committee from other collaborating University/ Institute/ Organization

- In order to promote quality post-graduate research and training in cutting edge areas, the University may permit the scholar to conduct research in other university/ research institute/ Organization. While constituting an advisory committee of a student, if the chairperson, advisory committee feels the requirement of involving of a faculty member/ scientist of such partnering university/ Institute/ Organization, he/ she may send a proposal to this effect to the Dean, IART along with the proposal for consideration of Student's advisory committee.
- The proposed faculty member from the partnering institution can be allowed to act as Chairperson/ Co-guide/ Member, Advisory committee, by mutual consent, primarily on the basis of intellectual input and time devoted for carrying out the research work at the particular institution.

9.4 Allotment of students to the retiring persons

Normally, retiring faculty may not be allotted with M. Sc. Student if he/ she are left with less than 2 years of service.

9.5 Changes in the Advisory committee:

i. Change of the Chairperson or member of the Advisory committee is not ordinarily permissible. However, in exceptional cases, the change may be effected with due approval of the Dean, IART.

ii. Normally, staff members of the university on extra ordinary leave or on study leave or who leave the University service will cease to continue to serve as advisors of the post-graduate students of the University. However, the Dean, IART may permit them to continue to serve as advisor subject to the following conditions:

   a) The concerned staff member must be resident in India and if he/ she agrees to guide research and must be available for occasional consultations;

b) An application is made by the student concerned duly supported by the Advisory committee;

c) The Head of the Department and the Dean, IART agree to the proposal;

iii. In case the Chairperson/ member of Advisory committee retires, he/ she shall be allowed to continue provided that the student has completed his/her course work and minimum of 10 research credits and the retiring Chairperson/ member stays at the Headquarters of the College, till the thesis is submitted.

iv. The change shall be communicated to all concerned by the Head of the Department.

9.6 Guidelines on the duties of the Advisory committee

- Guiding students in drawing the outline of research work
- Guidance throughout the program of study of the students.
- Evaluation of research and seminar credits.
- Correction and finalization of thesis draft.
- Conduct of final viva-voce examination.
- The proceedings of the Advisory committee will be sent to the Head of the Department concerned within 10 working days.
- Periodical review of the Advisory committee proceedings will be made by the Head of the Department concerned.

10. Program of Study

10.1. The student's plan for the post-graduate work, drawn up by the Advisory Committee, shall be finalized before the end of the first mid semester.

10.2. The program shall be planned by the Advisory Committee taking into account his/her previous academic training and interest.

10.3. Program of research work

The outline of research work of the student, in the prescribed manner and as approved by the Advisory Committee, shall be forwarded by the Chairperson to the Head of the Department concerned by the end of the first mid semester.

11. Evaluation of Student's Performance

Multiple levels of evaluation (First Test, Midterm and Final semester) will be conducted.

11.1 First Test (FT)

Every teacher handling a subject shall conduct First Test (FT) as per the scheme drawn by the Head of the Department concerned /PG coordinator on the fourth week from the date of registration of the course, and evaluate. The evaluation process will be based on objective type questions and short concepts.

11.2 Mid-Semester Examination (MSE)

11.2.1 Every teacher handling a subject shall conduct Mid-Semester Examination (MSE) as per the scheme drawn by the Head of the Department concerned /PG coordinator, on the eighth week from the date of registration of the course and evaluate. The evaluation process will be of descriptive type.

11.2.2. The answer scripts of both FT and MSE will be shown to the student after valuation, and returned to the course teacher. The Head of the Department will be responsible to ensure the distribution of answer papers to the students. The marks obtained by the students should be sent to the Controller of Examinations through the Head of the Department and Dean concerned within fifteen working days.

11.2.3. Writing the First Test and Mid-Semester Examination is a pre-requisite for writing the final theory and practical examinations. If a student does not appear for FT/MSE, he/she is not eligible to appear for the final examinations. Such candidate has to reappear for the FT/MSE as and when the respective examinations are conducted only after getting permission from the Head of the Department concerned.

11.2.4. The FT and MSE marks will not be shown separately in the grade sheet but will be combined with the respective final theory and practical marks. FT and MSE marks awarded in a course will be added to the supplementary examinations also.

11.2.5. The FT and MSE marks will be furnished to the Head of the Department within 10 days after the conduct of FT and MSE. If the student is not satisfied with the award of the marks, he/she shall appeal to the Dean, through Head of the Department within three working days after the announcement of marks. The appeal will be considered and the results reviewed by a Cell consisting of the Dean and the Head of the Department concerned. The decision of the Review Cell shall be final. If the Head of the Department himself is the course teacher, one senior member of the department concerned shall be nominated by the Dean.

11.2.6. The first test will be of one hour duration and MSE of theory will be of one hour duration.

11.2.7. If the student is not able to write the FT/ MSE due to deputation by the University, he/she may be permitted to take up missing FT/MSE. Such examination should be completed ordinarily within 15 working days after the respective FT/MSE.

11.2.8. A student who fails to attend a first test and mid-semester examination due to unavoidable circumstances shall be permitted with prior approval of the Head of the Department to take up missing examination of the particular course. Such tests should be completed ordinarily within 15 working days after the respective FT/MSE.

The distribution of marks will be as indicated below:

Test	Subjects with Practical	Subjects without Practical	Subjects without Theory
First Test	10	20	20
Mid-Semester	20	30	30
Final Theory	30	50	-
Final Practical	40	-	50
Total	**100**	**100**	**100**

The question paper model and distribution of marks for Mid-Semester Examinations is as follows.

First Test (One hour duration) (Total Marks: 10)

1. Objective Type	10 out of 12	10 x 0.5 marks	5 Marks
2.Definitions/Short Concepts	5 out of 7	5 x 1 marks	5 Marks

First Test without Theory / practical (One hour duration) (Total Marks: 20)

1. Objective Type	10 out of 12	10 x 0.5 marks	5 Marks
2.Definitions/Short Concepts	10 out of 12	10 x 1.5 marks	15 Marks

Mid-Semester Examination

For Subjects with Practical (Two hours duration) (Total Marks: 20)

1. Objective Type	10 out of 12	10 x 0.5 marks	5 Marks
2.Definitions/ Concepts	5 out of 7	5 x 1 marks	5 Marks
3. Short Notes	2 out of 3	2 x 2 ½ marks	5 Marks
4. Essay Type	1 out of 2	1 x 5 marks	5 Marks

For Subjects without Theory / practical (Two hours duration) (Total Marks: 30)

1. Objective Type	10 out of 12	10 x 0.5 marks	5 Marks
2.Definitions/Concepts	5 out of 7	5 x 1 marks	5 Marks
3. Short Notes	4 out of 5	4 x 2 ½ marks	10 Marks
4. Essay Type	2 out of 3	2 x 5 marks	10 Marks

11.3. Final Examination

11.3.1. The final theory examination will be of three hours duration and practical examination will be of three hours duration, both conducted separately by the University. The question paper for the theory examination will be set as per Bloom's taxonomy by the external. The final theory and practical examinations will be evaluated by two examiners (Internal & External).

11.3.2. The question paper model and distribution of marks for final theory examinations are as follows.

Final Theory Examination with Practical (3 hours duration) (Total marks: 30)

1. Definitions	5 out of 7	5 x1 marks	5 marks
2. Short Notes	2 out of 3	2 x2½ marks	5 marks
3. Essay Type	Either or type (one question from each unit)	5 x 4 marks	20 marks

For Subjects without Theory / practical (Total marks: 50)

1. Definitions	6 out of 8	6 x1 marks	6 marks
2. Short Notes	3 out of 5	3 x 3 marks	9 marks
3. Essay Type	Either or type (one question from each unit; At least two questions must represent K6 level of Bloom's taxonomy)	5 x 7 marks	35 marks

11.3.3. Practical Examination

Practical examinations will be conducted with the plan of separate schedule after the theory examination. Proper maintenance and regular submission of practical records are required. Those who do not bring with them the certified practical records/ assignments will not be allowed to appear for the practical examination. The marks awarded for assignments shall be noted in the record, at the time of first appearance and will be taken into account for subsequent appearances. If a student secures a 'pass' in the practical examination of a particular course and fails in the theory examination, then, the practical examination marks obtained in the first attempt will be added to the supplementary examinations also and he/she doesn't require to reappear for practical examination.

Assignment

Each student will be assigned a topic by the concerned course teacher. Such topic should cover a wide range of topics within the subject limits. The topic should be different from that of the credit seminar. Assignments will be evaluated during practical examination.

The distribution of marks for **final practical examination** for courses with theory and practical and only practical is as follows:

Sl. No	Particulars	Courses with Theory and Practical	Courses only with Practical
1	Practical part	25	35
2	Assignment	5	5
3	Record	5	5
4	Viva voce	5	5
	Total	**40**	**50**

11.4. Grading

- The student should secure 65 per cent marks separately in theory and practical and 65 per cent marks in aggregate to secure a pass in the subject. Students who secure marks below 65 per cent in a subject will be treated as Reappearance (RA). An OGPA of 7.00 shall be the minimum requirement for the award of degree.
- Each subject shall carry a maximum of 100 marks for purpose of grading. The grading shall be done as grade point, i.e., the percentage of marks earned in a subject is divided by ten. The grade point is expressed on a 10 point scale up to two decimals.
- The reappearance examinations for the candidates who fail in a subject or subjects will be held in the subsequent semester.
- Students who did not fulfill the required minimum attendance of **80 per cent** will be awarded 'E' grade and has to repeat the subject.

11.5. Percentage Equivalence and Class Ranking

In calculation of percentage and class equivalent for OGPA the following formula shall be adopted.

$$\text{Percentage Equivalent for OGPA} = \frac{\text{Sum of Marks obtained by the Candidates in all the Courses}}{\text{Sum of Maximum Marks in all the Courses}} \times 100$$

In calculation of percentage and class equivalent for OGPA, the following classification shall be adopted.

OGPA	**Percentage**	**Class**
9.00 and above	90 and above	Distinction
8.00 to 8.99	80.00 to 89.99	I Class
7.00 to 7.99	70.00 to 79.99	II Class

12 Credit Seminar

Seminar is compulsory for all the students and each student should present a Non-gradial seminar in the first and second semester and gradial seminar of 0+1 credit in the third semester.

12.1. The seminar topic should be only from the major field of his/her research. The seminar topics are to be assigned by the students in consultation with the Chairperson of the advisory committee with the Head of the Department concerned within 4 weeks after the commencement of the semester.

12.2. Under the guidance and supervision of the Chairperson of the advisory committee, the student will prepare the seminar paper after reviewing all the available literature and present mid-term review of the seminar 2 weeks after completion of Mid- Semester Examination in the presence of the Head of the Department, advisory committee, staff members and PG students. The final presentation will be done before the practical exam.

12.3. The circular on the seminars by the post-graduate students shall be sent to other Departments to enable those interested to attend the same.

12.4. The Chairperson will monitor the progress of the preparation of the seminar paper and correct the manuscript containing not less than 25 typed/printed pages with a minimum number of 50 references covering the recent 10 years' time. The student will submit two copies of the corrected manuscript to the Head of the Department concerned through the Chairperson before presentation.

12.5. The student will incorporate suggestions and carry out corrections made during the presentation and resubmit three fair (hard and soft) copies to the Head of the Department concerned through the Chairperson (one copy each to Dept. Library, Chairperson and the Student) within 10 days after presentation.

12.6. The performance of the student has to be evaluated for 100 marks and Grade Point will be awarded by advisory committee. The Grade Point may be given based on the following norms.

Mid-term Evaluation	Final Evaluation
40	60

Which should cover,

Coverage of Literature & Presentation
Use of Audio–Visual Aids
Capacity to Participate in the Discussion and Answer the Questions
Innovative Proposal Submission, submission of seminar for publications

13 **Absence of Advisory Committee Member during Final Viva-voce Examination**:

13.1 Conducting final viva voce examination in the absence of advisory committee members is not allowed.

13.2 Under extra-ordinary circumstances if the final viva-voce examination to postgraduate student has to be conducted in the absence of one or two advisory committee members, permission to conduct the examination by co-opting another member in such contingencies should be obtained from the Dean in advance through the Head of the Department. The Chairperson of the advisory committee in consultation with the concerned member and Head of the Department will co-opt another member.

13.3. The co-opted member should be from the same department of the member who is not attending the examinations.

13.4. In the absence of the Chairperson of advisory committee, respective Heads of Department should act as Co-chairperson with prior permission of Dean.

14 Research Work

14.1. The topic of thesis research to be carried out by the student in consult with the Chairperson of the Advisory Committee and the Head of the Department concerned. After selecting the topic by the student, each student may be instructed to submit a detailed program of work to be carried out by him/her during the semester in the prescribed proforma. After scrutiny and approval, a copy of the program may be given to the student for carrying out the work during the semester in the prescribed proforma. The evaluation of research work done by the student should be based on the approved program.

14.2. The distribution of research credits will be as follows:

I Semester	0+ 4
II Semester	0+ 8
III Semester	0+ 8
IV Semester	0+ 10
Total	0 + 30

(* In the fourth semester, out of 10 credits, 6 credits will be for evaluation of research and remaining 4 credits for evaluation of viva voce)

In the Evaluation of Research:

Mid-term Evaluation	Final Evaluation
40	60

15 Evaluation of Thesis Research

15.1. Attendance register must be maintained in the Department by HOD /major advisor for all the students to monitor whether the student has 80% of attendance in research.

15.2. The student has to submit his/her research observation note book to the major advisor. The major advisor will scrutinize the progress and sign the note book with remarks as frequently as possible. This note book will form the basis for evaluation of research progress.

15.3. After completion of 80% attendance for research and on or before the last day of the semester, the advisory committee should evaluate the progress of research work as per the approved program and monitoring register and award **MARKS** out of 100 depending upon quantity and quality of work done by the student during the semester.

15.4. The procedure for evaluating research credits under different situations are explained hereunder.

Situation - I

The student has completed the research credits as per the approved program and awarded **MARKS** by the advisory committee. Under the said situation, the student can be permitted to register fresh credits in the subsequent semester. If the student is awarded **'FAIL',** he/she has to register afresh the same block of the research credits in the subsequent semester.

Situation - II

The student who does not satisfy the required **80 per cent** attendance shall be awarded grade **'E'**.

Situation-III

The student who could not complete the research work as per the approved program of work for reasons beyond his/her control such as

- Any impeding/ unfavorable situation for satisfying the advisory committee
- Under the situations II&III, grade 'E' should be awarded. The student has to re-register the same block of research credits for which 'E' grade was awarded in the following semester. The student should not be allowed to register for fresh (first time) research credits.
- In the mark sheet, it should be mentioned that 'E' grade was awarded due to lack of attendance or want for favorable conditions.

Situation – IV

The student who fails to complete the research work after repeating the registration for the second time will be awarded '**FAIL'**.

- For the registration of research credits for the third time, permission has to be obtained from the Dean, IART.
- Re-registration of further research credits shall be decided by the University based on the recommendation of the Advisory Committee, Head of the Department concerned and the Dean, IART.

16 Submission of Thesis

16.1. The thesis for his/her Master's degree should be of such a nature as to indicate a student's potentialities for conduct of independent research. The thesis shall be on topic falling within the field of the major subject and shall be the result of the student's own work. A certificate to this effect duly endorsed by the Major Advisor (Chairperson) shall accompany the thesis.

16.2. The research credits registered in the last semester of post graduate programs should be evaluated only at the time of the submission of thesis, by the advisory committee. Students can submit the thesis at the end of the final semester. If a post graduate student has completed the thesis before the closure of the final semester, the chairperson can convene the advisory committee meeting and take decision on the submission of thesis provided the student satisfies 80 per cent attendance requirement. Two copies of the thesis should be submitted in paper pack for evaluation to the HOD.

16.3. The thesis shall contain a certificate from the supervisor specifying that the thesis submitted is a record of research work done by the candidate during the period of study under him/her, and that the thesis has not previously formed the basis for the award of any Degree, Diploma, Associate ship, Fellowship or similar title. A statement from the supervisor indicating the extent to which the thesis represents independent work on the part of the candidate should also be made including free from plagiarism **above the specified level.**

16.4. The thesis shall also contain a declaration by the candidate that the work reported in the thesis has been carried out by the candidate himself/herself and that the material from other sources, if any, is duly acknowledged and no part of the thesis is plagiarized **more than percent.**

17 Grace Period

17.1. Students can avail a grace period up to a month for submission of thesis/project report after the closure of final semester by paying necessary fine as prescribed by the University. If a student is not able to submit the thesis within a month (grace period), the student has to re-register the credits in the forthcoming semester. The student who re-register the credits after availing the grace period will not be permitted to avail grace period.

17.2. Based on the recommendation of advisory committee and the Head of the Department, the Dean, can sanction the grace period. A copy of the permission letter along with the receipt for payment of fine as prescribed by the University should accompany the thesis while submission.

18 Submission of thesis after Re-registration

The minimum of 80 per cent attendance requirement for submitting the thesis after, re-registration need not be insisted for those students who have fulfilled the minimum academic and residential requirement i.e. 2 years (4 semesters) and completed the minimum credit requirements for getting degree.

19 Publication of Articles

Part of the thesis may also be published in advance with the permission of the HOD. If any part is published, the fact should be indicated in the certificate given by the chairperson that the work has been published in part/full in the scientific or popular journals, proceedings, etc. The copies are to be enclosed in the thesis at the time of submission.

20 Evaluation of Thesis

20.1. The thesis submitted in partial fulfillment of a Master's degree shall be evaluated by an external examiner. The external examiner shall be a specialist in the student's major field of study from outside NMV University and shall be appointed by the University as per the panel submitted by the Head of the Department.

20.2. The external examiner will send the evaluation report in duplicate, one marked to the Controller of Examinations and another to the Head of the Department along with the corrected copy of the thesis. If the report is favorable, Viva-Voce will be arranged by the Head of the Department concerned and conducted by the Advisory Committee along with the external examiner. The chairperson of the advisory committee shall send the recommendations of the examining committee to the Controller of Examinations through Head of the Department after the student duly carries out the corrections/ suggestions mentioned by the external examiner (a certificate to be enclosed along with the recommendation). On the unanimous recommendation of the committee and with the approval of the University, the degree shall be awarded to the candidate.

20.3. In case of rejection of the thesis by the external examiner, the Head of the Department concerned and Advisory Committee shall refer the thesis for evaluation by a second external examiner. If the second external examiner recommends the thesis for acceptance, Viva-Voce will be conducted.

20.4. If the revision of the thesis is recommended for repeating experiments, field trial etc., resubmission must be done by the candidate concerned after a minimum of six months. The revised version should be sent to the examiner who recommended revision.

20.5. After incorporating the suggestions of the examiners and those received at the time of viva-voce, three hard bound copies of thesis should be submitted to the Department (one to the scholar, one to the chairperson and one to the Department Library) and one soft copy in CD to the Department. Along with two copies of the thesis, two copies of abstract of thesis (in 10-15 lines) and summary of the findings both in Tamil and English and soft copy both in a C.D. shall be submitted. At the time of final submission, the Chairperson of the advisory committee should certify that the corrections and suggestions have been carried out as indicated by the examiners.

21 Revision of thesis

If an examiner recommends for revision of thesis, the following norms will be adopted.

21.1. For revision of draft, the thesis should be resubmitted after a minimum of one month from the date of communication from the Controller of Examinations

21.2. At the time of submission, the advisory committee should give certificate for carrying out the corrections/recommendations. The resubmitted copies of thesis should be got corrected after carrying out the necessary corrections indicated by the external examiner and necessary certificates shall be obtained from the chairperson and HOD before the conduct of the final viva-voce.

21.3. A fine prescribed by the University to be collected from the students at the time of resubmission of thesis.

22 Failure to appear for Final Viva-voce/ Non Submission of thesis after Viva-voce

22.1. If a candidate fails to appear before the examining committee for final viva-voce, on the date fixed by the HOD, the following are the time frame and penalty.

22.2. The re-viva-voce must be completed within two years. An amount of fine prescribed by the University must be charged to the candidate.

22.3. After successful completion of thesis final viva-voce, if a student fails to submit the corrected version of the thesis within 15 days, he/she will be levied a fine prescribed by the University at the time of sending the proposal for result declaration.

23 Internship during Master's Program

Internship for Development of Entrepreneurship in Agriculture (IDEA)

Currently, a provision of 30 credits for dissertation work in M.Sc. programs helps practically only those students who aspire to pursue their career in academic/ research. There is hardly any opportunity/ provision under this system to enhance the entrepreneurship skills of those students who could start their own enterprise or have adequate skills to join the industry. Therefore, in order to overcome this gap, an optional internship/ in-plant training (called as IDEA) in lieu of thesis/ research work is recommended which will give the students an opportunity to have a real-time hands-on experience in the industry. It is envisaged that the internship/ in-plant training would enhance the interactions between academic organizations and the relevant industry. It would not only enable the development of highly learned and skilled manpower to start their-own enterprises but also the industry would be benefitted through this process. This pragmatic approach would definitely result in enhanced partnerships between academia and industry.

The main objectives of the program:

1. To promote the linkages between academia and industry
2. To establish newer University – Cooperative R&D together with industry for knowledge creation, research and commercialization
3. Collaboration between Universities and industries through pilot projects
4. To develop methods for knowledge transfer, innovation and networking potential
5. To enhance skill, career development and employability

Following criteria for IDEA will be taken into consideration:

- Major emphasis will be given for the students to pursue under IDEA
- Major Advisor will be from Academia and Co-advisor (or Advisory Committee member) from industry
- Total credits (30) will be divided into 20 for internship/ in-plant training and10 for writing the report followed by viva-voce, similar to thesis research
- Work place will be industry; however, academic/ research support would

be provided by the University or both. MoU may be developed accordingly

- The IPR, if any, would be as per the University policy

24. Result Notification

24.1. After the completion of each semester, the student will be given the statement of marks by the Controller of Examinations.

24.2. The transcript will be prepared by Controller of Examinations. The various subjects taken by a student along with the credits and the grade obtained shall be shown on his/her transcript. Based on the total credits admitted, the final grade point average shall be calculated and given.

25. Award of Medals

Medal should be awarded only if the student is a rank holder and secures at least 8.5 OGPA, clears all courses in first attempt and in the program having a batch of at least three students.

26. Transitory Regulations

Separate time table of course work under old semester system will be arranged by the HOD for students with attendance deficiency in a course/courses provided such course/courses are not currently offered due to the introduction of the revised syllabus with effect from the academic year 2023-2024. The candidates under old semester system will, however, complete all the examinations within a period of four academic years from the year of admission.

27 Removal of Difficulties

If any difficulty arises in giving effect to the provisions of these regulations, based on the recommendations of the Dean, the Vice-Chancellor may issue necessary orders, which appear to him to be necessary or expedient for removing the difficulty.

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M.Sc. (Ag.) Agricultural Extension Education

Courses and Credit

I) Course work	Credit
Major Courses	**20**
Minor Courses	**08**
Supporting Courses	**06**
Common Courses	**05**
Seminar	**01**
II) Thesis Research / IDEA	**30**
Total credits	**70**

Distribution Pattern of Courses and Credit (Research)

Semester	Major Courses	Minor Courses	Supporting Courses	Common Courses	Seminar	Research	Credit
I	8	-	6	2	-	4	20
II	12	-	-	2	-	8	22
III	-	6	-	1	1	8	16
IV	-	2	-	-	-	10	12
Credit Load	**20**	**8**	**6**	**5**	**1**	**30**	**70**

Distribution Pattern of Courses and Credit (IDEA)

Semester	Major Courses	Minor Courses	Supporting Courses	Common Courses	Seminar	IDEA	Credit
I	8	-	6	2	-	-	16
II	12	-	-	2	-	-	14
III	-	6	-	1	1	10	18
IV	-	2	-	-	-	10 +10	22
Credit Load	**20**	**8**	**6**	**5**	**1**	**30**	**70**

DISTRIBUTION OF COURSES

M.Sc. (Ag.) in Agricultural Extension Education

Major Courses: 20 credits

Sl.No.	Course Code	Course Title	Credit Hours
		Major Courses	
1	EXT 502	Applied Behavior Change	3(2+1)
2	EXT 503	Organizational Behavior and Development	3(2+1)
3	EXT 504	Research Methodology in Extension	3(2+1)
4	EXT 505	Capacity Development	3(2+1)
5	EXT 506	ICT's for Agricultural Extension and Advisory Services	3(2+1)
6	EXT 507	Evaluation and Impact Assessment	3(2+1)
		Optional Major Course	
1	EXT 501	Extension Landscape	2(2+0)
2	EXT 511	Advances in Communication and Extension Management	2(2+0)
3	EXT 512	Development Perspectives of Extension Education	2(1+1)
		Minor Courses (Any three)	
10	EXT 508	Managing Extension Organizations	3(2+1)
11	EXT 509	Enabling Innovation	2 (1+1)
12	EXT 510	Gender Mainstreaming	3(2+1)
13	EXT 513	Advances in Agricultural Extension	3(2+1)
		Supporting Courses	
14	STA 502	Statistical Methods for Social Sciences	3(2+1)
15	COM 502	Computer Applications for Agricultural Extension Research	3(2+1)
		Common Compulsory Courses	
16	PGS 501	Agricultural Research, Research Ethics and Rural Development Program	1(1+0)
17	PGS 502	Technical Writing and Communication Skills (English)	1 (0+1)
18	PGS 503	Laboratory Techniques for Audio and Video Production	1 (0+1)
19	PGS 504	Library and Information Services (Library Science)	1 (0+1)
20	PGS 505	Intellectual Property and its Management in Agriculture	1 (1+0)
		Non Gradial Courses	
21	NGC 511	Disaster Management (Contact Hour: 1)	-
22	NGC 512	Constitution of India (Contact Hour: 1)	-
23	EXT 591/EXT 592	Seminar	-
23	VAC	**Value Added Course**	-
24	EXT 593	**Master's Seminar**	1(0+1)
25	EXT 596/ 597/598/599	**Research / IDEA**	30

SEMESTER WISE DISTRIBUTION OF COURSES (RESEARCH)

Sl. No.	Course Title	Credit Hours
	I Semester	
	Major Courses	**8**
1.	EXT 501 Extension Landscape	2(2+0)
2.	EXT 502 Applied Behavior Change	3(2+1)
3.	EXT 504 Research Methodology in Extension	3(2+1)
	Supporting Courses	6
4.	STA 502 Statistical Methods for Social Sciences	3(2+1)
5.	COM 502 Computer Application for Agricultural Extension Research	3(2+1)
	Common Courses	2
6.	PGS 501 Agricultural Research, Research Ethics and Rural Development Programs	1(1+0)
7.	PGS 502 Technical Writing and Communications Skills	1(0+1)
8.	**EXT 591** Non Gradial Seminar	-
9.	**EXT 596 Research**	4
	Total	**20**
	II Semester	
	Major Courses	12
1.	EXT 503 Organizational Behavior and Development	3(2+1)
2.	EXT 505 Capacity Development	3(2+1)
3.	EXT 506 ICT's for Agricultural Extension and Advisory Services	3(2+1)
4.	EXT 507 Evaluation and Impact Assessment	3(2+1)
	Common Courses	2
5.	PGS 503 Laboratory Techniques for Audio and Video Production	1(0+1)
6.	PGS 504 Library and Information Services	1(0+1)
7.	**EXT 592** Non Gradial Seminar	-
8.	**EXT 597 Research**	8
	Total	**22**
	III Semester	
	Minor Courses	6
1.	EXT 508 Managing Extension Organizations	3(2+1)
2.	EXT 510 Gender Mainstreaming	3(2+1)
	Common Course	1
3.	PGS 505 Intellectual Property and its Management in Agriculture	1(1+0)
4.	NGC 511 Disaster Management	-
5.	NGC 512 Constitution of India (Contact Hour 1+ 0)	-
6.	**EXT 593 Master's Seminar**	1
7.	**EXT 598 Research**	8
8.	**VAC Value Added Course (3+0)**	-
	Total	**16**
	IV Semester	
	Minor course	2
1.	EXT 509 Enabling Innovation	2(1+1)
2.	**EXT 599 Research**	10
	Total	**12**

SEMESTER-WISE DISTRIBUTION OF COURSES (IDEA)

Sl. No.	Course Title	Credit
	I Semester	
1.	**Major Courses**	8
	Supporting courses	
2.	STA502 - Statistical Methods for Applied Sciences	3
3.	COM 502 - Computer Application for Agricultural Economics Research	3
	Common courses	
4.	PGS 501 - Agricultural Research, Research Ethics and Rural Development Programmes	1
5.	PGS 502 - Technical Writing and Communications Skills	1
6.	AEC 591* - Seminar I	-
7.	EXT 596 - IDEA	-
	Total	**16**
	II Semester	
1.	**Major Courses**	12
	Common Courses	
2.	PGS 503 - Basic Analytical Techniques	1
3.	PGS 504 - Library and Information Services	1
4.	AEC 592* - Seminar II	-
5.	EXT 597 - IDEA	-
	Total	**14**
	III Semester	
1.	**Minor Courses**	6
	Common Courses	
2.	PGS 505 - Intellectual Property and its Management in Agriculture	1
3.	NGC 511 - Disaster Management (Contact hour 1+ 0)*	-
4.	NGC 512 - Constitution of India (Contact hour 1+ 0)*	-
5.	EXT 593 – Master's Seminar III	1
6.	EXT 598 - IDEA	10
7.	VAC 501 - Value Added Course (Contact hour 3+0)*	-
	Total	**18**
	IV Semester	
1.	Minor Courses	2
2.	EXT 599 - IDEA	10+10
	Total	**22**

* Non Gradial

Program Outcomes (POs)
1. To plan, communicate and impart farm technologies and entrepreneurial orientation effectively to empower farmers, farm women and rural youth.
2. To plan, conduct the research and find out the solutions for the problems in an ethical manner.
3. To become excellent teachers with the use of advanced AV aids and teaching methods
4. To identify, develop and manage human resources in an organizational environment.
5. To plan, start and mange new entrepreneurial ventures successfully

PO and CO Mapping Matrix

AFFINITY LEVELS	
1	**Low**
2	**Moderate/ Medium**
3	**Substantial /High**

EXT 501 EXTENSION LANDSCAPE (2+0)

Objectives

1. To understand the challenges before extension and advisory services.
2. To explore new functions and new capacities in extension advisory services.
3. To learn about pluralism in extension and advisory services.
4. To facilitate students to learn new extension approaches.
5. To gain knowledge about extension reforms and policy challenges.

Theory

Unit I: Challenges before Extension and Advisory Services (EAS)

Extension and Advisory Services – Meaning and concepts - New challenges before farmers and extension professionals. Natural Resource Management - Supporting farmers to manage the declining/deteriorating water and soil for farming. Gender Mainstreaming- Enhancing access to new knowledge among women farmers through extension. 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 – Contribution of extension in 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 - Promotion of agripreneurship and agri-tourism. Urban and peri-urban farming - Issues associated with urban and peri-urban agriculture; Farmer distress, suicides - Supporting farmer in tackling farm distress.

Unit II: 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).

Units III: Pluralism in EAS

Pluralism in Extension Delivery: Role of private sector (input firm, 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.

Units IV: Insights from Innovation Studies and New Extension Approaches

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. 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 Extension and advisory services - GFRAS (Global Forum for Rural Advisory Services) and its regional networks.

Unit V: Extension Reform and Policy Challenges

Reduction in public funding - Public withdrawal from extension provision (partial/ full)-Examples/Cases. Privatization - Public funding and private delivery, cost sharing and cost recovery - Examples/Cases. Decentralization of extension services - Examples/ Cases; Lessons from extension reforms in different countries - Extension and Sustainable Development Goals (SDGs). Pluralism - Managing pluralism and Co-ordination of pluralistic extension provision - Public Private Partnerships in extension including the role of local governments/ Panchayats and producer organizations. Challenges in co-ordination - Achieving convergence in extension planning and delivery, Financing Extension - Mobilising resources for extension - Public investments and 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 and current stream of thoughts.

Lecture Schedule

1. Extension and Advisory Services – Meaning and concepts - New Challenges before farmers and extension professionals
2. Natural Resource Management - Supporting farmers to manage the declining/deteriorating water and soil for farming
3. Gender Mainstreaming - Enhancing access to new knowledge among women farmers through extension. Nutrition - Role of extension in supporting communities with growing nutritious crop and eating healthy food
4. 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;
5. Adaptation to climate changes – Contribution of extension in up-scaling Climate Smart Agriculture; Supporting family farms-strengthening the capacities of family farms
6. Migration - Advising farmers to better respond to opportunities that emerge from increasing mobility and also supporting migrants in enhancing their knowledge and skills
7. Attracting and Retaining Youth in Agriculture - Promotion of agripreneurship and agri-tourism

8. Urban and peri-urban farming - Issues associated with urban and peri-urban agriculture

Farmer distress, suicides - Supporting farmer in tackling farm distress.

9. First Test.

10. 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;

11. Mediating conflicts and building consensus to strengthen collective decision making; Facilitating access to credit, inputs and services including development of service providers;

12. Influencing policies to promote new knowledge at a scale - Networking and partnership development including convening multi-stakeholder platforms/ innovation platforms.

13. 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),

14. Pluralism in Extension Delivery: Role of private sector (input firm, 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

15. Role of Non-Governmental Organizations (National/international)/ Civil Society Organizations (CSOs) in providing extension - Experiences from India and other countries

16. Producer Organizations- Role in strengthening demand and supply of extension services; their strength and weaknesses - Experiences from different sectors;

17. Mid-semester Examination.

18. Role of Media and ICT advisory service providers - Global experiences with use of media and ICTs in advisory services provision

19. Diffusion of Innovations paradigm - Strengths and limitations – Multiple sources of innovation -Farmer innovation, institutional innovation

20. Farmer participation in technology generation and promotion strength and limitations

21. Agricultural Knowledge and Information Systems (AKIS) - Strength and limitations; Agricultural Innovation Systems (AIS)- Redefining Innovation

22. Role of Extension and Advisory Services in AIS - From information delivery to intermediation across multiple nodes

23. Role of brokering - Innovation Platforms, Innovation Management - Strength and weaknesses of AIS

24. Rethinking Communication in the Innovation Process – Network building, support social learning, dealing with dynamics of power and conflict.

25. Evolution and features of extension approaches Transfer of technology approach, educational approach, farmer participatory extension approach

26. Demand-driven extension, market led extension (value chain extension),extension for climate smart agriculture, gender sensitive extension, extension for entrepreneurship

27. Extension systems in different regions: Asia-Pacific, Europe, Latin America, Australia, North America.

28. Networking for Strengthening Extension and advisory services - GFRAS (Global Forum for Rural Advisory Services) and its regional networks.

29. 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

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

31. Pluralism - Managing pluralism and Co-ordination of pluralistic extension provision – Public Private Partnerships in extension including the role of local governments/ panchayats and producer organizations

32. Challenges in co-ordination - Achieving convergence in extension planning and delivery, Financing Extension - Mobilising resources for extension - Public investments and donor support (grants/loans)

33. Monitoring and Evaluation of Extension - Generating appropriate data for Assessment and Evaluation of pluralistic extension

34. Strengthening extension policy interface - Generating evidence on impact of extension and policy relevant communication and current stream of thoughts.

Course Outcome

At the end of course students will be able to

CO1: Understand challenges before extension and advisory services

CO2: Learnt about new functions and new capacities in extension and advisory services

CO3: Gain expertise on pluralism in extension and advisory services

CO4: Expose on new extension approaches

CO5: Gain knowledge on extension reforms and policy challenges

CO – PO MAPPING

	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**
CO 1	**1**	**1**	**2**	**1**	**1**
CO 2	**1**	**-**	**3**	**-**	**1**
CO 3	**2**	**1**	**1**	**1**	**-**
CO 4	**-**	**1**	**-**	**1**	**2**
CO 5	**1**	**-**	**-**	**3**	**1**

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E-resources

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2. http://www.fao.org/research-and-extension/en
3. http://www.g-fras.org/en/
4. https://ingenaes.illinois.edu/
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EXT 502 APPLIED BEHAVIOUR CHANGE (2+1)

Objectives

1. To understand the foundations of human behaviour
2. To improve knowledge about cognitive processes and learning
3. To learn about Information processing
4. To guide the students to learn about human judgement, choice and decision making
5. To gain knowledge about human behaviour in the society, social judgement, social identity and inter group relations

Theory

Unit I: Foundations of Human Behaviour

Human behaviour – Meaning, importance and factors influencing human behaviour; Biological bases of human behaviour – Nervous system, brain, endocrine system and genes; Individual variations – Intelligence, ability and creativity – Foundations and theories, personality and temperament - Foundations, approaches, theories of personality, measuring personality traits, locus of control, self-efficacy; Personal, social and moral development – Meaning, concepts – self-concept, self-esteem and self-worth and theories. Motivation – Foundations, approaches, theories, managing human needs and motivations; perceiving others – Impression, attitude, opinions; Emotions - Foundations, types and functions, measuring emotional intelligence.

Unit II: Cognitive Processes and Learning

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 III: Information Processing and Learning

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. 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 IV: Judgement, Choice and Decision-making

Human judgment – Meaning, nature, randomness of situations, theories and models; Choice – Meaning, criteria for evaluating options; theories and models of human choice; Choice architecture; Decision-making – Meaning, problem analysis; steps and techniques of decision- making under different contexts.

Unit V: Human Behaviour in the Society

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; 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 and current stream of thoughts.

Practicals

Perception – Elective attention capacity and skills – Stroop test – Creative thinking – Divergent and convergent thinking – Maslow's hierarchy of needs – Classical conditioning and operant conditioning learning – Learning styles – Self-esteem – Emotional intelligence – Problem solving Visual perception – Self-concept using by chromatic tools – Theories and models of human choice – Problem analysis and decision making – Theories and techniques of persuasion
– Factors influencing information processing

Lecture Schedule

1. Human behaviour – Meaning, importance and factors influencing human behaviour
2. Biological bases of human behaviour; Nervous system, brain, endocrine system and genes
3. Individual variations – Intelligence, ability and creativity – Foundations and theories
4. Personality and temperament - Foundations, approaches, theories of personality, measuring personality (traits, locus of control, self-efficacy)
5. Personal, social and moral development – Meaning, concepts – Self-concept, self-esteem and self-worth and theories
6. Motivation – Foundations, approaches, theories, managing human needs and motivations; perceiving others – Impression, attitude, opinions;
7. Emotions - Foundations, types and functions, measuring emotional intelligence
8. Sensory organs and their role cognition; Cognitive processes – Attention, perception, remembering and forgetting, knowledge and expertise – Foundations and theories.
9. **First Test**
10. Principles and processes of perception
11. Consciousness – Meaning, types, sleep and dreams
12. Learning and Memory – Memory - Meaning, types and mechanisms of storage and retrieval of memories in the Human brain

13. Complex cognitive processes - Concept formation, Thinking, Problem solving and transfer – Foundations, theories and approaches
14. 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
15. Attention and perception – Meaning, types, theories and models; Consciousness
16. Learning – Foundations, approaches and theories; Cognitive approaches of learning – Meaning, principles theories and models, Memory – Foundations, types.
17. **Mid Semester Examination**
18. Behavioural approaches of learning – Foundations and theories - Classical conditioning, operant conditioning, applied behaviour analysis
19. Social cognitive and constructivist approaches to learning – Foundations and theories – Social cognitive theory
20. Self - Regulated learning; learning styles – Meaning, types and applications in learning
21. Human judgment – Meaning, nature, randomness of situations, theories and models
22. Choice – Meaning, criteria for evaluating options; theories and models of human choice; Choice architecture
23. Decision-making – Meaning, problem analysis; steps and techniques of decision – Making under different contexts
24. Attitudes - Meaning, assumptions, types, theories and models of attitude formation; methods of changing attitudes
25. Relating to others - Liking, attraction, helping behaviour, prejudice, discrimination and aggression
26. Liking/ affect – Meaning, types and theories
27. Attraction – Meaning, types and theories
28. Persuasion – Meaning, theories and techniques
29. Social influence and groups – Conformity, compliance and obedience
30. Social judgement – Meaning, frame of reference, stereotyping; The judgement of attitude models
31. Attribution – Meaning, theories; Rational decision making
32. Social identify – Meaning, types; assessment
33. Groups – Meaning, types, group processes; sustainability of groups
34. Inter group processes and theories of social learning and current stream of thoughts.

Practical schedule

1. Understanding perception – Attentional Blink and Repetition Blindness exercise
2. Understanding attention - Testing selective attention capacity and skills and processing speed ability through Stroop test
3. Hands-on experience in the techniques for assessing creative thinking – Divergent and convergent thinking
4. Lab exercise in applying Maslow's need hierarchy to assess motivation
5. Learning - Classical conditioning and operant conditioning

6. Assessing learning styles through Barsch and Kolb inventories
7. Practical experience in building self-esteem
8. Assessment of emotional intelligence
9. Exercises in problem solving and attitude assessment
10. Exercises in visual perception
11. Measuring self-concept using psycho metric tools
12. Experiment on factors influencing information processing
13. Hands on experience in methods of persuasion
14. Field experience in assessing social judgement
15. Simulation exercise to understand decision-making under different situations
16. Exercise in rational decision-making
17. **Final Practical Examination**

Course Outcomes

The course will facilitate the students to

CO 1: Understand the biological and cognitive process determining human behaviour

CO 2: Gain knowledge about the process of learning under different context

CO 3: Facilitate the students to develop competencies in influencing the human decision processing various contexts

CO 4: Gain knowledge about Information processing

CO 5: Design effective strategies to influence attitude and behaviour

Co-Po Mapping Matrix

	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	1	1	2	1	1
CO 2	1	-	3	-	1
CO 3	2	1	1	1	-
CO 4	-	1	-	1	2
CO 5	1	-	-	3	1

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EXT 503 ORGANISATIONAL BEHAVIOR AND DEVELOPMENT (2+1)

Learning objectives

1. To understand the theory and practice relating to the processes of organizational behavior, development and change.
2. To develop insight and competence in diagnostic and intervention processes and skills for initiating and facilitating change in organizations.
3. 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.
4. 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.
5. To gain skill on Organizational Development Interventions

Theory

Unit I:

Basics of Organization 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. **Basics of Organizational Behaviour –** Concepts of Organizational Behaviour, Scope, Importance, Models of OB.

Unit II: Individual Behaviour and Group Behaviour in Organizations

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. **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 I I I: Productive Behaviour and Organizational System

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. **Organizational System -** Organizations Structure - Need and Types, Line & staff, functional, committee, project structure organizations, centralization &decentralization, Different stages of growth and designing the organizational structure; Organizational Design - Parameters of Organizational Design, Organization and Environment, Organizational Strategy,

Organization and Technology, Power and Conflicts in Organizations, Organizational Decision- Making; Organizational Culture Vs Climate; Organizational Change; Organizational Learning and Transformation.

Unit IV: Organizational Development

Overview of Organizational Development- Concept of OD, Importance and Characteristics, Objectives of OD, History and Evolution of OD, Implications of OD Values. **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, and evaluation.

Unit V: Organizational Development: Interventions and Practitioner

Organizational Development Interventions - Meaning, Importance, Characteristics of Organization development Interventions, Classification of OD Interventions - Interpersonal interventions, Team Interventions, Structural Interventions, Comprehensive Interventions. **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 practitioner's skills, activities and current stream of thoughts.

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 - Comparatives study off functional and on functional organizations and drawing factors for organizational effectiveness. Exercise on OD interventions (Interpersonal, Team, Structural, and Comprehensive) with its procedure to conduct in an organization

Lecture Schedule

1. Introduction and concept of organizations and characteristics of organizations
2. Typology of organization and Theories of organizations
3. Nature and Classical theories of organizations
4. Modern management theories, System theories - Critics and lessons learnt/analysis
5. Concepts of Organizational behaviour, Scope and Importance of organizational behaviour. Models of organizational behaviour
6. Introduction to self-awareness perception and attribution, learning
7. Systems approach to studying organization needs and motives - Attitudes, values and ethical behaviour, personality
8. Concepts of Motivation and Theories, Managing motivation in organizations.
9. **First Test**

10. Foundations of group, group behaviour and group dynamics - Group development Cohesiveness, group performance and Decision making, Intergroup relations

11. Teams in organizations - Team building experiential exercises and Interpersonal communication and group

12. Meaning and types of Leadership, Theories and perspective on effective leadership

13. Power and influence, managing conflict and Negotiations skills, job/Stress management

14. Decision making, problem and solving techniques

15. Meaning and dimension of Productive behaviour, Job analysis, Meaning and dimensions of Job performance, determinants, measurement and Job satisfaction

16. Meaning of organizational commitment, dimensions and measures roles and role, clarity

17. Mid semester examination

18. Meaning of organizational stress, sources, theories and models

19. Coping mechanism, effects and management, Organizational stress in farming, farmer groups/organizations, research and extension organization

20. Organizations structure - Need and types, line and staff, functional, committee

21. Project structure organizations, centralization and decentralization

22. Different stages of growth and designing the organizational structure

23. Organizational design, parameters of organizational design, organizational Environments

24. Organization strategy, Technology, Power and conflicts in organizations

25. Organizational culture Vs climate, organizational change, organizational learning and Transformation

26. Concept of Organizations Development, Importance, objectives and characteristics of organizations development

27. Basic components of organizations development program, diagnosis, contracting and diagnosing the problem

28. Diagnostic models, open systems, individual level group level and organizational level diagnosis, Action - Collection and analysis for diagnostic information, feeding back the diagnose information and intervention

29. Program management - Entering Organization development relationship, contracting, diagnosis, feedback, panned change, intervention and evaluation

30. Meaning, Importance and characteristics of Organization development interventions

31. Classification of Organization development interventions, Interpersonal interventions, Team interventions Structural interventions, comprehensive interventions

32. Who is Organization, development consultant and their advantages?

33. Qualifications, comparison of traditional consultants Vs Organization Development consultants

34. Organizational Development process by the practitioner's skills and activities and current stream of thoughts.

Practical Schedule

1. Visit to ADA's /ADH's office for studying the attitude, values, motivation and leadership of organization
2. Visit to JDA's office for studying the attitude, values, motivation and leadership of organization
3. Visit to Agriculture research institutions/research stations to study the organizational climate and their management
4. Visit to nationalized bank to study the organizational structure, span of control, delegation of authority, decision making patterns, individual and group behavioral work, attitude and values, motivation and leadership
5. Visit to Agriculture research institutions/research stations to study the organizational structure, departmentalization, span of control, delegation of authority, decision making patterns, individual and group behavioural work, attitude and values, motivation and leadership
6. Visit to Private organization to study the organizational structure, departmentalization, span of control, delegation of authority, decision making patterns, individual and group behavioural work, attitude and values, motivation and leadership, conflict
7. Visit to Co-operative society to study the organizational structure, departmentalization, span of control, delegation of authority, decision making patterns, individual and group behavioural work, attitude and values, motivation and leadership,
8. Visit to NGO to study the organizational structure, departmentalization, span of control, delegation of authority, decision making patterns, individual and group behavioural work, attitude and values, motivation and leadership
9. Visit to various organization to study the conflict and their management
10. Simulation exercise on problem solving techniques in organization setup
11. Visit to Various organizations to study the individual and group behavioural work in organization
12. Comparative study of functional and non-functional organization and drawing factors for organizational effectiveness
13. To study the organizational development interventions with its procedure to conduct in an organization
14. Assignment I
15. Assignment II
16. Presentation of Assignments
17. **Final Practical Examination**

Course Outcome

At the end of course

CO 1: Equip the students to become potential change agents and OD practitioners.CO 2: Able to learn how to improve individual, group/team and organizational performance through the use of OD techniques or interventions.

CO 2: Gain knowledge about organizational system and development.CO 4: Improve capacity to understand conflict management

CO 3: Exposure on various organizational development techniques and practices.

Co-Po Mapping Matrix

	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	**1**	**1**	**2**	**1**	**1**
CO 2	**1**	**-**	**3**	**-**	**1**
CO 3	**2**	**1**	**1**	**1**	**-**
CO 4	**-**	**1**	**-**	**1**	**2**
CO 5	**1**	**-**	**-**	**3**	**1**

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EXT 504 RESEARCH METHODOLOGY IN EXTENSION (2+1)

Learning objectives

1. To create a workforce which has sound fundamental knowledge in behavioural sciences.
2. To identifying the steps in formulating research problems.
3. To develop theoretical, conceptual, empirical frameworks; Approaches for identifying concepts, constructs and variables.
4. To emphasis on critical competencies in planning, conducting and applying behaviouralresearch.
5. To formulate quality extension models, methods and statistical tools.

Theory

Unit 1: Introduction to Behavioral Research Nature of Behavioral Research

Methods of knowing; Science and scientific method; Behavioral 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 behavioral research in extension; Careers in behavioral research. Basic steps in behavioral research – Formulating a Research Problem; Reviewing the Literature; Identifying the variables and hypotheses; Formulating research designs, methods and tools; Selecting sample; Collecting data; Analyzing and Interpreting the Data; Reporting and Evaluating Research; Skills needed to design and conduct research; Writing research proposals.

Unit 2: Research Problem and Reviewing the Literature

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; Research Objectives - Meaning, types and criteria for judging the objectives. 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; organizing literature.

Unit 3: Variables, Hypotheses and Research Designs

Developing theoretical, conceptual, empirical frameworks; Approaches for identifying concepts, constructs and variables; Role of theory in behavioral 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. 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 behavioral 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 4: Selecting Sample and Collecting Data

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; Generalization – Importance, Types of generalizations. 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 homological 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 5: Analyzing and Interpreting the Data and Reporting

Data 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 analyzed data. Writing reports and research publications; Evaluation Methodology , Citation and common citation managers, Common referencing styles in social research – MLA, APA Chicago manual style and current stream of thoughts. National Academy of Agricultural Sciences (NAAS), Google Citation Index & Content writing.

Practicals

Research problem – Hypothesis – Review of literature – Identification of variables – Selection of research design – Sampling and sampling method – Development of research methods and tools – Reliability and validity of research instruments – Research proposal – Data collection – SPSS – Formulation of sub-tables – Referencing style – Citation managers – Report writing – Thesis writing – Research article writing – Presentation of reports.

Lecture Schedule

1. Science – Meaning Dimensions and Characteristics of science, Behavioural science / social science research – Meaning, Aim, Goal and Objectives, Characteristics of research, Types of social research
2. Fundamentals of Adaptive and Action Research their objectives and applications Methods and importance of social research, Types of knowledge generated through research – Historical axiological theoretical and conceptual knowledge prior research studies reviews and academic debate
3. Role of behavioural research in extension, Careers in behavioural research, Basic steps in behavioural research - Formulating a Research Problem, Reviewing the Literature, Identifying the variables and hypotheses, Formulating research designs methods and tools
4. Basic steps in behavioural research - Selecting sample, Collecting data, Analyzing and Interpreting the Data Reporting and Evaluating Research Skills needed to design and conduct research, Writing research proposals
5. The research problem and research topic – Definitions, Importance of formulating a research problem, Sources of research problems, Characteristics of a good research problem
6. Research problems in quantitative and qualitative research, Steps in formulating a research problem, Strategies for writing research problem statement & Research purpose statement
7. Research questions – Types & criteria for selecting research questions, Techniques for narrowing a problem into a research question
8. Research objectives – Meaning types and criteria for judging the objectives, Statement of objectives
9. **First Test**
10. Review - Meaning and importance, Types of literature review – Context, Historical Integrative, methodological, self-study and theoretical, Literature review for quantitative and qualitative studies
11. Steps in conducting literature review – Identify key terms, locate literature, critical evaluation and selection. Organizing literature and writing literature review in literature cards
12. Developing theoretical conceptual empirical frameworks, Role of theory in behavioural research, Approaches for identifying concepts constructs and variables, Types of concepts, Difference between concepts and constructs and their roles in social research

13. Variables – Types of variables, Steps in identifying variables, Propositions and hypothesis – Meaning, definition, their importance in social research, Types and characteristics of good hypothesis.

14. Measurement – Meaning, functions and importance of measurement in social research. Difference between psychological and physical measurement

15. Levels of measurement – Nominal, ordinal, interval and ratio

16. Postulates of measurements, Criteria for choosing measurement levels for variables

17 Mid Semester examination

18. Research designs – Definition purpose and functions, Research Design as Variance Control, MAXMINCON Principle, Criteria for selecting a suitable Research Design

19. Classification of research designs Quantitative designs – Experimental, descriptive, comparative, correlational, survey ex-post facto and secondary data analysis

20. Qualitative designs – Ethnographic, grounded theory, phenomenological and Narrative research; Mixed method designs – Action research design, Translational research

21. 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

22. 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- An orientation about different techniques; Projective and non – projective techniques

23. 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, Probability Sampling - Simple random sampling, Cluster sampling, Systematic sampling, Stratified random sampling and Unequal probability Sampling

24. 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, Generalization – Importance and Types of generalizations

25. The process of collecting data – Selection, training, supervision and evaluation of field investigators. An introduction to online data collection. Errors and biases during data collection

26. 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, discriminant, factorial and homological validity

27. 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

28. Data exploration and editing, Methods of data processing in quantitative and qualitative studies

29. 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, and Power, P Value;

30. Multivariate data analysis – Regression factor analysis, cluster analysis, logistic regression and structural equation modelling

31. Guidelines for choosing appropriate statistical analysis, Statistical packages for data analysis in social research

32. Methods of interpreting data and drawing inferences, The Ladder of Inference, Methods of communicating and displaying analyzed data

33. Writing reports and research publications, Evaluation Methodology

34. Citation and common citation managers, Common referencing styles in social research – MLA, APA Chicago manual style and current stream of thoughts. National Academy of Agricultural Sciences (NAAS), Google Citation Index & Content writing.

Practical Schedule

1. Selecting a research problem and writing problem statement
2. Narrowing down research problem to purpose, research questions and objectives
3. Hands on exercise on reviewing research literature
4. Identifying the variables – Steps and related statistical analysis. Conceptualization and defining variables
5. Choosing research design based on research problem
6. Choosing right sampling method and estimating sample size
7. Developing research methods and tools – Questionnaires, interview schedule, check lists and focus group guides
8. Testing reliability and validity of research instruments
9. Writing a research proposal
10. Field data collection using research methods and tools
11. Hands on experience in using SPSS for coding, data exploration, editing, analysis and interpretation
12. Formulation of secondary tables based on the objectives of research
13. Orientation about different referencing styles
14. Hands on experience on citation managers
15. Writing reports, writing of thesis and research articles
16. Presentation of reports
17. **Final practical examination**

At the end of the course students will be able to

CO1: Identify the significant research problem and formulate hypotheses
CO2: Understand the methods and tools of behavioral sciences research
CO3: Use appropriate statistical tools for data collection and analysis.
CO4: Use the Statistical Package for Social Sciences (SPSS)
CO5: Interpretation of data and summarizing results.

Course Outcome

Co-Po Mapping Matrix

	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	1	1	2	1	1
CO 2	1	-	3	-	1
CO 3	2	1	1	1	-
CO 4	-	1	-	1	2
CO 5	1	-	-	3	1

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EXT 505 CAPACITY DEVELOPMENT (2+1)

Learning objectives

1. To understand the concepts of training, capacity building, capacity development and human resource development in the context of roles and responsibilities of extension professionals.
2. To discuss capacity development- Approaches, strategies, needs assessment and methods/ tolls.
3. To facilitate devise, organize, implement and evaluate capacity development programs.
4. To improve skill on formulation of project proposal.
5. To gain knowledge on Performance appraisal

Theory

Unit I: Capacity Development, Approaches, Strategies Planning and Organization of Capacity Development Programs

Capacity Development - 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), Organizational 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. 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. Planning and Organization of Capacity Development Programs - 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; Organizing capacity development program; Operational arrangements at different stages- Before the program, During the program, Middle of the program, At the end of the program, After the program, Follow up; Stakeholders' responsibilities.

Unit II: Capacity Development Needs Assessment

Planning and Organization of Capacity Development Programs Concept of Need Assessment; Approaches in Need Analysis - Performance Analysis, Task Analysis, Competency Study; Needs Survey. 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 program), 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.

Unit III: Capacity Development Institutions and Management

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; Organization's Role in Capacity Development. 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).

Unit IV: Capacity Development Process and HRD

Capacity Development Methods and Tools- Capacity Development Methods – Lecture, Discussion, Syndicate, Seminars, Conference, Symposium, Role Play, Case study, Program 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. Capacity Development Program 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 program, Evaluation at the end; Use of evaluation findings; Statistical Tools for evaluation. 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 V: 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, Organizational 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, Socialization System, Governance; Functions of HRD - Organizational Development, Career Development, Capacity Development and current stream of thoughts.

Practical

Capacity development needs assessment exercise; Capacity development project formulation exercise; Planning organizing and conducting an extension capacity development

program; Designing program; Writing learning objectives; Developing objectives into curriculum; Training plan; organizing capacity development workshop; evaluation with pre & post training tests; training methods - Practicing each method mentioned in content as group exercise.

Lecture Schedule

1. 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)
2. Organizational capacities (how various actors come together to perform given tasks), Individual capacities (technical, functional and leadership skills).
3. 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.
4. Capacity Development- Approaches and Strategies- Capacity Development Dilemma- Theory versus Practice, Trainee versus Task, Structured versus Unstructured, Generic and Specific;
5. Approaches in Capacity Development - Informative approach, Participatory approach, Experimental approach/ Experiential, Performance based approach;
6. Capacity Development Strategies - Academic strategy, Laboratory strategy, Activity strategy, Action strategy, Personal development strategy, Organizational development strategy.
7. Planning and Organization of Capacity Development Programs - 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;
8. Organizing capacity development program; Operational arrangements at different stages - Before the program, during the program, Middle of the program, At the end of the program, After the program, Follow up; Stakeholders' responsibilities.
9. **First Test**
10. Capacity Development Needs Assessment - Planning and Organization of Capacity Development Programs Concept of Need Assessment; Approaches in Need Analysis- Performance Analysis, Task Analysis, Competency Study; Needs Survey.
11. 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 program)
12. Empirical Methods (Job analysis, Performance evaluation, Checklist or Questionnaire Method, Tests, Critical Incident Technique, Card Sort Method, Focus Group Discussion, Interview, SWOT Analysis);
13. Information and Skills required in Need Analysis; Identification of Needs through Task Analysis - Task identification, Task Analysis, Gap Analysis.

14. Capacity Development Institutions and Management - Capacity Development Institutions- Capacity Developer (Trainer): Meaning and concept; Types of Capacity Developers (regular, *ad-hoc*, part time, guest and consultants);
15. Roles of Capacity Developer (explainer, clarifier, supporter, confronter, role model, linker, motivator, translator/ interpreter, change agent);
16. 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);
17. **Mid Semester Examination**
18. Capacity Development Centers and Locations; Organization's Role in Capacity Development.
19. Development Project Formulation - Project Proposal: Concept and Meaning; Steps in Project Formulation.
20. Review of past proposals, Consulting experts, consultants, and previous organizers, Review past project evaluation reports, Interact with the prospective beneficiaries;
21. Format for Writing Project Proposal (LFA).
22. Capacity Development Process and HRD Capacity Development Methods and Tools- Capacity Development Methods – Lecture, Discussion, Syndicate, Seminars, Conference, Symposium, Role Play, Case study, Programmed Instruction, T - group/ Laboratory methods;
23. Factors Determining Selection of Methods - Capacity development objectives, subject matter, categories of participants, and the available resources like time, location, budget; Capacity Development Aids.
24. Capacity Development Program Evaluation - Meaning & Importance; Purpose of Evaluation; Principles of Evaluation; Types of Evaluation – Formative, Summative, Kirkpatrick's four levels of evaluation;
25. Process of Evaluation - Evaluation at the beginning, Evaluation during the program, Evaluation at the end; Use of evaluation findings; Statistical Tools for evaluation.
26. 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;
27. Methods of Impact Evaluation - Learning retention of participants (KOSA), Impact on the job performance, Impact on organizational effectiveness, Impact on stakeholder's competency.
28. Human Resource Development - HRD: Meaning, Importance and Benefits; Types of HRD Systems & Sub-systems Career system (Manpower planning, Recruitment, Career planning, Succession planning, Retention),
29. Work system (Role analysis, Role efficacy, Performance plan, Performance feedback and guidance, Performance appraisal, Promotion, Job rotation, Reward)
30. Development system (Induction, Training, Job enrichment, Self-learning mechanisms, Potential appraisal, Succession development, Counselling, Mentor system)
31. Self-renewal system (Survey, Action research, Organizational development interventions),
32. Culture system (Vision, mission and goals, Values, Communication, Get together and celebrations, Task force, Small groups);
33. Components of HRD System - Performance Appraisal, Potential Appraisal, Task System, Development System, Socialization System, Governance;

34. Functions of HRD - Organizational Development, Career Development, Capacity Development and current stream of thoughts.

Practical Schedule

1. Visit to a central govt. institute to study their capacity development activities, HRD systems and facilities
2. Visit to a state government organization to study their capacity development activities, RD systems and facilities
3. Visit to private organization to study their capacity development activities, HRD systems and facilities
4. Visit to an NGO to study their capacity development activities, HRD systems and facilities
5. Exercise on Practicing Capacity Development Methods - Lecture and panel Discussion
6. Exercise on Practicing Capacity Development Methods - Seminars, Role Play
7. Exercise on Practicing Capacity Development Methods - Symposium, workshop, T-group
8. Exercise on capacity development needs assessment using different methods
9. Exercise on Capacity development project formulation - Review of past proposals
10. Exercise on Capacity development project formulation - Consulting experts, consultants, previous organizers, Review past project evaluation reports
11. Exercise on Capacity development project formulation - Interaction with the prospective beneficiaries and project proposal finalization
12. Exercise on Planning, organizing and conducting an extension capacity development program-Designing a program, Writing learning objective
13. Exercise on Planning, organizing and conducting an extension development program-Developing objectives into curriculum, Training plan capacity
14. Exercise on Planning, organizing and conducting an extension capacity development programs-Organizing capacity development workshop
15. Exercise on Planning organizing and conducting an extension capacity development programs-Evaluation with pre & post training tests
16. Presentation of reports
17. **Final practical examination**

Course Outcome

At the end of the course students will be able to

CO1: Understand basic concepts related to training, capacity building, capacity development and HDR

CO2: Gain knowledge on planning and development of capacity development programs

CO3: Gain knowledge on capacity development institutions and management of capacity development institutions

CO4: Understand advances in capacity development methods and tools, evaluation and impact assessment

CO5: Develop skills in human resource development and organizational development

Co-Po Mapping Matrix

	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	1	1	2	1	1
CO 2	1	-	3	-	1
CO 3	2	1	1	1	-
CO 4	-	1	-	1	2
CO 5	1	-	-	3	1

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EXT 506 ICTS FOR AGRICULTURAL EXTENSION AND ADVISORY SERVICES (2+1)

Learning objectives

1. To discuss different ICT initiatives, knowledge management process and application aspects.
2. To orient students on advances in smart/ disruptive technologies and data analytics.
3. To provides hands on experience in navigating ICTs.
4. To understand various ICT enabled extension advisory services.
5. To gain knowledge on smart technologies and Human Computer Interactions

Theory

Unit I: Introduction to Information and Communication Technologies (ICTs) and E-extensionICTs - 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, m-Learning, advantages and limitations of ICTs. ICTs in Knowledge Management Knowledge management - Meaning, approaches and tools. Role of ICTs in Agricultural Knowledge Management. 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.

Unit II: Application of ICTs in Extension and Advisory Services

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

Unit III: Knowledge Management and Standards

Policies in Knowledge Management- Global policy/ Standards on e-Governance, National policy on e-governance, Open Data/Open Govt. Standards and Open Source etc; Language Technology Applications; National e-Agriculture policy/ Strategies/ guidelines. Web Standards - Web standards, creating and writing for web portals, development of mobile applications, developing digital videos - Story board - Video recording - Video editing, types of blogs and writing guidelines. 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.

Unit IV: Smart and Disruptive Technologies and Advanced Analytics for Agricultural Extension

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 V: 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, personalization, 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 and current stream of thoughts.

Practicals

ICT initiatives in Extension Advisory services – Successful ICT initiatives – Content and client engagement analysis – Content creation on digital visual aids, Digital posters & banners; Social Media platform; Web portals, websites, blogs – Digital audio in social media – ICT interventions – Organizing webinars – Practicing web conferencing – Farmer's call centre – E-commerce initiatives – Remote sensing – GIS – Village Knowledge Centre.

Lecture Schedule

1. Information Communication Technologies (ICTs) – Meaning, Concepts and Importance in Agricultural Development - Advantages and Limitations of ICTs - SWOC analysis of ICTs interventions
2. Information Communication Technologies in Agriculture – Global and National Status – Types and Function of ICTs - Innovations in Information Communication Technologies
3. e-Governance, E-Learning and M-Learning – Meaning, Concepts and Importance in Agricultural Development
4. Knowledge Management – Meaning, Concepts and Approaches - Tools of Knowledge Management – Application in Agricultural Education, Research and Extension - Role of ICTs in Agricultural Knowledge Management
5. e-Extension – Government, SAUs, Private and NGOs Initiatives in Agricultural Extension in State, National and International level
6. Village Knowledge Centres (VKC) – Principles and Functions; Hub and Spoke Model in VKC - Digital Kiosks – Concept and Development; Role of Digital Kiosks in Transfer of Agricultural Technologies
7. Websites and Web Portal for Dissemination of Agricultural Technologies – Concept and Method of construction of websites and portals
8. Agricultural related websites and Portal in National and Internationals level for dissemination of agricultural technologies to different stakeholders

9. First Test Examination

10. Community Radio Station – Principles, Method of working and application in Transfer of Technologies
11. Kisan Call Centres (KCC) – Meaning and Functions; Role of KCC in providing Agro advisory services to the farming community
12. Mobile Based Agro Advisory Services – e-Velanmai model of Extension –- Different Mobile apps in Agriculture and Allied Sectors – Role and functions
13. Self – Learning CDs on Package of Practices – Meaning, Importance and role of transfer of Technologies
14. Social Media – Meaning and Concepts – Types of Social Media - Role of Social Media in Agricultural Education, Research and Extension - Development of Digital Media

    Meaning, Methods and Use in Agricultural Extension
15. Social Media – Guidelines for preparing social media content - Types of Blogs – Development of Blogs for sharing of knowledge – writing guidelines. Market Intelligence and Information Systems – Meaning and application in Agricultural Development – Role of DEMIC in forecasting commodity prices to farmers
16. ICT enabled Supply chain and Value Chain management in agriculture – Food Marker Initiative, E- Marketing – meaning and importance - Role of e-NAM / AGMARKNET in providing market advisory services to the farmers

17. Mid Semester Examination

18. Expert System – Management Information System Meaning – Concept – Types Approaches and Development protocol
19. Role of Expert System in providing farm health management, diagnosing animal and fishery problems, soil health management and weather management
20. Global and Regional Knowledge network – International Information Management systems – Application in agricultural extension
21. e-Learning platforms – Meaning and principles – MOOCs, Coursera and Edu Ex and Digital networks among extension personnel and FPOs / Farmers Groups National Policy on e-Governance ; Open source – Meaning and concept – Open Data/ Open Govt. Standards and Language Technology Applications
22. Governmental Web standards, Development of web portals and mobile applications – Meaning, principles and methods
23. Development of Digital Videos – Story board – video recording and editing – Meaning and Methods
24. Video Conference – Live Streaming and webinars – Meaning, Process and application in Agricultural Extension
25. Engaging Audience and Data analytics
26. Human Centered Learning – Ergonomics – Human Computer Interactions – Meaning, Principles and importance
27. Principles of Multimedia Learning – Split attention, Modality, Redundancy, Coherence, Signaling, Segmenting, Pre-training, Personalization, Voice embodiment – Advanced Principles – Guided discovery, worked examples, Self-explanation, drawing, feedback, multiple representation, learner control, animation, collaboration, prior knowledge and working memory
28. Theories of Multimedia learning
29. Designing ICT gadgets based on human interaction principles, meaning, importance, approaches and methods – Usability testing methods

30. Artificial Intelligence and Smart Technologies – Meaning, Concepts, m-Velanmai: AI based Extension Advisory system
31. Remote sensing, GIS and GPS – Meaning, Concept, Principles and application in Agricultural Extension
32. Disruptive technologies – Internet of Things (IoTs) – Meaning, concept, principles and application in Agricultural Extension
33. Block Chain Technologies and Big Data analytics – Meaning, Importance and Application in Agricultural Extension and current stream of thoughts.

Practical Schedule

1. Brainstorming session on ICT initiatives in Extension Advisory Services
2. Review of successful ICT initiatives in Extension Advisory Services
3. Presentation of ICT Initiatives in EAS
4. Content and client engagement analysis
5. Creating content and designing digital visual aids – Digital posters and banners
6. Creating Social Media Platform for sharing knowledge
7. Content creation for social media and posting in social media
8. Content creation for Web portals/Websites/blogs & designing website/blog
9. Writing content for Radio & posting digital audio in social media
10. Content creation for short video and editing techniques and posting it in YouTube
11. Visit to a leading computer centre to have a knowledge on various ICT Interventions and activities handled by the centre
12. Practicing in conducting webinars and practicing Web conferencing
13. Visit to Farmer's call centre and practicing advisory services
14. Exposure visit to understand e - marketing/e - commerce initiatives
15. Exposure visit to Department of Remote sensing and GIS to understand RS & GIS and drones in Smart Extension advisory
16. Visit to Village Knowledge Centers for learning its functions and activities
17. **Final practical examination**

Course Outcome

At the end of course students will be able to

CO1: Understand the ICT application aspects and to evaluate ICT initiatives and smart/disruptive technologies

CO2: Execute extension functions by applying ICTs and engage stakeholders in knowledge management process.

CO3: Develop capacity to handle various ICT tools and techniques

CO4: Enhance skill on smart computer technologies

CO5: Gain knowledge about blogs and website designing

Co-Po Mapping Matrix

	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	**1**	**1**	**2**	**1**	**1**
CO 2	**1**	**-**	**3**	**-**	**1**
CO 3	**2**	**1**	**1**	**1**	**-**
CO 4	**-**	**1**	**-**	**1**	**2**
CO 5	**1**	**-**	**-**	**3**	**1**

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EXT 507 EVALUATION AND IMPACT ASSESSMENT (2+1)

Learning objectives

1. To orient students on the importance of evaluation and impact assessment.
2. To develop capacities for evaluation and impact assessment
3. To understand the technique of conducting evaluations and impact assessment.
4. To develop an understanding on the concept of evaluation and impact assessment
5. To expose the students in the context of program evaluation tools.

Theory

Unit I: Program Evaluation

Introduction to Evaluation - Concept of Evaluation: Meaning and concept in different contexts; Why Evaluation is done and When? Program planning, analyze program effectiveness, decision making, accountability, impact assessment, policy advocacy; Objectives, types, criteria and approaches of program 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.

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 - Program 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.

Unit II: Evaluation Process

How to Conduct Evaluation - Ten Steps in program evaluation: (1) Identify and describe program you want to evaluate (2) Identify the phase of the program(design, start-up, ongoing, 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, analyze 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 (program continuation/discontinuation, improve on-going program, plan future programs and inform program stakeholders).

Evaluating the Evaluation - Evaluating the Evaluation - 10 Steps as above with focus on conceptual clarity, representation of program components and stakeholders, sensitivity, representativeness of needs, sample and data, technical adequacy, methods used for data collection and analysis, costs, recommendations and reports.

Unit III: Program Management Techniques

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

Networks - Networks – Introduction, origin and widely used networks (Program 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.

Unit IV: Program Evaluation Tools

Bennett's Hierarchy of Evaluation - Introduction to Bennett's hierarchy – Background and description; Relation between program 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

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.

Unit V: Impact Assessment

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. 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. 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. 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? and current stream of thoughts.

Practicals

Identification of evaluation indicators – Utilization-Focused evaluation; Values engaged evaluation, Empowerment evaluation, Theory-driven evaluation – Developing Evaluation proposal – Extension programs – Comprehensive program evaluation – Evaluating the evaluation – SWOC analysis – Gantt chart – PERT and CPM – Network Analysis – LFA – Identification of impact assessment indicators – Presentation and current stream of thoughts.

Lecture Schedule

1. Program Evaluation, Introduction to Evaluation - Concept of Evaluation: Meaning and concept in different contexts; Why Evaluation is done and When?
2. Program planning, analyse program effectiveness, decision making, accountability, impact assessment, policy advocacy; Objectives, types,
3. criteria and approaches of program evaluation, evaluation principles; the context of program evaluation in agricultural extension;
4. Role and Credibility of Evaluator: Role as educator, facilitator, consultant, interpreter, mediator and change agent. Competency and credibility of evaluator.
5. 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 - Program theory, social science theory, and evaluation theory (other theories/ approaches)
6. Utilization-Focused Evaluation & Utilization - Focused Evaluation (U-FE) Checklist, Values Engaged Evaluation, Empowerment Evaluation, and Theory-Driven Evaluation).
7. Integration between theory and practice of evaluation: – Evaluation forums, workshops, conferences and apprenticeship/ internship.
8. Evaluation Process How to Conduct Evaluation - Ten Steps in program evaluation: (1) Identify and describe program you want to evaluate (2) Identify the phase of the program(design, start-up, ongoing, 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)
9. **First Test**

10. (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 (program continuation/ discontinuation, improve on-going program, plan future programs and inform program stakeholders).
11. Evaluating the Evaluation - Evaluating the Evaluation - 10 Steps as above with focus on conceptual clarity, representation of program components and stakeholders, sensitivity, representativeness of needs, sample and data, technical adequacy, methods used for data collection and analysis, costs, recommendations and reports.
12. Program Management Techniques - SWOT Analysis and Bar Charts - SWOT Analysis – Concept, origin and evolution; SWOT As a Program Management Tool; conducting SWOT Analysis.
13. Common Questions in SWOT Analysis; Advantages and Disadvantages of SWOT;
14. Bar Charts (Gantt Charts and Milestone Charts) - Characteristics, advantages and limitations.
15. Networks-Networks – Introduction, origin and widely used networks (Program Evaluation and Review Technique (PERT) and Critical Path Method (CPM), differences between PERT and CPM, advantages and disadvantages.
16. 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),
17. **Mid Semester Examination**
18. 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.
19. Program Evaluation Tools - Bennett's Hierarchy of Evaluation - Introduction to Bennett's hierarchy – Background and description; Relation between program objectives & outcomes at 7 levels of Bennett's hierarchy
20. Inputs, activities, participation, reactions, KASA changes, practice and behaviour changes, end results. Advantages and Disadvantages of Bennett's hierarchy
21. Logic Framework Approach (LFA) - Introduction to LFA – Background and description; Variations of LFA, LFA Four-by-Four Grid, Advantages and Disadvantages of LFA.
22. Goal Oriented Project Planning (GOPP) or Objectives Oriented Project Planning (OOPP);
23. 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).
24. Impact Assessment - Introduction to Impact Assessment - Concept of Impact Assessment: Meaning, concept and purpose in different contexts; Impact Assessment Framework:
25. Meaning of inputs, outputs, outcomes, impacts and their relation with monitoring, evaluation and impact assessment.

26. Impact Assessment Indicators - Indicators for impact assessment – meaning and concept; Selecting impact indicators; Types of impact indicators for technology and extension advisory services
27. Social and behavioral indicators, socio-cultural indicators, technology level indicators, environmental impact assessment indicators and institutional impact assessment indicators.
28. Approaches for Impact Assessment-Impact assessment approaches – Quantitative, qualitative, participatory and mixed methods with their advantages and disadvantages;
29. Quantitative Impact Assessment Types – Based on Time of Assessment (Ex-ante and ex-post), Based on Research Design (Experimental, quasi experimental, Non-experimental).
30. 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.
31. 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.
32. Environmental Components of EIA – Air, noise, water, biological, land; Composition of the expert committees
33. 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;
34. Salient Features of 2006 Amendment to EIA Notification - Environmental Clearance/Rejection, participants of EIA; Shortcomings of EIA and How to improve EIA process? and current stream of thoughts.

Practical Schedule

1. Reviewing of literature using web/printed resources and identify evaluation indicators for the Utilization-Focused Evaluation and Values Engaged Evaluation
2. Collection of literature using web/printed resources and identify evaluation indicators for Empowerment Evaluation and Theory-Driven Evaluation
3. Developing an evaluation proposal of any one program using 'Ten Steps in Program Evaluation'
4. Visit to Directorate of Extension in the university and enquire about extension programs being implemented/coordinated by Directorate
5. Collecting and reviewing a comprehensive program evaluation report from published sources
6. Evaluating a comprehensive program evaluation report through the 'Evaluating the Evaluation' approach
7. Conducting SWOC analysis for two Agriculture development programs implemented in the district
8. Conducting SWOC analysis for two Horticulture development programs implemented in the district
9. Identify an on-going development program and make-out 6 activities from the program. Draw a Gantt chart for 12 months program activities
10. Write a report on evaluation hierarchy levels and indicators as per Bennett's hierarchy of evaluation for any development program or project

11. Exposure to Network Analysis (PERT and CPM) through analysis of project proposal12.Develop an LFA for any development program or project
13. Identify the impact assessment indicators for an agriculture technology promoted by KVK in the aspect of social and behavioral indicators and socio-cultural indicators
14. Identify the impact assessment indicators for an agriculture technology promoted by KVK in the aspect of technology level indicators, environmental impact assessment indicators and institutional impact assessment indicators
15. Refer an Environment Impact Assessment report and critical analyze of steps in EIA
16. Collection and presentation of Recent research studies in Evaluation and Impact Assessment.
17. **Final Practical Examination**

Course Outcome

At the end of course students will be able to

CO1: The course will help the students to develop competencies in the areas of evaluation planning.

CO 2: Enhance skill development, to conduct evaluation, impact assessment and writing reports.

CO 3: Equip the students on SWOC analysis

CO 4: Acquire skill on Network Analysis

CO 5: Familiarize the students with environmental impact assessment process.

Co-Po Mapping Matrix

	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	1	1	2	1	1
CO 2	1	-	3	-	1
CO 3	2	1	1	1	-
CO 4	-	1	-	1	2
CO 5	1	-	-	3	1

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EXT 508 MANAGING EXTENSION ORGANIZATIONS (2+1)

Learning objectives

1. To make the students to understand the importance of knowledge and skills on various management functions, as applicable to extension organizations
2. To Discuss the ways of running services as managers of agri-ventures
3. To develop capacities for becoming effective managers of agri-ventures
4. To understand the fundamentals of management
5. To gain knowledge on organizational communication systems

T h e o r y

Unit I : Basics of Management

Management - An Overview - Management and Extension management – Meaning, concept, nature and importance; theories of management. Management, administration and supervision - Meaning, definition and scope; Approaches to management, Principles, functions and levels of management; Qualities and skills of a manager; Interpersonal relations in the organization; Reporting and budgeting

Unit II: Management in different types of Extension Organizations

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. Organizational Structure, Relations between different units - Challenges in management

Unit III: 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. **Unit IV: Motivation and Organizational Communication**

Motivation and Communication - Managing work motivation – Concept, Motivation and Performance, Approaches to motivation, team building; Organizational Communication – Concept, Process, Types, Networks, Aristotle Communication; Mentoring, Time management, Teamwork and team-building strategies; Modernization of information handling

Unit V 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 and current stream of thoughts.

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

Lecture Schedule

1. Management, administration and supervision – Meaning, concept, nature and importance
2. Administration and supervision – Meaning, concept, nature and importance
3. Extension Management - Meaning, concept, nature and importance
4. Theories of management – Scientific management theory, principle of administrative management theory and bureaucratic management theory
5. Approaches to management – Different approaches to management
6. Principles, functions and level of management
7. Qualities and skills of a manager; Interpersonal relations in the organization, reporting and budgeting
8. Management of Extension Organization –POSDCORB
9. **First Test**
10. Extension management in public sector - Department of Agriculture Agricultural Technology Management Agency (ATMA), Krishi Vigyan Kendra (KVK)
11. Extension management in public sector - SAUs, ICAR Institutes, Extension management in private sector
12. Extension management in Cooperatives, NGOs, FPOs etc.
13. Organizational Structure and Relations between different units
14. Challenges in management of organization
15. Decision making – Concept, Types, Styles and techniques of decision making
16. Steps in DM Process, Guidelines for making effective decisions
17. **Mid-Semester Examination**
18. Human Resource Management: Manpower planning, Recruitment, Selection, Placement and Orientation, Training and Development
19. Dealing with fund and staff shortages in different extension organizations such as KVK, ATMA etc.
20. Leadership – Concept, Characteristics, Functions and Approaches to leadership
21. Leadership styles, Authority and responsibility, Delegation and decentralization, line and staff relations
22. Challenges of co-ordination in extension organizations, Managing inter departmental coordination and convergence between KVK, ATMA and line departments
23. Coordinating pluralism in extension services, Challenges in managing Public-Private Partnerships (PPPs) at different levels in agricultural development in general and extension in particular
24. Performance appraisal– Meaning, Concept and Methods.
25. Managing work motivation – Concept, Motivation and Performance26.Approaches to motivation and team building
26. Organizational Communication – Concept, Process, Types, Networks, Barriers to

Communication
27.Mentoring, Time management, Teamwork and team-building strategies
29.Modernization of information handling
30. Supervision – Meaning, Responsibilities, Qualities and functions of supervision31.Essentials of effective supervision in the organization
32. Managerial Control – Nature, Process, Types, Techniques of Control and Observation
33. Project Evaluation Techniques : PERT and CPM
34. Management Information Systems (MIS): Concept, tools and techniques, MIS in extension organizations and current stream of thoughts.

Practical Schedule

1. Simulated exercises to understand the management processes
2. Simulated exercises on techniques of decision making
3. Brain storming on Managerial styles of different extension organizations
4. Field visit to agro-enterprises to study its structure and functions
5. Designing organizational structure/organograms
6. Group activity on leadership development skills
7. Group activity on stages of team building
8. Simulated exercise to understand management processes
9. Field visit to extension organization – ATARI to understand the functions of management
10. Field visit to extension organization - KVKs to understand the functions of management
11. Field visit - NGOs to understand the functions of management
12. Field visit - FPOs to understand the functions of management
13. Field visit to Dairy cooperatives to understand the functions of management14.Practical exercises on PERT & CPM
15. Group exercise on development of short term and long term plans for agro-enterprises
16.Developing model agriculture-based projects including feasibility study, Financial Planning and Cost-benefit analysis
17. Final practical examination

Course Outcomes

At the end of the course students will be able to

CO 1: Understand concepts related to Extension Organization Management.
CO 2: Gain expertise on practical applications of Management concepts in extension organization
CO 3: Gain expertise on application of various exercises on extension management
CO 4: Develop skills in managing extension organizations
CO 5: Enhance skills on PERT & CPM

CO-PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	1	-	-	-	-
CO 2	3	1	-	2	1
CO 3	-	2	2	-	-
CO 4	3	-	1	1	2
CO 5	3	1	-	2	1

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EXT 509 ENABLING INNOVATION (1+1)

Learning objectives

1. To introduce the new perspectives related to "innovation" and help learners to apply the AIS framework especially in dealing with scaling up knowledge.
2. To explore AIS including the roles of different actors and the enabling environment (including institutions and policies) in enabling innovation.
3. To broaden the understanding of students in scaling up knowledge and orient students to varied tools and approaches to scaling up.
4. To understand the concepts of enabling and scaling up.
5. To gain knowledge on approaches and pathways of scaling up.

Theory

Unit I: Agricultural Innovation Systems

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;

Unit II: Agricultural Innovation Systems: Concepts and Elements

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 III: 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.

Unit IV: Scaling Up Knowledge for Innovation

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;

Unit V: Scaling Up: Tools, Approaches and Pathways

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 and current stream of thoughts.

Practicals

Agricultural Innovation System (AIS) – Database Management System – Validation of existing Innovation systems – Analyzing State Department of Agriculture, Local Agricultural Research Station, Tea board – using AIS frame work – Scaling up of knowledge – SWOC analysis – AIS diagnosis report – Up scaling strategy – Linkage models of AIS – Crop advisory systems – Presentation of SWOC analysis.

Lecture Schedule

1. Origins of Innovation system Concept – Innovation Vs Invention.
2. Agricultural Innovation System (AIS) – ToT, FSR, AKIS and AIS compared.
3. Key insights from AIS – How innovation takes place – Role of different actors in AIS.
4. **First Test**
5. Importance of Interaction and Knowledge flows among different actors - Role of communication in Innovation process.
6. Different views to analyze AIS – Structural view, Functional view, Process view, and Capacity view.
7. Role of enabling Environment – Policies and Institutions in enabling innovation – Role of Government.
8. Innovation policy – Achieving coordination and policy coherence, Innovation platforms – Role of Innovation brokers.
9. **Mid Semester Examination**
10. Methodologies for AIS diagnosis – Typologies of existing methodologies – Strengths and limitation.
11. Assessing Extension and Advisory services within AIS.
12. Capacity development in AIS – Strengthening capacities to innovate.
13. Scaling up – Definitions, Changing views on Scaling up.
14. Approaches to Scaling up – Push, Pull, Plant, Probe.
15. Scaling up Pathways – Drivers and Spaces for scaling up.
16. Framework and Tools for Scaling up – Planning and implementing a scaling up pathways, Scalability assessment tools.
17. Role of policies in Scaling up – Influencing policies for Scaling up. Innovation management for Scaling up knowledge and implications for extension and advisory services and current stream of thoughts.

Practical Schedule

1. Analysis of Agricultural Innovation Systems (AIS) in National and International context
2. Detailed Study on Database Management Systems of various Agricultural Innovations
3. Constructing Logical Framework to validate the existing Innovation systems in Agriculture
4. Visit to State Department of Agriculture and use AIS frame work to diagnose actors and their roles, patterns of interaction, institutions determining interaction.
5. Visit to Local Agricultural Research Station to study Agricultural Innovation Systems to diagnose actors and their roles, patterns of interaction, institutions determining interaction.
6. Visit to Tea board and use AIS frame work to diagnose actors and their roles, patterns of interaction, institutions determining interaction and the enabling policy environment.

7. Undertake a case study on a successful case of scaling up knowledge and identify factors that contributed to its success.
8. SWOC Analysis of various Agricultural Innovation Systems (AIS)
9. Develop an AIS Diagnosis Report based on assessments of various organizations you visited. (Review and Key informant interviews)
10. Identify one specific knowledge (a technology and an approach) that has been recently introduced and develop an Up-scaling Strategy
11. Find out different linkage models of Agricultural Innovation Systems (AIS)
12. Explore on various cloud computing technologies and its application in Agriculture
13. Examine Prospects and Retrospect of Crop Advisory systems
14. Presentation of diagnostic report of various institutions visit
15. Presentation of SWOC Analysis Report
16. Assignment I and II
17. **Final Practical Examination**

Course Outcome

At the end of course students will be able to

CO1: Application of the AIS framework in different contexts

CO2: Enhance their knowledge and skills related to enabling innovation.

CO3: Facilitate the students to diagnose AIS and design interventions for improvement and scaling up strategies to achieve innovation and impact.

CO4: Enhance skill on SWOC analysis report

CO5: Develop ability on various cloud computing technologies

Co-Po Mapping Matrix

	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	1	-	-	-	-
CO 2	3	1	-	2	1
CO 3	-	2	2	-	-
CO 4	3	-	1	1	2
CO 5	3	1	-	2	1

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EXT 510 GENDER MAINSTREAMING (2+1)

Learning objectives

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

Theory

Unit I: Why Gender Matters?

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

Unit II: Gender Related Concepts, Analysis, Gender and Technology

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 III: Gender, Technology and Mainstreaming

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.

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 programs and policies.

Unit IV: Women Empowerment and Global Best Practices, Policies and Frameworks

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 programs.

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 programs in agriculture and rural development.

Unit V: 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 program and process for women in agriculture and current stream of thoughts.

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 as in gender analysis techniques. Visit to agencies supporting women empowerment followed by report presentation. Each student should visit a different organization such as State Rural Livelihood Mission, Women Development Corporation, Department of Agriculture, and 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 and current stream of thoughts.

Lecture Schedule

1. Historical perspectives of gender: Feminism and emergence of gender as a concept
2. Scope of gender studies in agriculture and rural development
3. Agrarian Importance of Gender
4. Understanding the importance of gender in national and global agriculture - Key gender issues and challenges in agriculture
5. Gender and value chain - Global actions to address gender needs
6. Needs and strategies to address gender and women empowerment.
7. Gender related concepts and divides: Understanding of the concepts of gender, gender equality and equity, gender balance,
8. Gender blindness, gender relations, gender neutrality, Gender bias and discrimination, gender rights, gender roles and responsibilities.
9. **First Test**
10. Gender budgeting- Concept, importance, Scope; Pre-requisites for gender budgeting
11. Steps in gender budgeting; Gender budgeting at different levels of development programs
12. Gender budget - Budget allocation in Five Year Plans of Government of India
13. Approaches to gender budgeting; Gender responsive budgeting tools
14. Gender divides and their implications such as gender digital divide, gender access to resources and inputs divide
15. Gender mobility divide, Gender wage divide, Gender needs: Practical and Strategic
16. Gender analysis: Importance, usage, prerequisites, techniques of gender analysis –Tools for gender analysis, PRA and PLA Tools
17. **Mid-Semester Examination**
18. 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
19. Gender mainstreaming: Importance of gender mainstreaming in agriculture,
20. Extension strategies to address gender issues such as gender and health, nutrition
21. Gender in agricultural value chains, gender and climate change adaptation,

22. Gender and globalization& liberalization for mainstreaming gender concerns into the national programs and policies.
23. Women Empowerment: Dimensions, Tools and methodologies
24. Importance of women empowerment, Current national women empowerment and gender indices. Women empowerment approaches (technological, organizational, political, financial, social, legal and psychological),
25. Case studies based on experiences and learning from various development and rural development programs.
26. Global Best Practices, Policies and Frameworks: Global best practices,
27. Women empowerment and gender mainstreaming models and frameworks for addressing gender concerns in agriculture
28. Approaches of various organizations: gender mainstreaming and special women focused programs in agriculture and rural development.
29. Entrepreneurship development for women
30. Women entrepreneurship development in agriculture and agro processing: Women Agripreneur - Definition, Need, Importance, Role of Government, Private, NGO in promoting women entrepreneurship
31. current status, women led enterprises, supporting organizations and schemes,
32. Govt. policies, entrepreneurship development program and process for women in agriculture
33. Institutional mechanism and supporting organizations for women development in India- Central Social welfare Board, Union Ministry of Child and Women Development
34. Women's Welfare and Development Bureau, Women's cells in Central Ministries, National Commission for women - State level Institutions - Social welfare Department, Tamil Nadu Women Development Corporation and current stream of thoughts.

Practical Schedule

1. Visit to a village for understanding rural gender roles and responsibilities as groups, followed by class presentation by groups
2. Exercise for capturing shifts in gender roles and responsibilities.
3. Visit to social welfare department to study about social welfare programs.
4. Visit to TNCDW to study the activities and programs for women in agriculture
5. Visit to DRDA to study the budget allocation and auditing for women development programs
6. Conducting gender analysis in a village using gender analysis techniques
7. Visit to Women Development Corporation/Social Welfare Development agency to study the activities and programs supporting women development
8. Visit to an NGO to learn about the women development initiatives
9. Exercise for identification and prioritization of needs for women empowerment
10. Exercise for identification and prioritization of issues affecting women empowerment
11. Visit to department of women and child development, Virdhunagar.
12. Visit to entre for gender studies and development
13. Group discussion on gender based violence.
14. A study on gender violence prevention acts.15.

Interaction with successful SHG

16. Report presentation
17. **Final Practical Examination**

Course Outcome

At the end of the course students will be able to
CO1: Understand basic concepts related to gender mainstreaming and historical perspectives of gender.
CO2: Gain knowledge on gender related concepts and gender technology.
CO3: Learnt about gender technology and gender mainstreaming
CO4: Enhance knowledge on women empowerment
CO5: Expose on entrepreneurship development for women

Co-Po Mapping Matrix

	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	1	-	-	-	-
CO 2	3	1	-	2	1
CO 3	-	2	2	-	-
CO 4	3	-	1	1	2
CO 5	3	1	-	2	1

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EXT 511 ADVANCES IN COMMUNICATION AND EXTENSION MANAGEMENT (2+0)

Learning objectives

1. To understand the concept of TOT and REC linkage
2. To know about the organizational communication pattern
3. To gain skills in using advance ICT tools in extension communication.
4. To study various advanced management techniques in extension organization.
5. To develop skill in handling advanced audio visual aids.

Theory

Unit I – Communication

Communication – Meaning - Concept and definitions – Characteristics, functions – Types – Elements – Models and barriers in communication – Credibility, fidelity, empathy and feedback in communication, agricultural communication – TOT, REC linkage, components, organizational communication - Meaning and definition, characteristics, elements, models, need and importance – Types of communication in organization – Principles of communication - Barriers to organizational communication.

Unit II - Extension Communication Methods and Audio Visuals Aids

Extension communication methods – Meaning, types and classification. Traditional media for communication in development programs Radio, T.V and print media in communication. Audio visual aids – Meaning and classification, selection, use and production, advances in audio visual aids – LCD projector, interactive white board, multi-media projectors, digital photography and smart T.V.

Unit III – ICT in Extension

IT and ICT – Concept, definition – Unique features and need of ICT in agriculture Role and Scope of ICT in agricultural extension - Types of ICT tools – ICT for agriculture extension initiatives in India – National Policy on ICT in agricultural extension – Success stories of ICT use in Rural India - Barriers for agricultural extension initiatives – Technology Parks - Extension next
– Social media in agricultural extension.

Unit IV – Management in Extension Organization

Concept and principles of administration and management, schools of management thought – Interpersonal and interpersonal communication skills, virtual organization, - Personnel management - National institute of agricultural extension and management (MANAGE), NIRD& PR, EEI and NAARM. Corporate management in agriculture sector – POSDCORB functions of management – Planning, organizing, staffing, directing and leading, controlling, coordinating, reporting and budgeting. Case studies and success stories in agricultural extension management. **Unit V– Extension Management Practices and Techniques**

Management by learning objectives (MBO) – Total Quality Management (TQM), Project evaluation and review technique (PERT) – Critical Path Method (CPM) – Logical Frame working Analysis (LFA) – Project Management Techniques – Monitoring, evaluation and impact analysis of extension programs - Critical analysis of organizational set up of extension

Administration at various levels – Information Technology Parks – Management Information System – Management of Agricultural Knowledge Systems (MAKS) and current stream of thoughts.

Lecture Schedule

1. Communication – Meaning, concept, definitions, credibility, fidelity, empathy and feedback in communication, characteristics
2. Different types communication, elements
3. Models in communication and barriers in Communication
4. Agricultural communication – TOT, REC linkage, components
5. Organizational communication - Meaning and definition, characteristics, elements
6. Need and importance, Types of communication in organization
7. Principles and barriers in organizational communication
8. Extension communication methods – Meaning, types and classification, Traditional media, Radio, Television and Print media use in communication
9. **First Test.**
10. Audio visual aids – Meaning and classification, selection, use and production 11.Advances in audio visual aids – LCD projector, interactive white board
12. Multi-media projector, digital photography and smart TV
13. IT and ICT – Concept, definition – Unique features and need of ICT in agriculture
14. Role and Scope of ICT in agricultural extension - Types of ICT tools
15. ICT for agricultural extension initiatives in India – National Policy on ICT in agricultural extension
16. Success stories of ICT use in Rural India
17. **Mid Semester Examination**
18. Impact of ICT for agricultural extension initiatives
19. Barriers for agricultural extension initiatives
20. Technology Parks - Extension next – Social media in agricultural extension.
21. Concept and principles of administration and management
22. Schools of management thought, virtual organization.
23. Personnel management - Interpersonal and Interpersonal communication skills.
24. National Institute of Agricultural Extension and Management (MANAGE), NIRD& PR, EEI and NAARM.
25. Corporate management in agriculture sector
26. POSDCORB functions of management: planning, organizing, staffing, directing and leading
27. POSDCORB functions of management: controlling, coordinating, reporting and budgeting
28. Case studies and success stories in agricultural extension management
29. Management by LEARNING OBJECTIVES (MBO) and Total Quality Management(TQM)
30. Project evaluation and review technique (PERT) Critical Path Method (CPM) and Logical Frame Working (LFW)

31. Project Management Techniques – Monitoring, evaluation and impact analysis of extension programs
32. Critical analysis of organizational set up of extension administration at various levels
33. Information Technology Parks
34. Management Information System (MIS) and Management of Agricultural Knowledge Systems(MAKS) and current stream of thoughts

Course Outcome

At the end of the course the students will be able to

C 1: Understand advances in agricultural communication.
CO2: Analyze the different communication methods.
CO3: Develop skills for using ICT tools.
CO4: Understand principles of administration and management
CO5: Apply various management techniques in an organization

Co - Po Mapping Table

CO	PO 1	PO 2	PO 3	PO 4	PO 5
CO1	3	2	3	3	-
CO2	3	-	3	-	-
CO3	2	2	3	-	-
CO4	-	-	-	3	3
CO5	-	-	-	3	3

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E-resources

1. www.agriinfo.in
2. http://mhrd.gov.in/ict
3. www.agritech.tnau.in
4. www.manage.gov.in
5. http://www.kopykitab.com

EXT 512 DEVELOPMENT PERSPECTIVES OF EXTENSION EDUCATION (1+1)

Learning objectives
to enable the students

1. To understand the fundamentals of extension education.
2. To know about various extension systems in India.
3. To gain knowledge on steps in program planning
4. To understand the concept of poverty and antipoverty programs
5. To learn recent Employment Generation and Women development programs.

Theory

UNIT I: Fundamentals of Extension Education

Extension Education – Meaning, objectives, concepts, principles and philosophy, critical analysis of definitions – Extension Education as a Profession – Adult Education and Distance Education. The steps in Extension Teaching - Teaching Learning process.

UNIT II: Extension Systems in India

Pioneering Extension efforts and their implications in Indian Agricultural Extension – Analysis of Extension systems of ICAR and SAU – State Department Extension system and NGOs
– Role of Extension in Agricultural University.

UNIT III: Anti-Poverty Program

Poverty Alleviation Programs – SGSY, SGRY, PMGSY, DPAP, DDP, CAPART

UNIT IV: Employment and Women Oriented Program

Employment Generation Programs – NREGP, Women Development Programs – ICDS, MSY, RMK, Problems in Rural Development.

UNIT V: New Trends in Extension

Current Approaches in Extension: Decentralized Decision Making, Bottom up Planning, Farming System Approach, Farming Situation Based Extension, and Market Led Extension, Farm Field School, ATIC, Kisan Call Centers, NAIP and current stream of thoughts.

Practicals

Visit to Gram Panchayat to study on-going Rural Development Programs, Visit to KVK, NGO and Extension centers of State Agricultural University and State Departments, Bottom up planning, Report preparation and presentations.

Lecture Schedule

1. Extension Education – Meaning, objectives, concepts.
2. Principles, philosophy and critical analysis of definitions
3. Extension Education as a Profession – Adult Education and Distance Education
4. **First Test**
5. Steps in extension teaching, teaching learning process
6. Pioneering Extension efforts and their implications in Indian Agricultural Extension.
7. Analysis of Extension systems of ICAR.
8. SAU – State Department Extension systems, Non-Governmental Organizations.
9. **Mid Semester Examination**
10. Role of Extension in State Agricultural University.
11. Poverty Alleviation Programs – SGSY, SGRY, PMGSY, DPAP, DDP, CAPART

12. Employment Generation Programs – NREGP, Women Development Programs – ICDS, MSY, RMK.
13. Problems in Rural Development.
14. Current Approaches in Extension: Decentralized Decision Making and Bottom up Planning.15. Farming System Approach and Farming Situation Based Extension.
16. Market Led – Extension, Farm Field School
17. ATIC, Kisan Call Centres, NAIP, and current stream of thoughts.

Practical Schedule

1. Visit to Village Panchayats to study on-going Rural Development Programs
2. Visit to KVK to study role and functions in TOT
3. Visit to a Rural Development Centre.
4. Visit to an SHG
5. Visit to Educational Media Centre
6. Visit to An Adult Education centre
7. Visit to State Department of Agriculture to study the field interventions like FLD
8. Visit to NGO
9. Visit to DRDA to study role and functions from development perspectives
10. Visit to Project Directorate of Mahalir Thittam to study women development programs
11. Visit to villages to study the problems of the farmers
12. Visit to village Nehru Yuva Kendra
13. Visit to villages to study the bottom up planning
14. Visit to villages to study the participation of people in planning
15. Report Preparation
16. Report presentation
17. **Final Practical Examination**

Course outcome

At the end of the course students will be able to

CO 1: Understand fundamentals of extension education.

CO 2: Gain knowledge on extension systems in India.

CO 3: Gain expertise on various rural development program.

CO4: Expose on Extension activities of different organizations.

CO5: Learnt about bottom up planning

Co-Po Mapping Matrix

	PO 1	PO2	PO3	PO4	PO5
CO1	1	-	1	-	2
CO2	1	2	-	3	-
CO3	-	1	2	-	2
CO4	3	-	1	-	-
CO5	-	2	1	2	-

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EXT 513 ADVANCES IN AGRICULTURAL EXTENSION (1+1)

OBJECTIVES

To enable the students

1. To analyses the different agricultural extension approaches.
2. To understand various advances in agricultural extension.
3. To visualize implications of WTO and to develop extension strategies.
4. To understand extension reforms, farm field schools and gender main streaming.
5. To understand Organization innovations in Extension.

THEORY

Unit I: Approaches of Agricultural Extension and Indigenous Knowledge system

Approaches of Agricultural Extension. Importance and relevance of indigenous knowledge system - Identification and documentation of ITK - Integration of ITK system in to agricultural research and extension - Concept of Agricultural Knowledge and Information System(AKIS) - Training of Stakeholders of AKIS.

Unit II: Cyber Extension and ICT

Cyber Extension - Concept of cyber extension - National and international cases of extension projects using ICT and their impact of agricultural extension – Alternative methods of financing agricultural extension – Scope, limitations and types of ICT tools – their experiences and cases – Electronic publishing in agriculture – Information KIOSK – ICT indicators and network readiness index.

Unit III: Extension systems and Stake Holder's Analysis

Research - Extension - Farmer - Market linkage: Importance, Scope, Implications etc., Market - Led Extension – Market intelligence - Farmer - Led Extension, Contract farming - Farm Field School, Farm School, Public - Private Partnership - Meaning, models, identification of various areas of partnership. Stakeholder's analysis in extension.

Unit IV: Gender Main streaming and Empowerment

Gender mainstreaming and empowerment – Meaning, definitions related to gender mainstreaming - Importance of empowering women – Gender in Agriculture issues. Implications of WTO - AOA for extension services, re-orientation of extension services for agri-business and marketing activities, Government of India (GOI) - NGO collaboration to improve efficiency of extension.

Unit V: Extension and contemporary issues:

Extension contemporary issues - Extension and issues related to rural poverty - Privatization of Extension - Intellectual Property Rights (IPRs) - Extension Reforms in India -Decentralized decision making - Bottom up planning - Participatory technology development - Farming System and Situation based Extension Delivery System - Extension delivery through Commodity Interest Groups - Strategic research and extension plan - Organization innovations in Extension - ATIC, ATMA, KVK, IVLP and Kisan Call Centres and current stream of thoughts.

PRACTICAL

Analysis of ITK systems, cases and integration of ITK and formal research system, Analysis of cases on cyber extension and privatization of extension, Analysis of Agrl. Technology Management Agency (ATMA), Contract Farming System in India – Institutional Village Linkage Program (IVLP), Krishi Vigyan Kendra (KVK), Visit to Public – Private – Farmer Partnerships.

LECTURE SCHEDULE

1. A critical analysis of different approaches of agricultural extension in India.
2. Indigenous Technical Knowledge - Importance and relevance of Indigenous Knowledge System
3. Identification and documentation of ITK - ITK documentation methods, ITKin Agricultural Development.
4. Integration of ITK into agricultural research and extension, Limitations of ITKs
5. Agricultural Knowledge and Information System (AKIS) – Concept – Direct and indirect effects of agricultural innovation on lifestyle of farmers.
6. Training of Stakeholders of AKIS – Market – oriented and asset constrained AKIS
7. Cyber Extension – Concept, objectives - Cyber extension tools and information needs and access of farming community.
8. National and International cases of extension projects using ICT and their impact of Agricultural Extension.
9. ICT – Introduction – Types of ICT tools – Trends in Agricultural Information Management.
10. Alternative methods of Financing Agricultural Extension
11. Scope and limitations of ICT, their experiences and cases.
12. Electronic publishing in Agriculture.
13. Information Kiosk – Concept, ICT indicators - Network readiness index.
14. Research - Extension -Farmer - Market linkage - Importance, Scope, Implications.
15. Market - Led Extension – Meaning and Scope – Challenges and opportunities in Market led extension.
16. Market Intelligence – Meaning, Importance, market intelligence for agricultural commodities – Market information services
17. **First Test**
18. Farmer - Led Extension.
19. Contract farming – Concept, models, policy support – Advantages and challenges of Contract farming, NABARD initiatives in contract farming.
20. Farm Field School and Farm school – Concept, meaning, principles and characteristics of FFS & FS.
21. Public - Private Partnership: Meaning, Models, Identification of various areas for partnership. Stakeholder's analysis in Extension.
22. Gender mainstreaming and empowerment – Meaning, definitions related to gender mainstreaming
23. Importance of empowering women – Gender issues in Agriculture – Gender analysis – Gender budgeting.
24. Implications of World Trade Organization – AOA for extension services, re-orientation of extension services for agri-business and marketing activities.
25. Government of India (GOI) -NGO collaboration to improve efficiency of extension.
26. Extension Contemporary issues – Extension and issues related to rural poverty.
27. Privatization of Extension
28. Intellectual Property Rights – Meaning, functions – merits and demerits.
29. Extension Reforms in India - Decentralized decision making, Bottom up planning.

30. Participatory Technology Development – Meaning, definition, elements, rationale, characteristics, process and benefits of Participatory Technology Development.
31. Farming System and Situation based Extension Delivery System,
32. Extension delivery through Commodity Interest Groups
33. Strategic research and extension plan – Meaning – Scope – Need in Agricultural development.
34. Organization innovations in Extension – ATIC, ATMA, KVK, IVLP and Kisan call centres and current stream of thoughts.

PRACTICAL SCHEDULE

1. Visit to villages to identify the ITK that prevails in their locality.
2. Visit to villages to identify the ITK that prevails in their locality.
3. Visit to villages for the documentation of the most successful ITKs
4. Visit to village to study about the successful cases on using ITKs.
5. Visit to a village to study about the progressiveness of farmers on the use of cyber extension in agriculture and to identify successful cases.
6. Visit to a village to study about the progressiveness of farmers on the use of cyber extension in agriculture and identify successful cases.
7. Visit to a village to study about the progressiveness of farmers on the use of cyber extension in agriculture and identify successful cases.
8. Visit to village to conduct a survey on privatization of extension.
9. Visit to village to conduct a survey on privatization of extension.
10. Visit to village to conduct a survey on privatization of extension.
11. Visit to a village to analyze the effectiveness of ATMA where it is functioning.
12. Visit to a village to analyze the success of IVLP.
13. Visit to a village to analyze the contract farming system.
14. Visit to an extension organization to study about its role in practicing bottom up planning.
15. Visit to an extension organization to study about Public-Private Partnerships & Public-Private–Farmer Partnerships.
16. Visit to KVK to study about its role in Agricultural Extension.
17. **Final Practical Examination**

COURSE OUTCOME

At the end of the course students will be able to

CO1: Understand various approaches in agricultural extension and Indigenous knowledge system.

CO2: Evaluate the role of ICT and cyber extension.

CO3: Critically analyze Extension systems

CO4: Appreciate the importance of Gender Main streaming and Empowerment

CO5: Understand Organization innovations in Extension.

CO – PO MAPPING TABLE

COS	PO 1	PO 2	PO 3	PO 4	PO 5
CO1	3	3	3	-	-
CO2	3	3	3	-	2
CO3	3	3	-	3	-
CO4	3	-	-	-	3
CO5	3	3	-	-	2

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2. https://www.wto.org/english/thewto_e/thewto_e.htm
3. http://www.fao.org/e-agriculture/blog/icts-and-agricultural-extension-services
4. https://oar.icrisat.org
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STA 502 STATISTICAL METHODS FOR SOCIAL SCIENCES (2+1)

Learning objectives

1. Students will acquire awareness on Statistical Methods.
2. To gain familiarity on statistical Techniques.
3. To develop experience on field experiments in Agricultural Applications.
4. To get more expose on testing and Time Series Analysis
5. To acquire the knowledge on Testing of Hypothesis.

Theory

Unit - I: Theory of Sampling

Basic concepts - Unit and frame, population and sample - Sampling and complete enumeration - Probability and non-probability sampling - Sampling and non-sampling errors. Simple Random Sampling (SRS) - with and without replacement - Methods of selection of SRS - Lottery method and random number table method. Systematic sampling. Stratified Random Sampling - Stratification - Types of allocation - Equal, proportional allocation. Cluster sampling.

Unit – II: Descriptive statistics and skewness

Measures of central tendency: arithmetic mean, geometric mean, harmonic mean, median and mode – Merits and demerits. Measures of dispersion: Range, Quartile deviation, Mean deviation, standard deviation, and coefficient of variation - Karl - Pearson and Bowleys Skewness.

Unit - III: Correlation and regression analysis

Simple correlation - Meaning - Assumptions - Positive and negative correlation – Scatter diagram - Computation of correlation coefficient - Properties, testing and interpretation of correlation coefficient - Coefficient of determination. Regression theory - Simple linear regression - Meaning assumptions - Fitting of simple linear regression - Properties of regression coefficients

- Interpretation of regression coefficients. Multiple linear regression - Assumptions - Fitting of multiple linear regression equation - Interpretation of regression coefficients.

Unit - IV: Test of significance

Test of significance - Basic ideas - Type I error, Type II error - Large sample tests – Testing the significance of single mean, two means - test of significance based on small sample - 't' test - testing the significance of single mean - Testing the significance of two means for independent samples and paired samples - Chi-square test for independent of attributes. Goodness of fit tests

- 'F' test - One way ANOVA and two way ANOVA.

Unit - V: Time series analysis and non-parametric test

Time series analysis - Components of time series - Trend, seasonal, cyclical and irregular movements - Elimination of trend - moving average method - Least square method - Seasonal movement - Simple average and ratio to trend method - Link relative method. Non-parametric tests (Distribution free tests) - Advantages - Disadvantages -run test - Test for randomness - median test - Sign test - Mann - Whitney U test for two samples - Kolmogrov - Smirnov one sample and two sample test, Kruskal - Walli's test.

Practicals

Simple random sample - Selection - Estimation - Systematic sampling - Stratified random sampling - Measures of central tendency -Measures of dispersion - Skewness - Tests of significance based on large and small sample tests - One way ANOVA and two way ANOVA - Simple correlation - Computation of correlation co-efficient and it's testing – Co- efficient of determination. Rank correlation coefficient - Simple linear regression - Fitting of simple linear regression equations. Multiple linear regression equation - Interpretation of regression coefficients.

Theory Schedule

1. Basic concepts - Unit and frame, population and sample
2. Sampling and complete enumeration - Probability and non-probability sampling
3. Sampling and non-sampling errors
4. Simple random sampling (SRS) - with and without replacement - Methods of selection of SRS - Lottery method and random number table method.
5. Systematic sampling.
6. Stratified random sampling - stratification - Types of allocation - Equal, proportional allocation
7. Cluster sampling.
8. Measures of central value - Measures of dispersion and its measures, Karl – Pearson and Bowleys Skewness.
9. **First Test**
10. Simple correlation - Meaning - Assumptions - Positive and negative correlation - Scatter diagram
11. Computation of correlation coefficient– Properties
12. Testing and interpretation of correlation coefficient of determination
13. Regression theory - Simple linear regression - Meaning assumptions.
14. Fitting of simple linear regression - Properties of regression coefficients
-15. Multiple linear regression - Assumptions
16. Fitting of multiple linear regression equation - Interpretation of regression coefficients
17. **Mid semester examination**
18. Test of significance - Basic ideas - Type I error, Type II error
19. Large sample tests - Testing the significance of single mean, two means
20. Small sample tests- 't' test for single mean
21. Testing the significance of two means for independent samples and paired samples
22. Chi-square test for independent of attributes
23. Goodness of fit tests
24. 'F' - test, one way ANOVA and two way ANOVA
25. Time series analysis - Components of time series - Trend, seasonal, cyclical and irregular movements
26. Elimination of trend - Moving average method - Least square method
27. Seasonal movement - Simple average and ratio to trend method - Link relative method
28. Non-parametric tests (Distribution free tests) - Advantages - disadvantages

29. Run test - Test for randomness
30. Median test - Sign test
31. Mann-Whitney U test for two samples
32. Kolmogrov - Smirnov one sample and two sample test
33. Kruskal Walli's test
34. Final Examination

Practical Schedule

1. Simple random sample - Selection - Estimation
2. Systematic sampling- Selection, estimation
3. Stratified random sampling - Selection, estimation
4. Measures of central tendency
5. Measures of dispersion
6. Skewness
7. Tests of significance based on large sample tests
8. Tests of significance based on small sample tests, t- test, Chi-square test
9. F-test
10. One – way classification
11. Two - way classification
12. Simple correlation - Computation of correlation coefficient and it's testing
13. Co-efficient of determination
14. Rank correlation coefficient
15. Simple linear regression - Fitting of simple linear regression
16. Fore casting using regression techniques, Multiple linear regression equation
17. Final Practical Examination

Course Outcome

CO1: The course outcome will reveal the knowledge of various sampling methods.
CO **CO2**: The course outcome will ensure the understanding the concept involved in Correlation and Regression.
CO3: The course outcome will support the students to do the research problem in a Time Series Data.
CO4: The course outcome will assist the students to apply the non-parametric test in Agricultural data.
CO5: The course outcome will assist the students to lead research team.

Co-Po Mapping Matrix

	PO 1	**PO2**	**PO3**	**PO4**	**PO 5**
CO1	2	2	1	-	-
CO2	-	2	-	-	3
CO3	-	-	2	-	-
CO4	-	1	-	3	-
CO5	1	-	-	-	-

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2. https://online.stat.psu.edu/stat505/
3. https://www.iiap.res.in/astrostat/School08/PennStateSchool08_LecNotes.pdf
4. https://www.math.uci.edu/~htucker/LectureNotes/MultivariateAnalysis.pdf
5. http://i2pc.es/coss/Docencia/ADAM/Notes/MultivariateAnalysisSlides.pdf

COM 502 Computer Application for Agricultural Extension Research (2+1)

Learning objectives

1. This is a course on Introduction to Networking.
2. Introduce the fundamentals of computing devices and reinforce computer vocabulary, particularly with respect to personal use of computer hardware and software, the Internet, networking and mobile computing.
3. Provide hands-on use of Microsoft Office applications Word, Excel, Access and PowerPoint. Completion of the assignments will result in MS Office applications knowledge and skills.
4. IT applications and different IT tools in Agriculture.

Theory

Unit I: Concept of Computers- Brief History of Computers, Generation and Its Evolution, Characteristics of Computers, Main Areas of Computers and their Applications; Classification of Computers, Input-Output Devices, Memory Types (Cache, RAM, ROM), Memory Units,

Unit-II: System Software and Application Software, Open source software, introduction to computer languages, Introduction to Operating Systems – Functions, Features and Types. , MS
- Windows and LINUX. Data Base Management System, MS Office (MS Word, MS Power Point, MS Excel, MS-Access and use of various management software Like SPSS, SAS etc.

Unit-III Internet, Intranet, extranet and Internet, Introduction to Web page design using HTML, Cloud Computing, Security and ethical challenges: Computer crime – Hacking, cyber theft, unauthorized use at work. Piracy – Software and intellectual property Health and Social Issues, Ergonomics and cyber terrorism.

Unit-IV Use of ICT in Agriculture, Computer Models for understanding plant processes. IT application for computation of water and nutrient requirement of crops, Computer – controlled devices (automated systems) for Agri-input management, Smartphone Apps in Agriculture for farm advises, market price, postharvest management etc.,

Unit-V Geospatial technology for generating valuable agri-information. Decision support systems, concepts, components and applications in Agriculture, Agriculture Expert System, Soil Information Systems etc. for supporting Farm decisions, Preparation of contingent crop-planning using IT tools.

Lecture Schedule

1. Introduction to Computers, History of Computers.
2. Generation and its Evolution.
3. Classification of Computers.
4. Input-Output Devices.
5. Memory Types.
6. System Software and Application Software.
7. Introduction to computer languages and Operating systems.
8. MS Office word, Creating, Editing, Formatting a document and saving a document.

9. First Test

10. MS Excel Data Presentation, Data presentation, interpretation and graph.
11. Creation MS Power Point Presentation.
12. MS Access Concepts of Database, Creating Database.
13. SPSS and SAS.
14. Database Concepts.
15. Introduction to HTML.
16. Html syntax and elements, tags.
17. **Mid Semester Examination**
18. Introduction to Web page design.
19. Static websites, dynamic websites.
20. Client Side processing.
21. Scripting languages.
22. Business value of internet, Intranet
23. Cloud Computing.
24. Security and ethical challenges.
25. Computer Crime – Hacking.
26. Software and intellectual property.
27. Cyber Terrorism.
28. ICT in Agriculture.
29. IT application.
30. Smartphone Apps in Agriculture.
31. Applications in Agriculture.
32. Geospatial technology
33. Agriculture Expert System.
34. Soil Information Systems.

Practical Schedule

1. Study of Computer Components and accessories– Booting of Computer and its Shut Down.
2. Practice of some fundamental DOS commands – TIME, DATE, DIR,MD, CD, RD, DEL, TREE,COPY, VOL and LABEL.
3. Introduction of different operating systems such as windows, Unix, Linux.
4. MS-WORD – Creating, editing and presenting a scientific Document.
5. MS-POWER POINT – Creating, editing and presenting a scientific Document.
6. MS-EXCEL: Creating a spreadsheet, writing expressions, Entering formula expression through the formula tool bar and use of inbuilt statistical, mathematical functions.
7. MS-EXCEL: creating graphs, analysis of scientific data - Data **analysis -** t-test, Regression, ANOVA.
8. MS-ACCESS: Creating Database, preparing queries and reports.
9. MS-ACCESS: Demonstration of Agri-information system.
10. Introduction to World Wide Web (WWW) and its components.
11. Introduction of programming languages.
12. HTML: Creation of scientific website.
13. HTML using Agriculture Templates.

14. Internet: Presentation and management agricultural information through web.
15. ICT in Agriculture.
16. Geospatial Technology for Agriculture.
17. **Final Practical Examination**

Course Outcome

At the end of the course students will be able to

CO 1: Describe the usage of computers and why computers in society.
CO 2: Analyze common business problems using appropriate
CO 3: Learn categories of programs.
CO 4: system software and applications.
CO 5: Information Technology applications and systems.

Co-Po Mapping Matrix

	PO 1	PO 2	PO 3	PO4	PO 5	PO6
CO1	1	0	3	0	0	3
CO2	0	1	3	1	1	3
CO3	1	1	3	1	0	3
CO4	0	0	3	0	1	3
CO 5	1	1	3	0	0	3

References

1. Jain, S., & Geetha, K. (2010). *Computer Course Windows 7 with Ms Office* 2010. Bpb Publications.
2. Jain, A., & Mehra, A. (2010). *Computer Fundamental MS Office*: Including Internet & Web Technology.
3. Zip, W. (1994). *Improving the transfer and use of agricultural information:* A guide to information technology.
4. Cox, V., & Wermers, L. (2006). *HTML Illustrated Complete (3rd ed.)*. Florence, AL: Course Technology.

E-resources

1. https://www.tutorialspoint.com/computer_fundamentals/index.htm.
2. https://www.shobhituniversity.ac.in/caigers/caigers-course.php.
3. https://ecourses.icar.gov.in/.
4. https://www.kisangates.com/agro-informatics.html.
5. http://www.agrimoon.com

COMMON COMPULSORY COURSES

PGS 501 - AGRICULTURAL RESEARCH, RESEARCH ETHICS AND RURALDEVELOPMENT PROGRAMS (1+0)

Learning objectives

To enlighten the students about the organization and functioning of agricultural research systems at national and international levels, research ethics, and rural development programs and policies of Government.

Unit I

History of agriculture in brief; Global agricultural research system: need, scope, opportunities; Role in promoting food security, reducing poverty and protecting the environment; National Agricultural Research Systems (NARS) and Regional Agricultural Research Institutions; Consultative Group on International Agricultural Research (CGIAR): International Agricultural Research Centers (IARC), partnership with NARS, role as a partner in the global agricultural research system, strengthening capacities at national and regional levels; International fellowships for scientific mobility.

Unit II

Research ethics: research integrity, research safety in laboratories, welfare of animals used in research, computer ethics, standards and problems in research ethics.

Unit III

Concept and connotations of rural development, rural development policies and strategies. Rural development programs: Community Development Program, Intensive Agricultural District Program, Special group – Area Specific Program, Integrated Rural Development Program (IRDP) Panchayat Raj Institutions, Co-operatives, Voluntary Agencies/ Non-Governmental Organizations. Critical evaluation of rural development policies and programs. Constraints in implementation of rural policies and programs.

Unit IV

Research prioritization and selection of research problem – Research planning - Review of literature – Setting of objectives and hypothesis – Research design and techniques – Data collection

– Analysis – Formulation of tables – Interpretation of results - Computer software in tabulation, presentation - Thesis writing – Writing of research articles - Projects and report writing – Formulation and preparation of research / scheme proposal – Impact factor and citation index - citation and references- Guidelines for oral / poster presentations – Internet in scientific research.

Unit V

Authorship and copy right – Plagiarism – Scientific misconduct – Falsification of research results, data fabrication – Peer review, informed consent attribution of authorship and adequacy of peer review publication process - Responsibility of society and self – Public interest in research, relevance to society and motivation - Conflict of interest, moral commitment – Social trends on research ethics, adequate codes of conduct to regulate research activity.

Theory lecture schedule

1. History of agriculture in brief; Global agricultural research system: need, scope, opportunities; Role in promoting food security, reducing poverty and protecting the environment
2. National Agricultural Research Systems (NARS) and Regional Agricultural Research Institutions; Consultative Group on International Agricultural Research (CGIAR); International Agricultural Research Centers (IARC)
3. Partnership with NARS, role as a partner in the global agricultural research system, strengthening capacities at national and regional levels; International fellowships for scientific mobility.
4. Research ethics: research integrity, research safety in laboratories
5. **First test**
6. Welfare of animals used in research, computer ethics, standards and problems in research ethics.
7. Concept and connotations of rural development, rural development policies and strategies.
8. Rural development programs: Community Development Program, Intensive Agricultural District Program, Special group – Area Specific Program, Integrated Rural Development Program (IRDP) Panchayati Raj Institutions, Co-operatives, Voluntary Agencies/ Non- Governmental Organizations.
9. **Mid semester examination**
10. Critical evaluation of rural development policies and programs. Constraints in implementation of rural policies and programs.
11. Research prioritization and selection of research problem – Research planning - review of literature – setting of objectives and hypothesis – research design and techniques
12. Data collection - analysis – formulation of tables – interpretation of results - Computer software in tabulation and presentation
13. Thesis writing – writing of research articles- projects and report writing – Formulation and preparation of research / scheme proposal
14. Impact factor and citation index - citation and references- Guidelines for oral / poster presentations – Internet in scientific research.
15. Authorship and copy right – Plagiarism – Scientific misconduct – Falsification of research results, data fabrication – Peer review, informed consent attribution of authorship and adequacy of peer review publication process
16. Responsibility of society and self – Public interest in research, relevance to society and motivation - Conflict of interest, moral commitment
17. Social trends on research ethics, adequate codes of conduct to regulate research activity

Reference

1. Gs, B., & Singh, G. (2001). Indian Agriculture - Four Decades of Development. New Delhi: Sage Publ.
2. Punia, M. S. (n.d.). Manual on International Research and Research Ethics. Hisar.
3. Rao, B. (2007). Rural Development Strategies and Role of Institutions - Issues, Innovations and Initiatives. Mittal Publ.
4. Singh, K. (1998). Rural Development - Principles, Policies and Management. New Delhi: Sage Publ.

PGS 502 - TECHNICAL WRITING AND COMMUNICATION SKILLS (0+1)

Learning objectives

- To equip the students with skills *Viz.*, writing of dissertations, research papers, etc. and to communicate and articulate in English

Practical

Grammar - Tenses, parts of speech, clauses, punctuation marks; Error analysis Common errors; Concord; Collocation; Phonetic symbols and transcription; Accentual pattern: Weak forms in connected speech: Participation in group discussion: Facing an interview; presentation of scientific papers. Proof reading. Technical Writing - Various forms of scientific writings- theses, technical papers, reviews, manuals, etc; Structure of thesis and research communications (title page, authorship contents page, preface, introduction, review of literature, material and methods, experimental results and discussion); Writing of abstracts, summaries, précis, citations etc.; commonly used abbreviations in the theses and research communications; illustrations, photographs and drawings with suitable captions; pagination, numbering of tables and illustrations; Writing of numbers and dates in scientific write-ups; Editing and proof-reading; Writing of a review article.

Practical schedule

1. Grammar (Tenses, parts of speech)
2. Grammar (clauses, punctuation marks)
3. Error analysis (Common errors); Concord; Collocation;
4. Phonetic symbols and transcription;
5. **First test**
6. Accentual pattern: Weak forms in connected speech
7. Participation in group discussion, facing an interview; presentation of scientific papers.
8. Technical Writing- Various forms of scientific writings- theses, technical papers
9. **Mid -semester examination**
10. Technical Writing- reviews, manuals
11. Structure of thesis and research communications
12. Writing of abstracts, summaries, précis, citations etc
13. Commonly used abbreviations in the theses and research communications
14. Illustrations, photographs and drawings with suitable captions
15. Pagination, numbering of tables and illustration, numbers and dates in scientific write-ups
16. Editing and proof-reading, writing of a review article.
17. Final practical examination

References

1. Joseph, G. (2000). *MLA Handbook for Writers of Research Papers*. Affiliated East- West Press.
2. Wren, P. C. (2010). *High school English grammar & composition*. New Delhi, India: S Chand.

PGS 503 LABORATORY TECHNIQUES FOR AUDIO AND VIDEO PRODUCTION (0+1)

Learning objectives
To enable the students to learn

1. To gain knowledge on techniques in audio visual laboratory
2. Knowledge and skills in audio and video production technologies
3. Audio and video production.
4. Perform talk shows and Program compeering
5. To learn about short film production

Practical's

Designing an audio-visual lab, Familiarizing audio-visual equipment and aids, Audio production – Produce programs in different formats - Talk , compering, announcement, anchoring, interviews - Create an audio story book with BGM - Create a signature tune, a PSA, a radio ad, a jingle - Video production – Script, Story board, Camera movements, Shots, Angles, Basic lighting techniques and tilting, Capturing, Editing techniques – Produce programs in different formats - Anchoring, Short film, Interview, News production, Talk show and Compering - Students will work individually and in groups to write, record, shoot, and edit their own projects. Selected audios and videos are played during class throughout the semester to enhance the critique process. Video editing software.

Practical Schedule

1) Designing an audio-visual lab
2) Familiarizing audio-visual equipment and aids
3) Audio production - Talk, compering, announcement, anchoring, interviews
4) Create an audio story book with BGM
5) Create a signature tune, a PSA, a radio ad, a jingle
6) Visit to radio station
7) Project (audio) presentation and analysis
8) Video production – Script, Story board, Camera movements, Shots, Angles
9) **Mid semester Examination**
10) Basic lighting techniques and titling
11) Capturing and Editing techniques
12) Production of programs in different formats - Anchoring
13) Short film production
14) Interview show, talk show and Program compering
15) Visit to digital studio – video editing software
16) Project (video) presentation, analysis and video editing software
17) **Final Practical Examination**

Course Outcome

At the end of the course students will be able to

CO 1: Understand Techniques in audio visual laboratory
CO 2: Gain Knowledge and skills in audio and video production technologies
CO 3: Undertake audio and video production.
CO 4: Perform talk shows and Program compering
CO 5: Produce short films

Co – Po Mapping Table

CO	PO 1	PO 2	PO 3	PO 4	PO 5
CO1	3	-	3	-	-
CO2	3	-	3	-	-
CO3	3	-	3	-	-
CO4	-	-	3	-	-
CO5	-	-	3	-	-

References

1) Visual Education: *Teaching Innovative Techniques - Janardan Prasad.* (2014). Kanishka Publishing House.
2) Video Production - Vasuki Belavadi, 2ndEdition. (2013). Oxford University Press.
3) Basics of Video Production - *Des Lyver, Graham Swainson.* (2016). Oxford, United Kingdom: Graham Swainson, Focal Press.
4) Making Short Films: *The Complete Guide from Script to Screen - Clifford Thurlow.* (2012).

E-resources

1. https://www.maximes.net
2. https://eyeconvideo.com
3. http://www.videomaker.com
4. http://motionsource.com
5. http://vidblaster.com

PGS 504 - LIBRARY AND INFORMATION SERVICES (0+1)

Learning objectives

- To equip the library users with skills to trace information from libraries efficiently, to apprise those of information and knowledge resources, to carry out literature survey, to formulate information search strategies, and to use modern tools (Internet, OPAC, search engines etc.) of information search.

Practical

Introduction to library and its services; Role of libraries in education, research and technology transfer; Classification systems and organization of library; Sources of information- Primary - Sources, Secondary Sources and Tertiary Sources; Intricacies of abstracting and indexing services - (Science Citation Index, Biological Abstracts, Chemical Abstracts, CABI Abstracts, etc.); Tracing - information from reference sources; Literature survey; Citation techniques/Preparation of bibliography; Use of CD-ROM Databases, Online Public Access Catalogue and other computerized - Library services; Use of Internet including search engines and its resources; e-resources access methods.

Practical Schedule

1. Introduction to library and its services
2. Role of libraries in education, research and technology transfer
3. Classification systems and organization of library
4. Sources of information- Primary –Sources
5. Sources of information -Secondary Sources and Tertiary Sources
6. Concepts and theory of Indexes.
7. Functions and types of Indexes.
8. Concept of abstracts.
9. Types and qualities of abstracts.
10. Citation Index, Biological abstracts, Chemical Abstracts, CABI Abstracts etc.,
11. Tracing-information from reference sources, literature survey.
12. Citation techniques.
13. Preparation of bibliography.
14. Online Public Access Catalogue and other computerized- library services
15. Use of CD-ROM Databases
16. Use of Internet including search engines and its resources
17. e-resources access methods

Course Outcomes:

1. To equip the library users with skills to trace information from libraries efficiently,
2. To apprise them of information and knowledge resources,
3. To carry out literature survey, to formulate information search strategies, and
4. To use modern tools (Internet, OPAC, search engines etc.) of information search.

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	-	-	-	2	2
CO2	-	1	-	3	1
CO3	1	-	-	2	2
CO4	-	-	1	2	3

PGS 505 INTELLECTUAL PROPERTY AND ITS MANAGEMENT IN AGRICULTURE (1+0)

Learning objective

The objective of the course is to create awareness about intellectual property rights in agriculture. The course deals with management of patents, trademark, geographical indications, copy rights, designs, plant variety protection and biodiversity protection. The students will be taught on the marketing and commercialization of intellectual properties.

Theory

Unit - I- World trade organization - introduction

World Trade Organization - Agreement on Agriculture (AoA) and Intellectual Property Rights (IPR) - Importance of intellectual property management - IPR and economic growth - IPR and bio diversity - Major areas of concern in intellectual property management - Technology transfer and commercialization - Forms of different intellectual properties generated by agricultural research.

Unit - II- Patent document

Discovery *versus* invention - Patentability of biological inventions - Procedure for patent protection - Preparatory work - Record keeping, writing a patent document, filing the patent document - Types of patent application - Patent application under the Patent Cooperation Treaty (PCT).

Unit - III- Plant genetic resources

Plant genetic resources - Importance and conservation - Sui generic system - Plant varieties protection and farmers' rights act – Registration of extinct varieties registration and protection of new varieties/hybrids/essentially derived varieties - Dispute prevention and settlement - Farmers' rights.

Unit - IV- Trademark

Trademark - Geographical indications of goods and commodities - Copy rights designs - Biodiversity protection.

Unit - V- Benefit sharing

Procedures for commercialization of technology - Valuation, costs and pricing of technology - Licensing and implementation of intellectual properties - Procedures for commercialization - Exclusive and non-exclusive marketing rights - Research exemption and benefit sharing.

Theory schedule

1. World Trade Organization - Agreement on Agriculture (AoA) and Intellectual Property Rights (IPR)
2. Importance of intellectual property management - IPR and economic growth - IPR and bio diversity
3. Major areas of concern in Intellectual property management - Technology transfer and commercialization
4. Forms of different intellectual properties generated by agricultural research
5. **First Test**
6. Discovery versus invention patentability of biological inventions
7. Procedure for patent protection, Preparatory work - Record keeping, writing patent document, filing the patent document

8. Types of patent application - Patent application under the Patent Cooperation Treaty (PCT)
9. **Mid Semester Examination**
10. Plant genetic resources - importance and conservation
11. Sui generic system - plant varieties protection and farmers' rights act –registration of extant varieties
12. Registration and protection of new varieties / hybrids / essentially derived varieties - Dispute prevention and settlement - farmers' rights
13. Trade mark - geographical indications of goods and commodities - copyrights-designs
14. Biodiversity protection
15. Procedures for commercialization of technology - valuation, costs and pricing of technology
16. Licensing and implementation of intellectual properties -procedure for commercialization
17. Exclusive and nonexclusive marketing rights - research exemption and benefit sharing.

Course Outcomes

CO1: Understand the concepts in international trade.

CO2: Understand the procedure to obtain patent rights.

CO3: Know the way to protect extinct varieties.

CO4: Create awareness about geographical indications of goods and commodities.

CO5: Identify the way to commercialize intellectual properties.

CO – PO Mapping

	PO1	PO2	PO3	PO4	PO5
CO1	-	-	-	-	-
CO2	-	-	-	-	-
CO3	-	-	-	-	1
CO4	-	1	1	1	1
CO5	1	1	1	1	1

References

1. Arun Goyal and Moor Mohamed, 2001. *WTO in the New Millennium*, Academy of Business Studies, New Delhi.
2. BilekDebroy, 2004. *Intellectual Property Rights*, BR World of books, New Delhi.
3. Ganguli, P., 2001. *Intellectual Property Rights - Unleashing the Knowledge Economy*, Tata McGraw Hill, New Delhi.
4. Narayanan, R., 2006. *Patent Law*, Eastern Law House, New Delhi.
5. Ramappa, T., 2000. *Intellectual Property Rights under WTO - Tasks before India*, Wheeler Publishing, New Delhi.

Non Gradial compulsory courses

NGC 511* DISASTER MANAGEMENT (1+ 0)

(e-Course)

Learning objectives

- To introduce students to the key concepts and practices of mitigation for natural disasters and calamities and to equip them for disaster preparedness to conduct thorough assessment of hazards, risks vulnerability and capacity building strategies.

Theory

Unit I – Natural disaster

Natural Disasters - Meaning and nature of natural disasters, their types and effects. Floods, drought, cyclone, earthquakes, landslides, avalanches, volcanic eruptions, heat and cold waves.

Unit II – Climate change

Climatic change - Global warming, sea level rise, ozone depletion, Man-made disasters - Nuclear disasters, chemical disasters, biological disasters.

Unit III – Man – made disaster

Building fire, coal fire, forest fire, oil fire, air pollution, water pollution, deforestation, industrial waste water pollution, disaster management- efforts to mitigate natural disasters at national and global levels – India's key hazards, vulnerabilities and disaster response mechanisms in India.

Unit IV – Disaster warning, response and preparedness

Concept of disaster management, national disaster management framework; financial arrangements, role of NGOs, community-based organizations, and media central, state, district and local administration. Dissemination of disaster warning, response to natural disasters, national, state, district level, relief – Food and nutrition – Water – Health – Mental health services.

Unit V – Rehabilitation

Rehabilitation – Food - Clothing - Utensils - Fuel – Shelter – Relief camp – Sanitation and Hygiene. Resilient farming concepts – Reclamation and revival of the agriculture system after natural disaster (Bio-shield). Preparedness – Emergency Operations Centers (EOCS). Fire & Rescue services. Revenue and Disaster Management.

Theory lecture schedule

1. Natural Disaster - Meaning and nature of natural disasters, their types and effects.
2. Flood, drought, cyclone, earthquakes landslides, avalanches, volcanic eruptions, Heat and cold waves.
3. Climatic change- Global warming, sea level rise, ozone depletion
4. Manmade disaster - Nuclear disasters, chemical disasters, biological disasters.
5. Building fire, coal fire, forest fire, oil fire.
6. Air pollution, water pollution, deforestation, industrial wastewater pollution.
7. Disaster management - Efforts to mitigate natural disasters. India's key hazards, vulnerabilities and disaster response mechanism in India.
8. Concept of disaster management, national disaster management framework.
9. Financial arrangements, role of NGOs, community-based organizations and media.
10. Central, state, district and local administration.

11. Dissemination of disaster warning - response to natural disasters, national, state, district level.
12. Relief – Food and nutrition – Water – Health – Mental health services.
13. Rehabilitation – Tolerant and resistant crops - Resilient farming concepts – Bio-shields – Livelihood options – Insurance and compensation.
14. Disaster preparedness - Clothing and utensils and fuel – Shelter – Relief camp – Sanitation and hygiene.
15. Preparedness – Emergency Operations Centers (EOCS).
16. Fire & Rescue services.
17. Revenue and Disaster Management.

References

1. Gautam, D R. 2009. Community based disaster risk reduction. Mercy Corps, Lalitpur, Nepal.
2. Gupta, HK. 2003. Disaster management. Indian National Science Academy. Orient Blackswan.
3. Hodgkinson, PE and Stewart, M. 1991. Coping with Catastrophe: A handbook of disaster management.
4. Ministry of Home Affairs. 2010. Standard operating procedure for responding to natural disasters, Ministry of Home Affairs – Disaster management Division, New Delhi.
5. Sharma,VK.2001. Disaster management. National Centre for Disaster Management, India.
6. Das, H.P. 2016. Climate change and agriculture implications for global food security. BS Publications, Hyderabad.
7. Kelkar, R.R. 2010. Climate change -A Holistic view. BS Publications, Hyderabad.

E Resources

1. http:// research.un.org/en/disaster
2. https://searchworks.stanford.edu/
3. http://guodes.litrary.illinois.edu>c.php
4. http:// libguides. auu.edu.au>c.php
5. www.wcpt.org

NGC 512* CONSTITUTION OF INDIA (1+0)

Learning objectives

1. To Understand the basic feature of Indian constitution
2. To gain knowledge about basic rights and duties of Indian citizens
3. To ponder over the form of Indian Political system
4. To have broad understanding about the pivotal provision related with liberty, quality and fraternity

Theory

Unit I: **Constitution of India** and **Basic features and Fundamental Principles**

Meaning of the Constitution and Constitutionalism - Origin & Development of the Constitution of India - Salient features of the Constitution of India.

Unit II: Fundamental Rights and Duties

Fundamental Rights - Fundamental Duties - The Directive Principles of state policy

Unit III- Union Government

Executive: President, Prime Minister and Council of Ministers. – Legislature, Parliament-Judiciary: Supreme Court

Unit IV: State Government and Local Government

Executive: Governor, Chief Minister and Council of Ministers – Legislature - High Courts – Local Governments

Unit V: Constitutional Commissions

Election Commission – UPSC - Finance Commission & TNPSC.

Lecture schedule

1. Constitution of India – Definition, Basic features
2. Fundamental principles
3. Difference between constitution and constitutionalism
4. **First test**
5. Origin and development of constitution
6. Salient features of constitution of India
7. Fundamental rights and Fundamental duties
8. Direct principles of state policy
9. **Mid Semester Examination**
10. Union government - President, Prime Minister and Council of Ministers
11. Legislature, Parliament
12. Judiciary: Supreme Court
13. Executive: Governor
14. Chief Minister and Council of Ministers and Legislature
15. High Courts and Local Governments
16. Election & Finance Commission.
17. UPSC and TNPSC

References

1. The Constitution of India 2017 Kindle Edition- Government of India
2. Bahkshi P. M. 2015 the Constitution of India. Universal Law Publishing Co Ltd
3. Pylle M.V. 2018 an Introduction to the Constitution of India. Vikas Publishing
4. Bhansali S.R.2015. Textbook on the Constitution of India. Universal LexisNexis

Value Added Course

VAX 501 Sustainable Rural Livelihoods and Adaptations to Climate Change (3+0)

Learning Objectives

- Understand climate change
- Adaptation for Sustainable rural livelihoods
- Earth Sciences and Natural Resource
- Climate Change and Adaptation Planning

Theory

Unit I Sustainable Rural Livelihoods

Concept of Sustainable Rural Livelihoods (SRL) –Objectives – Strategies –Issues-Natural Resources conservation and SRL – Sustainable Crop Production – Indigenous Animals Breeding – Health & Nutrition – Income generation.

Unit II Climate Change (15 Hours)

Climate Change – Components – Natural Resources Management(NRM) – Water Resources – Land Resources – Forest Conservation – Joint Forest Management (JFM) – Watershed Management – Eco-environmental Sustainability – Conservation of Local Water Bodies – Kudimaramathu System – Rainwater Harvesting – Indigenous Methods & Techniques.

Unit III Earth Sciences and Natural Resources

Earth Sciences and Natural Resources – Water Table – Ground Water Recharging Structures– Natural Vegetation – Geospatial technology – GIS – Geo-informatics – Geo-morphology –ISRO and Rural Development – RESPOND Projects – Remote sensing – Resource Mapping- Types, Methods & Techniques.

Unit IV Adaptation Techniques

Adaptation Techniques – Concepts – Weather Crop Advisory Services (WCAS) – Livestock Advisory – Vermicomposting – Soil Resources Development – Tree Based Nursery & Cropping-Organic – fertilizers & Pesticides:- Production & Usage Zero Tillage – Direct Seeded Rice- Crop Intensification – Solar pumped Irrigation.

Unit V Climate Change and Adaptation Planning

Climate Change Adaptation Planning – Technology & Knowledge Management – Village Tool Bank – Community Managed crop Production & Resource Conservation: Approaches and adaptation package –Exposure Visit and Observation - Applications and Present Trends-Thoughts- Ideas Sharing – Community based Initiatives- Results and Impact.

Course Outcomes

After completion of the course, the students will be enable to

- will be able to work in Climate Change related Projects
- can get the complete information on natural Resources

Text Books:

Ajoy (2016) Environment and Biodiversity, Mittal Publications Gangopadhyay(2018) Plant Biodiversity, Sage Publications Regina et.al, (2019) The Global Environment: Institutions, Law and Policy, Sage Publications

Supplementary Readings:

Dan Egan, 2019. The Death and Life of the Great Lakes. Texas: Barnes &Noble Security, Washington: Food and Environment Program Sumita Sarkar Globalizatio and Gender, London. Longman Todd Miller, 2019. Storming the Wall, Climate Change, Migration, and Home land

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NMV UNIVERSITY INSTITUTE OF AGRICULTURE RESEARCH & TECHNOLOGY
Established under Tamil Nadu Private Universities Act, 2019

Muthuramalingapuram, Aruppukottai, Virudhunagar – 626 105

M.Sc. (Ag.) AGRICULTURAL EXTENSION EDUCATION

SEMESTER: I / II / III / IV **YEAR:**

PROFORMA FOR FORMATION OF RESEARCH ADVISORY COMMITTEE

1. Name of the student :
2. Reg. No. :
3. Degree :
4. Advisory Committee :

S. No	Advisory Committee	Name and Designation	Signature
1.	Dean		
2.	Chairperson		
3.	Internal Member		
4.	External Member		
5.	Additional Member		
6.	Reasons for additional Member		

DEAN

INSTITUTE OF AGRICULTURE RESEARCH & TECHNOLOGY
NMV UNIVERSITY
Established under Tamil Nadu Private Universities Act, 2019

Muthuramalingapuram, Aruppukottai, Virudhunagar – 626 105

I	II	III	IV

M.Sc. (Ag.) AGRICULTURAL EXTENSION EDUCATION

PROFORMA FOR EVALUATION OF SEMINAR

1. Name of the student :
2. Register Number :
3. Topic of the seminar and credit :

4. Distribution of marks:

Distribution of marks	**Max. Marks**					
Literature coverage	40					
Presentation	30					
Innovative proposal submission	10					
Interactive skills	20					
Total	100					
Name						
Designation		Dean	Chairperson	Internal Member	External member	Average
Signature						

Grade point:

DEAN

INSTITUTE OF AGRICULTURE RESEARCH & TECHNOLOGY
NMV UNIVERSITY
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Muthuramalingapuram, Aruppukottai, Virudhunagar – 626 105

M.Sc. (Ag.) AGRICULTURAL EXTENSION EDUCATION

PROFORMA FOR REGISTRATION OF RESEARCH CREDITS

PART A: PROGRAM

Semester: Year: Date of registration:

1. Name of the student :
2. Reg. No. :
3. Total research credits completed so far :
4. Research credits registered during the semester :
5. Program of work for this semester (list out the Items of research work to be undertaken during the semester) : 1.
   2.
   3.
   4.

Approval of advisory committee

Advisory committee	Name and Designation	Signature
Dean		
Chairperson		
Internal Member		
External Member		

DEAN

INSTITUTE OF AGRICULTURE RESEARCH & TECHNOLOGY
NMV UNIVERSITY
Established under Tamil Nadu Private Universities Act, 2019
Muthuramalingapuram, Aruppukottai, Virudhunagar – 626 105

M.Sc. (Ag.) AGRICULTURAL EXTENSION EDUCATION

PROFORMA FOR EVALUATION OF RESEARCH CREDITS

PART B - EVALUATION

(Evaluation to be done before the closure of Semester)

1. Date of Commencement of semester :
2. Date of closure of semester :
3. Date of evaluation :
4. Name of the student :
5. Reg. No. :
6. Total research credits completed so far :
7. Research credits registered during the semester :
8. Whether the research work has been carried out as per the approved program:
9. If there is deviation specify the reasons :
10. Marks Obtained :

Approval of the advisory committee

Advisory committee	Name and Designation	Signature
Dean		
Chairperson		
Internal Member		
External Member		

DEAN