Programme Code: GECO 82

Programme Name: Ph.D. Agri Business Management

Programme Outcomes

PO1: This programme will enhance the employability of students in niche emerging

areas like data analysis, data management etc.,.

PO2: This programme will bolster the graduate's confidence and skill to take up

independent research and prepare and evaluate projects which will facilitate their

employability by NGOs to carry out survey, data analysis, interpretation and

policy formulation.

PO3: This programme will kindle the student's aptitude for novel and futuristic research

thus they will imbibe the passion for pursuing independent research and post

doctoralprogrammewherebytheir prospects for recruitment as teaching (Assistant

Professors) will become bright.

REGULATIONS

1. SYSTEM OF EDUCATION

1.1 These rules and regulations shall govern the Ph.D. Programmes leading to the award of Degree of Doctor of Philosophy in the concerned subject in the Faculty of Agriculture, Annamalai University. They shall come into force with effect from the academic year 2019-2020.

1.2 The semester system shall be followed for all the Ph.D. degree programmes.

1.3 The duration of doctoral programmes is as follows:

Programme	Minimum Years	Maximum Years
Full Time	3	5
Part Time / External	4	6

2. DEFINITIONS

2.1 An "Academic year" shall consists of two semesters.

2.2 "Semester" means an academic term consisting of 105 instructional days excluding final theory examinations.

2.3 "Course" means a unit of instruction to be covered in a semester having specific No., title and credits.

2.4 "Credit hour" means, one hour lecture plus two hours of library or home work or two and half hours of library/field practicals per week in a semester.

2.5 'Credit load' of a student during a semester is the total number of credits registered by that student during that particular semester.

2.6 'Grade Point' of a course means the value obtained by dividing the percentage of marks earned in a course by 10 and the Grade Point is expressed on a 10 point scale and rounded off to two decimal places.

2.7 'Credit Point' means the grade point multiplied by corresponding credit hours.

2.8 'Grade Point Average'(GPA) means the quotient of the total credit points obtained by a student in various courses 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 scale and the GPA has to be corrected to two decimals.

2.9 'Overall Grade Point Average' (OGPA) means the quotient of cumulative credit points obtained by a student in all the courses 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.

3. PROGRAMMES OFFERED

The details of various Ph.D. programmes offered in the Faculty of Agriculture are as follows:

Agrl. Business Management

Agrl. Economics

Agrl. Entomology

Agrl. Extension

Agrl. Microbiology

Agrl. Biotechnology

Agronomy

Genetics and Plant Breeding

Horticulture

Plant Pathology

Seed Science & Technology

Soil Science and Agrl. Chemistry

4. ELIGIBILITY FOR ADMISSION

Candidates seeking admission to Ph.D. programme should satisfy the following requirements.

4.1 Candidates with two year master's degree programmes from Universities recognized by Annamalai University are eligible to apply for Ph.D. programmes of the university (Table 1).

4.2 Candidates who have undergone the programme under conventional system should possess not less than a second class Master's degree. The candidates under trimester system should possess a minimum OGPA of 3.00 out of 4.00. For those under semester system 7.00 out of 10.00 is required for various Doctoral programmes. However, this will not apply to SC/ ST candidates, nominees of State Government / Annamalai University / ICAR / and Government of India for whom a pass in the concerned degree is sufficient.

Table – 1: Eligibility Criteria

Doctoral Degree Programmes	Eligibility
1. Agrl. Business Management	MBA in Agribusiness
2. Agrl. Economics	M.Sc.(Ag.) in Agrl. Economics/ Agrl. Marketing Management.
3. Agrl. Entomology	M.Sc.(Ag.) in Entomology
4. Agrl. Extension	M.Sc.(Ag.) in Agrl. Extension
5. Agrl. Microbiology	M.Sc.(Ag.) in Agrl. Microbiology
6. Agrl. Biotechnology	M.Sc.(Ag.) in Genetics and Plant Breeding / Agrl. Biotechnology
7. Agronomy	M.Sc.(Ag.) in Agronomy
8. Genetics and Plant Breeding	M.Sc.(Ag.) in Genetics and Plant Breeding
9. Horticulture	M.Sc (Ag.) Hort. / M.Sc. (Hort.) /M.Sc. (Hort.) in Fruit Science / Vegetable Science/Floriculture and Landscape Gardening or Architecture / Plantation, Spices, Medicinal and Aromatic Crops
10. Plant Pathology	M.Sc.(Ag.) in Plant Pathology
11. Seed Science & Technology	M.Sc.(Ag.) in Seed Science & Technology
12. Soil Science and Agrl. Chemistry	M.Sc.(Ag.) in Soil Science and Agrl. Chemistry

4.3 Full time programme:

All full time research scholars shall undergo course work for two semesters as prescribed by the Department. Duration of the programe will be for three years.

4.4 Part Time Programme

The part time programme will be offered to the in-service candidates / Research Scholars of projects of Annamalai University. The candidates of this University should route their application through HOD and Dean, Faculty of Agriculture. The duration of the programme will be of 4 years. The in-service candidates / Research Scholars of projects of Annamalai University will be permitted to register the Ph.D. programme by course work and they have to undergo one year course work by utilizing any eligible leave for that period.

4.5. External Registration

The duration of the programme will be of 4 years. The following are the additional conditions for registration for a Ph.D. programme under external category

1. The candidates must register under a research supervisor who is a member of the Teaching Faculty of this University
2. The candidate should be working as Asst. Professor/Associate Professor/Professor or in equivalent positions on permanent basis in a recognized college where facilities for carrying out research work are available and have post graduate departments for Agrl. subjects or working as research assistants in private or government institutions having research and development facilities and who fulfill the eligibility conditions.
3. The candidate should have a recognized co-supervisor in parent department of the organization. The co- supervisor may be from other colleges / organization located from the same place if such persons are not available in the parental organizations.
4. The candidate shall undergo the course of the required credits during I year of the programme in Annamalai University Campus. He / She shall carryout the research at his / her parental organization for the entire of period of the programme.
5. NOC (No Objection Certificate) is to be produced from the employer of the institution / Organization where he / she is working and attached along with the application ii. Co-supervisor acceptance letter should be also be enclosed with the application form.

5. SELECTION PROCEDURE

A candidate who wishes to undertake Ph.D. programme of this University either full time or part time or external registration should apply in the prescribed form on or before the due date.

Applications which fulfil the above conditions (mentioned in the Prospectus) will be scrutinized by a Departmental Research Committee consisting of the Head of the Department (Coordinator), two Professors, one senior Associate Professor and one senior Assistant Professor (not more than five). Eligible candidates will have to appear for entrance test and interview on the dates specified by the University. The selection of the candidates shall be based on marks obtained in the qualifying degree, a written test and an interview. The weightage for Qualifying Degree Examination will be given for 50 marks. The written test shall comprise objective type questions and examine research aptitude, grasp of the subject, intellectual ability and general knowledge of the prospective candidates. The question paper for the written test shall be prepared for one hour duration. Question papers will be set and evaluated by the DRC for 25 marks. The interview will be conducted for 25 marks. The cut off marks for the selection shall be fixed as 50 percent. NET qualified candidates are exempted from the entrance test, but they have to appear for the interview. The minutes of the DRC together with the recommendation will be placed before the Vice-Chancellor who in consultation with the Dean of the Faculty and Head of the Department will select and admit the applicant to work under the guide proposed.

6. CREDIT GRADE POINT REQUIREMENTS

6.1. A student enrolled for Doctoral program to become eligible for the degree is required to complete 75 credits inclusive of 45 credits of research as detailed below

Sl.No.	Details	Credit Hours
1.	Major-Courses	15
2.	Minor-Courses	8
3.	Supporting-Courses	5
4.	Seminar	2
5.	Research	45
	Total	75

6.2. In a semester, a full time Ph.D. student can register a maximum of 15 credits excluding research. However, the research credits registered should not exceed 12 per semester. Semester wise distribution of credits are given in the respective Ph.D., programmes. The

total research credits for PT and EXT candidates should be distributed in all the eight semesters. The Ph.D. students (FT/PT/EXT) should complete their course work within two semesters in the first year in Annamalai University campus.

6.3. Requirements for Ph.D. programme shall also include successful completion of thesis research in the major field of study and submission of thesis thereon.

7. ATTENDANCE REQUIREMENT

7.1. "One hundred percent attendance is expected from each scholar. A student who fails to secure 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 shall be awarded 'E' (incomplete) and will be required to repeat the subject when ever offered.

7.2. In respect of the student who has absented himself / herself for classes with or without valid reasons, that period will be treated as absence only and not as leave. Also, no attendance will be given for writing make up tests.

7.3 In case of new admission, for calculating 80 percent attendance in the first semester, the number of working days will be calculated from the date of joining of the students who are permitted to join late due to administrative reasons. However, for genuine reasons, condonation of attendance deficiency may be considered by the Vice - chancellor on the recommendation of the Advisory committee, HOD and Dean, Faculty of Agriculture on payment of condonation fee prescribed by the university.

7.4 Students absenting from the classes with prior permission of the HOD on official University business shall be given due consideration in computing attendance.

7.5. In respect of students who had absented for the mid-semester examination on University business with prior permission of the HOD and Dean, Faculty of Agriculture, the make up mid-semester examination should be conducted ordinarily within 15 working days from the date of conduct of the mid-semester examination.

7.6. The students who absent himself/herself for mid-semester examination in a subject on genuine reasons shall be permitted on the recommendation of the course teacher / Research Supervisor and Head of the Department concerned. Missing examination should be completed within 15 working days from the date of respective examination on payment of missing examination fee prescribed by the university.

7.7 An employee of the University admitted to the programme leading to the Ph.D. Degree as a part-time internal candidate in accordance with these ordinances shall be required to work for a minimum period of 30 days per annum during the period of research. They shall carry out research work without affecting their regular duty.

7.8 External scholars are required to mark attendance maintained by the research supervisor/co-supervisor for a minimum compulsory period of 30 days per annum during their period of research.

7.9 External scholars are required to visit Annamalai University campus at the end of every year on a specified date to appear before the Research Advisory Committee (RAC) for review of the progress of their research work.

7.10 The attendance certificate signed by the research supervisor/co-Supervisor shall be sent to the Director, CARE through the respective Head of the Department and the Dean at the time of submission of the Synopsis.

8. RESEARCH ADVISORY COMMITTEE (RAC)

8.1. Each Ph.D. scholar shall have an RAC to guide the student in carrying out his/her programme. A Research Advisory Committee shall be constituted with the approval of the University for each candidate (full-time, part-time and external) separately, immediately after his/her admission. The purpose of the RAC is to provide expert opinion on frontline research. The Research Advisory Committee shall consist of the Head of the Department or

a Professor nominated by the Vice-Chancellor as the Chairperson, the Research Supervisor as the Convener, and two members who are experts in the field nominated by the Vice-Chancellor (one member from the same Department, and the other member from another related Department of our University/another University in Tamil Nadu/other states. The research supervisor in consultation with the HOD will propose the other three members.

8.1.1. Research Supervisor

Every student shall have a research supervisor (among the recognized guides), who will be appointed by the Vice-Chancellor on the recommendation of the Head of the Department and the Dean, Faculty of Agriculture. Research supervisors approved by the Vice-Chancellor only can be the guide for the students. A teacher having Ph.D with 5 years service and PG teaching is eligible for teaching and guiding Ph.D programme. A teacher should have a minimum of three years of service before retirement for allotment of doctoral candidates. The research supervisors who wish to avail leave/lien/deputation beyond a period of six months shall propose a Co-supervisor in the concerned subject for the candidates registered with them and it may be intimated to the University well in advance. The final approval of the proposal rests with the Vice-Chancellor. For external candidate, a Co-supervisor from his/her parental organization will be the Co-Chairman of the Advisory Committee.

8.1.2. Functions of the RAC

The Research Advisory Committee shall have the following functions:

1. Discuss, advice and recommend on all matters connected with the candidate's research from admission till the submission of the thesis.
2. Approve the topic of research and the synopsis.
3. Assess and approve the progress reports of Ph.D. students in the prescribed format and to report to the University on the fitness or otherwise of the candidate to proceed with his/her research work for the Ph.D.
4. If necessary, recommend and approve change of title of dissertation/Thesis, change of research supervisor and status of Researcher (full time to part time and vice-versa)
5. Conduct and supervise the presentation by the candidate of the final draft of his/her proposed thesis for approval before the submission of synopsis of the thesis to the University and to give a certificate to this effect to be submitted along with the synopsis.

8.1.3. The Research Advisory Committee will meet once in six months:

- to scrutinize the research proposal / progress report submitted by the candidate
- to assess the conduct of experiments/field work, peruse laboratory notebooks, data recording, analysis, and publication
- to review and endorse the annual progress report of the candidate.
- to approve the synopsis of the thesis.
  The convener will convene the Research Advisory Committee meetings with intimation to the Director, CARE.

8.2. Changes in RAC

The proposals for changes in the RAC is to be sent to the Director, CARE, through HOD and Dean for approval, if it is keenly felt that such changes are absolutely necessary.

8.3. Change of Research Supervisor

8.3.1 Change of research supervisor shall not be permitted as a routine. In exceptional cases, such change may be permitted, if valid reasons are provided by the candidates. The Committee headed by the Vice-Chancellor shall look into the request of the petitioner, if there is any conflict between the scholar and the research supervisor. The research supervisor under whom the scholar has originally registered shall give a "No Objection Certificate" and the new proposed Research Supervisor should give a "Certificate of Willingness" to guide the candidate. The final decision will rest with the University.

However, the Vice-Chancellor, on the recommendation of the RAC and Dean's Committee, has the right to assign a new research supervisor to the research scholar.

8.3.2 When the change of Research Supervisor is approved, the candidate shall work for a minimum of one year with the new Research Supervisor if the topic of his/her research is different under the new supervisor, provided he/she fulfils the attendance requirements.

8.4 Change of Topic of Research

8.4.1 Change of the specific area of research may be permitted within one year from the date of admission and request must be submitted with the recommendations of the RAC. In such cases, the minutes of the RAC meeting must include whether the course work undertaken by the candidate is relevant to the new research area and the competence of the research supervisor in this field.

8.4.2 If the RAC is of the view that there is a major change in the specific area of research and is not relevant to the course work undertaken, the candidates will have to go through the process of fresh examination pertaining to the area of research.

8.5. Absence of member during qualifying / final Viva-Voce examination

Under extra-ordinary circumstances if the qualifying/ final viva-voce examination to Ph.D. student has to be conducted in the absence of one or two RAC members, permission to conduct the examination by co-opting another member in such contingencies should be obtained from the Director, CARE in advance.

9. EVALUATION OF STUDENT'S PERFORMANCE

All students shall abide by the rules for evaluating the course work under the semester system of education, as prescribed from time to time by the university.

9.1. Examinations

There will be two examinations viz. mid semester and final examination. Wherever the course has practical, there will be a final practical examination also.

9.2. Grading

➢ The duration of mid semester examination will be of one hour and final examinations in theory and practical will be conducted for three hours each.

➢ The mid semester examinations will be conducted by course teachers during the ninth week of the semester as per the scheme drawn by HOD, evaluate and send the marks obtained by the students to the Director, CARE through HOD within seven working days.

➢ There will be final examination separately for theory and practical which will be conducted by the University. Each final theory and practical examinations will be evaluated by two examiners (one will be the course teacher and another will be the senior faculty of the Department).

➢ The distribution of marks will be as indicated below:

S.No	Examination	Course with practical	Course without practical	Course without theory
1	Mid-semester	30	30	30
2	Final theory	40	70	-
3	Final practical	30	-	70
	Total	100	100	100

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

Mid semester :

1	Objective Type	10 out of 12	(10 x 0.5)	5 marks
2	Definitions/concepts	5 out of 7	(5 x 1)	5 marks
3.	Short notes	5 out of 7	(5 x 2)	10 marks
4	Essay type	2 out of 3	(2x5)	10 marks

Final Theory:
Courses without practical (70 marks)

1.	Short notes	5 out of 7	(5 x 4)	20 marks
2	Essay type	5 out of 7	(5 x 10)	50 marks

Courses with practical (40 marks)

1.	Short notes	5 out of 7	(5 x2)	10 marks
2	Essay type	5 out of 7	(5 x 6)	30 marks

9.3. Minimum Marks for Pass

a) The student should secure a minimum of 60 per cent marks separately in the theory and practical and an aggregate of 70 per cent to secure a pass in the subject .

b) Each subject shall carry a maximum of 100 marks for purpose of grading. The grading will be done as grade point. i.e., the percentage of marks earned in a subject is divided by 10. The grade point is expressed on a 10 point scale upto two decimals.

c) Students who secure marks below 70 per cent in a subject will be awarded 'F' grade and students without having the required minimum attendance of 80 per cent will not be allowed to write the final examination and they will be awarded 'E' grade. Students who secure 'F' grade should appear for
re-examination in the subsequent semester.

d) If a student secured 'E' grade, he/she has to re-register and attend the course again during the next academic year.

9.4. Minimum GPA Requirement

A Ph.D student to continue his/her studies in the University, should maintain certain minimum Average Grade Point prescribed here under:

a) Earn a Grade Point of 7.00 for a pass in each subject.

b) For purpose of continuing as a student in the university, a candidate is required to earn an Overall Grade Point Average of not less than 7.50 at the end of each semester

c) A Ph.D. student may repeat the course(s) in which he/she gets a Grade point below 7.50 and above 7.0 to improve the OGPA.

9.5. Re-Examination

Re-examination is permitted only for the final theory and practical examinations. The students who secure 'F' grade are permitted to write the re-examinations as and when conducted with the permission of university. The re-examination fee as prescribed by university per course is to be paid on or before the prescribed date. A student is permitted to write the final theory and practical examinations only two times during the course period of three years excluding the regular final examination. In the event of a student who fails to secure a pass in the two re-examinations permitted, he/she has to re-register for the course along with juniors. The marks secured in mid semester examination will be retained and the student should produce the practical record during re-examination. The registration for the re-examination shall be done after mid-semester examination on the date specified by the Director, CARE. Each registration is considered as an attempt even if the student absents for the examination.

9.6. Return Of Valued Answer Papers

The valued answer papers of mid-semester shall be shown to the students after the examination. Discrepancies if any, in awarding marks, the student can approach the teacher concerned immediately for rectification. The answer paper should be retained with the course teacher for six months and then disposed off. Evaluated final theory papers have to be retained up to six months by the Director, CARE after the conduct of examination and then disposed off.

10. CREDIT SEMINAR

Seminar is compulsory for all students and each student should register and present two seminars each with 0+1 credits. A student can register only one seminar in a semester and only after successful completion of the first seminar the student is permitted to register for the second seminar.

10.1. Credit Seminar Topic

10.1.1 The seminar topic should be only from the major field and should not be related to the area of thesis research.

10.1.2 The seminar topics are to be assigned to the students by the research supervisor in consultation with HOD within three weeks after commencement of the semester.

10.1.3. Under the guidance and supervision of the research supervisor of the RAC, the student should prepare a seminar paper containing not less than 50 typed and printed pages with a minimum number of 75 references covering the recent 10 years time after reviewing all the available literature and present the seminar after completion of 80% attendance in the semester in the presence of the HOD, RAC, staff and post-graduate students of the concerned department.

10.1.4. The circular on the presentation of the seminars may be sent to other Departments to enable those interested to attend the same.

10.1.5. The research supervisor will monitor the progress of the preparation of the seminar and correct the manuscript. The student will submit 2 copies of the corrected manuscript to the HOD through chairman before presentation.

The student will incorporate the suggestions and carry out corrections made during the presentation and resubmit three fair copies to the HOD (one to Dept. library, the second to the research supervisor and the third for student) within 15 days after presentation.

10.1.6. The performance of the student in the credit seminar will be evaluated and grade point awarded by the HOD along with the RAC for 100 marks. Grade Point may be given based on the following norms:

Details	Marks
Coverage of literature	40
Presentation	30
Use of audio visual aids	10
Capacity to participate in discussion and answer the questions	20
Total	100

11. QUALIFYING EXAMINATION

Only those students who successfully complete the qualifying examination will be admitted to candidacy of the degree. The qualifying examination consists of written and oral examination.

11.1. Minimum requirement for Qualifying Examination

The students who have completed all the courses and earned a grade point average of not less than 7.5 will be permitted to appear for the qualifying examination. Students who do not satisfy these requirements shall not be permitted to take up the qualifying

examination. The qualifying examination will be conducted after the completion of course work.

11.2. Selection of Examiner

A panel of five external examiners for qualifying examinations shall be given by the RAC in consultation with HOD before three months of the date of completion of the student's course work to the Director, CARE. One of them will be appointed as external examiner.

11.3. Written Examination

The written examination consists of two papers covering major and minor subjects only. The Director, CARE will conduct the examination by obtaining the question paper from Head of Department to be prepared in consultation with the course teachers concerned.

The question paper for the written examination will be of 3 hours duration and each question (Essay type) need not be restricted to any particular topic in a course but it should be a comprehensive covering of each unit of the syllabus of each course. The written examinations will be conducted at the same time in all disciplines. The answer papers will be evaluated by the research supervisor and Head of the Department or a senior faculty nominated by the Head of the Department. Qualifying marks for passing the examination will be 60. The viva-voce will be conducted by the external examiner after the candidates passes the qualify examination.

11.4. Qualifying viva-voce Examination

The RAC shall conduct the qualifying viva-voce examination with one external member who shall be a specialist in the subject from outside the university

11.5. The Heads of Departments will monitor and coordinate the conduct of the qualifying viva. The performance of the candidate will be graded as Satisfactory / Unsatisfactory.

11.6. Communication of Results of Qualifying Examination

The research supervisor shall act as chairman for the examination committee and shall be responsible for communicating the results of the examination to the Controller of Examination through HOD in the prescribed format.

11.7. Failure /Absence in Qualifying Examination

When a student fails or absents for the qualifying examination, he/she may apply again for permission to appear for re-examination to the Controller of Examination with the recommendation of the chairman of the RAC and Head of the Department. A student, who applies for re-examination should attend written examination and viva-voce. Re-examination shall not take place earlier than three months after the first examination and it will be conducted by the advisory committee as previously indicated. If a student fails in the re-examination, further re-examination will be considered on the recommendation of the RAC, HOD and Dean, Faculty of Agriculture.

If the students fail in the qualifying examination, he / she is not permitted to register for further research credits.

12. THESIS RESEARCH

12.1. Selection of Topic

The thesis research for the Ph.D. degree should be of the nature of a definite contribution to the subject and the results should be of sufficient importance to merit publication. The findings should have some practical utility or should lead to theoretical contribution. The thesis shall be on a topic falling within the field of the major specialization and shall be the result of the student's own work. A certificate to this effect duly endorsed by the major advisor shall accompany the thesis.

12.2. Research Proposal

The research scholars shall present their broad area of research and submit a proposal to the Research Advisory Committee at the end of the first semester. The research proposal has to be presented by the student in a meeting organized by the Head of the department to get the opinion / suggestion of the scientists of the department for improving it. Three copies of the research proposal in the prescribed format should be sent to the Director (CARE) through the Head of the Department for approval

The distribution of research credit will be as follows

Semester	Credit Hours
I Semester	0+1
II Semester	0+2
III Semester	0+12
IV Semester	0+12
V Semester	0+9
VI Semester	0+9
Total	0+45

The total research credits for PT and EXT candidates should be distributed in all the eight semesters as advised by RAC.

12.3. Evaluation of Thesis Research

After assigning the research problem, for each semester, the student has to submit a detailed programme of work to be carried out by him/her during the semester in the prescribed proforma. After scrutiny and approval, a copy of the programme has to be given to the student for carrying out the work during the semester.

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

12.3.2. The student has to submit his/her research observation note book to the research supervisor who 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.

12.3.3. After completion of 80% attendance for research and on or before the last day of the semester, the research Scholars, both full time and part time, shall submit Progress Reports in the prescribed format (Annexure-3) duly endorsed by the Research Advisory Committee to the Director, CARE until they submit their synopsis.

12.3.4 Failure to submit the progress reports shall entail automatic cancellation of registration.

12.3.5 The minutes of the meeting of the Research Advisory Committee along with enclosures will be sent to the Director, CARE.

12.3.6 The review meetings of the RAC may also be conducted through video conferencing or internet chat if the candidate or the Research Supervisor is in a foreign country.

12.3.7 Candidates who are recipients of fellowships such as JRF/SRF directly from any of the funding agencies/ shall send the progress reports and the utilization certificates in the format prescribed by the respective funding agency through proper channel.

12.3.8. The procedure of evaluating research credits under different situations are explained hereunder.

SITUATION – I

The student, has completed the research credits as per the approved programme and awarded SATISFACTORY by the RAC. Under the said situation the student can be permitted to register for fresh research credits in the subsequent semester. If the student is awarded

UNSATISFACTORY, he/she has to re-register the same block of research credits in the subsequent semester.

SITUATION – II

The student who has not secured the minimum attendance of 80 percent shall be awarded grade E. The student has to re-register the same block of research credits for which 'E' grade was awarded earlier in the following semester with prior permission. Until the completion of reregistered credits, the student should not be allowed to register for fresh (first time) research credits.

SITUATION – III

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

a) Failure of crop
b) Non-incidence of pests or disease or lack of such necessary experimental conditions.
c) Non-availability of treatment materials like planting materials chemicals, etc.
d) Any other impeding / unfavourable situation for satisfying the advisory committee.

Under the said situations grade EE should be awarded.

In the mark list, it should be mentioned that E grade or EE grade was awarded due to 'lack of attendance' or 'want for favourable experimental conditions'.

SITUATION – IV

When the student failed to complete the work even in the 'second time' registration, the student will be awarded UNSATISFACTORY and in the mark list the 'second time' should be mentioned.

For the registration of research credits for the third time, permission has to be obtained from the Dean based on the recommendation of the RAC, and HOD. Permission for registration for the fourth time shall be given only by University based on the recommendation of the RAC, HOD and Dean, Faculty of Agriculture.

13. SUBMISSION OF THESIS

The research credits registered in the last semester should be evaluated only at the time of the submission of thesis, by the RAC. Students can submit the thesis at the end of the final semester. If a student has completed the thesis before the closure of the final semester, the research supervisor can convene the RAC meeting and take decision on the submission of the thesis, provided the student satisfies 80 per cent attendance requirement. The candidate shall be allowed to submit his/her thesis after the completion of stipulated period. A grace period of 30 days may be allowed to submit the thesis after the prescribed duration. If the thesis is not submitted even after the grace period, the student shall pay the tuition fee for the year.

If a student is not able to submit the thesis within the grace period, the student has to re-register for the credits in the forthcoming semester. The student who re-registers the credits after availing of the grace period will not be permitted to avail of grace period for the second time. The Head of the Departments can sanction the grace period based on the recommendation of advisory committee and a copy of the permission letter along with the receipt for payment of fine should accompany the thesis while submission

Five copies of the thesis (in the approved format) shall be submitted together with the submission fee not later than three months after the submission of the synopsis. No dues certificates from the Department and Central Libraries, Hostel, Stores, etc. must be submitted with the thesis copies. The Research Supervisor shall forward the thesis copies with the enclosures to the Director, CARE through the HOD and the Dean. A soft copy of the thesis in PDF fromat as prescribed by Shodhganga, shall also be submitted.

The Ph.D scholars have to publish a minimum of two research papers in Scopus / Web of Science indexed journal. The synopsis will be accepted for processing only after showing evidences for publications of 2 such articles.

The soft copy of the thesis shall be checked for plagiarism using Turnitin software. Beyond the percentage of reproduction prescribed by UGC will not be accepted for avaluation.

13.1   Pre-submission Presentation

1. The pre-submission presentation of the thesis is a requirement to enrich the scholar and to fine tune his/her research presentation

2. This presentation shall be conducted before the submission of the synopsis in the presence of the RAC, Supervisor/Co-Supervisor, Faculty members, Research Scholars, M.Phil., and /or P.G. Students.

3. The scholar is expected to present the first draft of the research work or explain the findings/problems faced.

4. The gathering may suggest ideas/references to be consulted/suggestions to improve the work and so on.

5. A report on this event along with an attendance sheet shall be forwarded by the Research Supervisor with the endorsement of the RAC and HOD to the Director, CARE.

13.2   Submission of Synopsis

1. The submission of synopsis may be permitted 3 months before the completion of required duration on successful completion of course work

2. The Research Scholar shall submit 3 copies of the synopsis approved by the Research Advisory Committee along with a soft copy to the Director, CARE through the Research Supervisor, the HOD and Dean of the respective Faculty. Guidelines for the preparation of the synopsis are appended in Annexure -4

3. Name of the candidate and name of the supervisor shall not be mentioned anywhere in the synopsis; enrolment number of the candidate alone shall be given. A model cover page for a synopsis is given in Annexure – 5

13.3   Guidelines for Preparation of Thesis

1. The thesis shall not exceed 250 pages excluding the Bibilography, Appendices,

etc. If it exceeds the specified number of pages, the Research Supervisor should write to University with the reasons and get prior approval from the University. The candidate shall pay a penalty for the excess number of pages as decided by the Deans Committee. The thesis should be in A4 size. The specification for the preparation of the thesis are given in Annexure-7. A model cover page for a thesis is given in Annexure -8.

2. The thesis shall be typed on both sides of the page in order to save paper and postage

3. The thesis shall contain a Certificate from the guide (Annexure-9) 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, Associateship, Fellowship or similar title. A statement from the guide indicating the extent to which the thesis represents independent work on the part of the candidate should also be made.

4. The thesis shall also contain a Declaration by the candidate (Annexure -10) 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.

14. VALUATION OF THE THESIS Panel Of Examiners

The thesis submitted in partial fulfillment of the Ph.D. degree shall be evaluated by two external experts one from within the country and the other from outside the country appointed by the Vice-Chancellor on the recommendation of the research supervisor of the RAC, HOD and Dean. They shall be chosen from a panel of at least five names of specialists separately from within the country and outside the country in the particular field, suggested by the research supervisor. The external experts shall send their evaluation reports of the thesis directly to the Director, CARE along with the copy of the evaluated thesis. The Director, CARE on receipt of the reports from the two examiners will send them to the concerned guide who is the convener of viva-voce board. The guide will send the consolidated report with his remarks to the Director, CARE through the Head of the Department. On the satisfactory reports of the evaluation, viva-voce examination will be arranged.

After a student's thesis for Ph.D. degree is evaluated as indicated above, the thesis shall be finally accepted for the award only after the student satisfactorily completes a final viva-voce examination. The Viva-Voce board comprises the student's RAC with the addition of the external examiner who valued the thesis, and the HOD. If the HOD happens to be the research supervisor, the Dean, Faculty of Agriculture will nominate a senior member of the staff of the concerned Department as a member. In case of external candidates, the co-supervisor will also serve as a member of the viva-voce board. The candidate is expected to defend the thesis at the viva-voce examination. The degree shall be awarded on the unanimous recommendation of the examining committee as satisfactory with regard to the thesis and the performance of the student in the final oral examination. The recommendation of the committee shall be forwarded to the Director, CARE by the research supervisor through HOD and Dean which shall be signed by all members of the committee and the external examiner. A candidate who is not successful (unsatisfactory) at the viva –voce examination will be permitted to undergo the viva voce examination again within a period of three months.

14.2. Revision and Resubmission of Thesis

i. If an examiner recommends change / further work, the thesis will be referred to the same examiner after compliance for his opinion. In case of rejection by any one of the examiners, the thesis will be sent to another examiner and his / her recommendation will be final.

ii. If the thesis is recommended to be revised by one or both examiners, the points of revision will be indicated clearly in the report. The necessary correction should be carried out, and the revised version should be sent to the concerned examiner(s). If the examiner(s) is / are still not satisfied with the revised version, the thesis will be rejected. If the thesis is accepted by the examiners (Evaluation), Viva–Voce examination will be conducted by the viva-voce board.

14.3. Re-registration and Submission of Thesis

The minimum of 80% 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 of 3 or 4 years.

14.4. Extension of Time

1. Research scholars who do not submit the thesis within the stipulated period as per full-time/part-time/external mode should apply for extension of time three months before the completion of 3 or 4 years. Extension of time and the fees to be paid will be considered by the Deans Committee, if the extension is duly recommended by the RAC, Head of the Department, and the Dean of the Faculty, such candidates will be eligible for extension of time for a maximum period of two years.

2. The scholar will have to enroll as fresh candidates if he/she fails to submit the thesis within the maximum extension period of three years when granted.

3. If a scholar requires a few more months after the expiry of the maximum extension period of two years for the submission of the thesis as per the evaluation of the RAC, duly recommended by the Head of the Department and the Dean of the Faculty, as an exceptional case, the Deans committee may consider for re-registration to enable the scholar to submit the thesis. In any case, the time granted shall not exceed six/ twelve months.

14.5. Number of Chances

A candidate will not be permitted to submit a thesis for the degree on more than two occasions. However, it will be open to the syndicate, if the Board of Examiners so recommend, to permit the candidate to submit a thesis on a third occasion. Also, he/she will not be permitted to appear for the viva-voce examination on more than two occasions.

15. DISCONTINUANCE AND READMISSION

15.1. Students admitted to the PhD degree who discontinue their studies before completing the degree with written permission from the University may be re-admitted to the degree programme, provided that the student should have completed the course work before such discontinuance. However the period of such discontinuance should not exceed five years for Ph.D. Degree from date of admission.

15.2. After completion of course work and qualifying examination, a student is eligible to discontinue temporarily his research program only once within 5 years for PhD program. If the discontinuation period exceeds two semesters, the student has to forego the research credits already registered and register afresh with revised program. In the case of field experiments or laboratory experiments in which continuity is essential for research and if a student temporarily discontinues in the middle without completing the experiments, then the entire experiment should be repeated even if the discontinuation period does not exceed two semesters.

15.3. A student joining the studies, after discontinuation should pay the fees of the existing semester.

16. PUBLICATION OF THE THESIS

The thesis, whether approved or not, should not be published in full or abridged form without the permission of the Syndicate, which may grant permission for the publication under such conditions as it may impose.

17. Each Department should maintain a list of theses produced so far with the abstract of the same.

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Department of Agricultural Economics
Ph.D. Agri Business Management (by course work)
Full Time/Part time/External
2019-20

Major Courses

ABM 811	Advances in Marketing Management	2+1
ABM 812	Advances in Operations Research	2+1
ABM 813	ManagementInformationSystems	3+0
ABM 814	Advances in Business Economics	2+1
ABM 821	Financial Management and Project Analysis	2+1
ABM 822	Human Resource Management and Organizational Behaviour	2+1
ABM 823	Agribusiness Sector Analysis	2+1
ABM 824	Advances in Food Retail Management	2+1

Minor Courses

ABM 815	Supply Chain and Logistics Management in Agribusiness	2+1
ABM 825	International Trade and Intellectual Property Rights	2+1
ABM 826	MOOC	2+0

Supportive Courses

COM 811	Advances in Computer Applications	0+1
LIS 812	Advances in Agricultural Information Retrieval	0+1
STA 821	Advanced Statistical Methods for Social Science	2+1
	Seminar	0+2
	Research	0+45

Ph.D. in Agri Business Management (Revised Syllabus 2019-20 onwards)

Semester Wise Distribution of Courses

Semester I

Major Courses*

ABM 811	Advances in Marketing Management	2+1
ABM 812	Advances in Operations Research	2+1
ABM 813	ManagementInformationSystems	3+0
ABM 814	Advances in Business Economics	2+1

Minor Courses (for other department/discipline)

ABM 815	Supply Chain and Logistics Management in Agribusiness	2+1

Supportive Courses

COM 811	Advances in Computer Applications	0+1
LIS 812	Advances in Agricultural Information Retrieval	0+1
ABM 801	Seminar	0+1
ABM 081	Research	0+1

Sub Total	**16 credits**

Semester II

Major Courses **

ABM 821	Financial Management and Project Analysis	2+1
ABM 822	Human Resource Management and Organizational Behaviour	2+1
ABM 823	Agribusiness Sector Analysis	2+1
ABM 824	Advancesin Food Retail Management	2+1

Minor Courses (for other department/discipline)

ABM 825	International Trade and Intellectual Property Rights	2+1	
ABM 826	MOOC		2+0

Supportive Courses

STA 821	Advanced Statistical Methods for Social Science	2+1

ABM 802	Seminar		0+2
ABM 082	Research		0+1

		Sub Total	**17 Credits**

Semester III

ABM 083	Research	0+12

Semester IV

ABM 084	Research	0+12

Semester V

ABM 085	Research	0+9

Semester VI

ABM 086	Research	0+9

Grand Total = 75 Credits

* Any Three   ** Any Two'

All Minor courses should be from other Departments or discipline.

ABM 811 Advances in Marketing Management (2+1)

Learning Objective

- To make the scholars exposed to the recent trends and advances in marketing research and management.

Theory

Unit-I: Emerging markets

Low income markets / bottom of the pyramid – nature of the BOP market – products and services for BOP – market analysis – consumer characteristics – marketing strategy – BOP global opportunities.

Unit-II: Brand management

Branding strategies – brand positioning and values – building brand equity – brand equity assessment – leveraging secondary brand knowledge – building global brands.

Unit-III: Marketing strategy

Developing marketing strategies and plans – strategic marketing planning process – marketing ethics – analyzing the marketing environment – socially responsible marketing.

Unit-IV: Marketing models

Multi-level marketing – business to business marketing – direct marketing – advances in electronic marketing – net working and e-marketing models.

Unit-V: International marketing management

Assessing global markets – strategies and ethical issues in global marketing – trade policies – instruments, impacts of trade policies – economic integration and regional grouping. **Current streams of thought**

Practical

Emerging market analysis – marketing communication for BOP – pricing methods for BOP – Brand equity assessment – brand extensions – communicating brand value – service market potential – ethical issues in services – analyzing marketing costs-social marketing models – evaluating impact of social marketing – e-marketing models – issues in global marketing – evaluating impact of trade policies, economic integration and regional grouping.

Theory lecture schedule

1. Low income markets / bottom of the pyramid
2. Nature of the BOP market
3. Products and services for BOP
4. Market analysis
5. Consumer characteristics
6. Marketing strategy
7. BOP global opportunities
8. Branding strategies
9. Brand positioning and values
10. Building brand equity
11. Brand equity assessment
12. Leveraging secondary brand knowledge
13. Building global brands

14. Developing marketing strategies
15. Developing marketing plans
16. Strategic marketing planning process
17. Marketing ethics
18. **Mid Semester Examination**
19. Analyzing the marketing environment
20. Socially responsible marketing
21. Marketing models
22. Multi-level marketing
23. Business to business marketing
24. Direct marketing
25. Advances in electronic marketing
26. Net working
27. e-marketing models
28. International marketing management
29. Assessing global markets
30. Strategies and ethical issues in global marketing
31. Trade policies
32. Instruments, impacts of trade policies
33. Economic integration
34. Regional grouping.

Practical schedule

1. Emerging market analysis
2. Marketing communication for BOP
3. Pricing methods for BOP
4. Brand equity assessment
5. Brand extensions
6. Communicating brand value
7. Service market potential
8. Ethical issues in services
9. Analyzing marketing costs
10. Social marketing models
11. Evaluating impact of social marketing
12. e-marketing models
13. Direct marketing
14. Issues in global marketing
15. Evaluating impact of trade policies
16. Economic integration and regional grouping
17. Case studies

Course Outcomes

At the end of the course students will be able to

CO1: Evaluate the viability of marketing a product or service.

CO2: Formulate a marketing plan including marketing objectives, marketing mix,

Strategies and budgetary costs.

CO3: Formulate a marketing plan to communicate marketing information.

CO4: Determine strategies for developing new products and services.

CO5: Analyse impact of trade policies on economic development

CO– PO Mapping

	PO1	PO2	PO3
CO1	3		3
CO2		2	3
CO3		3	
CO4	3		
CO5			3

References
1. AtulParvatiyar andRajendraSisodia, (2018), *Advances in Marketing*,Sage Publications India Pvt. Ltd., New Delhi.
2. Dhruv Grewal and Michael Levy, (2008), *Marketing,*The McGraw Hill Company Ltd., New Delhi.
3. Francis Cherunilam, (2006), *International Trade and Export Management*, Himalaya Publishing House, Mumbai.
4. Gupta, C.B., and Rajan Nair, (2004), *Marketing Management*, Sultan Chand and Sons, New Delhi.
5. Jha. S. M., (2007), *Service Marketing*, Himalaya Publishing House, New Delhi.
6. Jhingan, J.L., (2002), *International Economics*, Vrinda Publications, New Delhi.
7. Michael Etzel,J., Bruce J. Walker, William J. Stanton and Ajay Pandit, (2007), *Marketing – Concepts and Cases,*The McGraw Hill Company Ltd., New Delhi.
8. Philip Kotler, Kevin Lane Keller, Abraham Koshy and MithileswarJha, (2007), *Marketing Management-South Asian Perspective*, Pearson Education, UK.
9. Varshney, R.L. and Bhattacharya, (2005), *International Marketing Management*, Sultan Chand and Sons, New Delhi.
10. Varsshey, R.L. and S.L. Gupta, (2005), *Marketing Management*, Sultan Chand and Sons, New Delhi.

ABM 812 Advances in Operations Research (2+1)

Learning Objective

- To acquaint the learner with the applications of some important operations research techniques.
- To focus on understanding the use of these techniques in solving business problems.

Theory

Unit I: Linear programming

Objective –assumptions - formulation of linear programming problem, graphic method - simplex method - transportation and assignment problems.

Unit II: Inventory control models

Costs involved in inventory management -types of inventory, Economic Order Quantity (EOQ) model - Continuous Review (Q) system - Periodic Review(P) system - Hybrid system - simulation.

Unit III: Waiting line models

Waiting line problem -characteristics of a waiting line system -single-channel model -multiple-channel model -constant-service time model -finite population model -sequencing and replacement models.

Unit IV: Decision making under risk and uncertainties

Decision problem, maximax criterion, maximin criterion, minimax regret criterion, laplace criterion, pay off tables, decision trees, expected value of perfect information.

Unit V: Game theory

Two- person zero- sum game, simulation, network analysis – PERT & CPM.

Current streams of thought

Practical

Linear programming formulation of problem, solving through graphic and simplex methods, transportation model, problems on inventory control models, problems on waiting line models, pay off tables, decision tree, Game theory, project evaluation and review technique, critical path method.

Theory lecture schedule

1. Linear programming- objective and assumptions
2. Formulation of linear programming problem
3. Graphic method
4. Simplex method
5. Transportation problem
6. Assignment problem
7. Inventory control models
8. Costs involved in inventory management
9. Types of inventory
10. Economic Order Quantity (EOQ) model
11. Continuous Review (Q) system
12. Periodic Review (P) system

13. Hybrid system
14. Simulation
15. Waiting line models - introduction
16. Waiting line problem
17. **Characteristics of a waiting- line system**
18. **Mid Semester Examination**
19. Single- channel model
20. Multiple-channel model
21. Constant-service time model
22. Finite population model
23. Sequencing model
24. Replacement models
25. Decision making under risk and uncertainties
26. Maximax criterion
27. Maximin criterion
28. Minimax regret criterion
29. Laplace criterion
30. Pay off tables, decision trees, expected value of perfect information
31. Game theory – introduction
32. Two- person zero - sum game
33. Evaluation techniques
34. Network analysis–PERT &CPM.

Practical schedule
1. Linear programming formulation of problem
2. Solving through graphic method
3. Simplex method
4. Transportation model
5. Assignment problem
6. Problems on inventory control models
7. Problems on waiting line models
8. Sequencing model
9. Replacement model
10. Decision making under risk and uncertainty
11. Maximax criterion
12. Maximin criterion
13. Minimax criterion
14. Pay off tables, decision tree analysis
15. Game theory
16. Project evaluation and review technique
17. PERT and critical path method

Course Outcomes

At the end of the course students will be able to

CO1: Develop a general understanding of the Operational Research (OR) approach to

decision making.

CO2: Understand the basic ideas behind each analytical tool.

CO3: Identify the best technique to solve a specific problem.

CO4: Solve the problems using special solutions algorithms.

CO5:Set up decision models and use some solutions methods for nonlinear optimization problems.

CO – PO Mapping

	PO1	PO2	PO3
CO1			3
CO2	2	3	3
CO3	2	3	
CO4	3		
CO5		2	3

References
1. Barry Render Ralph M., Stair Michael and E. Hanna, (2008), *Quantitative Analysis for Management*, Dorling Kindersley (India) Pvt. Ltd., New Delhi.
2. Frederick Hillier and Gerald Lieberman, (2005), *Introduction to Operations Research*, McGraw Hill, New Delhi.
3. Gupta, P.K. and D.S. Hira, (2004), *Operations Research*, Sultan Chand and Sons, New Delhi.
4. Hamdy A. Taha, (2018), *Operations Research – An Introduction*, Dorling Kindersley (India) Pvt. Ltd., New Delhi.
5. KantiSwarup, P.K. Gupta, and Manmohan,(2014), *Introduction to Operations Research*, Sultan Chand and Sons, New Delhi.
6. Paul A. Jensen and Jonathan F. Bard, (2008), *Operations Research Models and Methods*, Willey Blackwell, UK.
7. Taha, H.A.,(2005),*Operations Research– An Introduction*, Prentice Hall, New Delhi
8. Taha, H.A., (1982), *Operations Research – An Introduction*, Macmillan India Ltd., New Delhi.
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10. Wagner,H.M.,(2005),*Principles of Operation Research*, Prentice Hall, New Delhi.

ABM 813 Management Information Systems (3+0)

Learning Objective

- To develop an understanding and utility of MIS.
- To focus on imparting knowledge of the basic concepts, development, functions and usage of MIS.

Theory

Unit I: MIS - Basics

The concept of MIS – Definition, importance, advantages and challenges - information systems in organizations – role of internet and web - classification of information system for organizations - office automation systems, transaction processing systems, decision support system, executive support system, knowledge based expert system.

Unit II: Data and information

Introduction – measuring data, information as a resource, information in organizational functions - types of information technology, types of information system - transaction processing systems – management information systems. Decision making and communication – introduction, decision making with MIS. Tactical decisions – operational decisions – strategic decisions – communication in organizations – types of communication – examples of communication in organizations and decision making with communication technology.

Unit III: Application of MIS

Applications of MIS in the areas of human resource management, financial management, production/operations management, materials management, marketing management Development of MIS for an organization –concept and stages of System Development Life Cycle. Business process integration – business process – enterprise resource planning systems – finance and accounting module – human resource management module – manufacturing and operations module – sales and marketing module.

Unit IV: Information Technology

Concept, applications, advantages and pre-requisites, choice of information technology, social and legal dimension of IT – information systems and competitive strategy – value chain – information systems plan – vendor coordination – technology updates –return on investment. Supply chain management systems, customer relationship management systems, challenges of enterprise systems implementations – international information systems.

Unit V: E-commerce

Introduction - e commerce technology – electronic data interchange – online payment technology – mobile commerce – e commerce portal – search engines – direct selling auctions – aggregators – e business. Decision support systems – introduction, understanding DSS – MIS and DSS – decision making – types of decision, analytics and business intelligence. **Current streams of thought**

Theory lecture schedule
1. MIS – concept of MIS, definition, importance
2. Advantages and challenges
3. Information systems in organizations
4. Role of internet and web
5. Classification of information system for organizations
6. Office automation systems
7. Transaction processing systems
8. Decision support system
9. Executive support system
10. Knowledge based expert system
11. Data and information– introduction, measuring data
12. Information in organizational functions
13. Types of information technology
14. Types of information system
15. Transaction processing systems
16. Management information systems
17. Decision making and communication – introduction
18. Decision making with MIS
19. Tactical decisions
20. Operational decisions
21. Strategic decisions
22. Communication in organizations
23. Types of communication
24. Examples of communication in organizations
25. Decision making with communication technology
26. **Mid Semester Examination**
27. Applications of MIS in Human Resource Management
28. Financial Management
29. Production/Operations Management
30. Materials Management
31. Marketing Management
32. Development of MIS for an organization– concept
33. Stages of System Development Life Cycle
34. Business process integration
35. Enterprise resource planning systems
36. Finance and accounting module
37. Human resource management module
38. Manufacturing and operations module
39. Sales and marketing module
40. Information Technology- concept, applications
41. Advantages and pre-requisites, choice of information technology
42. Social and legal dimension of IT
43. Information systems and competitive strategy– value chain

44. Information systems plan – vendor coordination – technology updates – return on investment
45. Supply chain management systems
46. Customer relationship management systems, challenges of enterprise systems implementations
47. International information system
48. E-commerce technology – electronic data interchange online payment technology – mobile commerce – e commerce portal – search engines
49. Direct selling auctions – aggregators – e business
50. Decision support systems – introduction, understanding DSS – MIS and DSS
51. Decision making – types of decision, analytics and business intelligence.

Course Outcomes

At the end of the course students will be able to

CO1: Understand of the MIS approach to decision making.

CO2: Understand the basic ideas behind each analytical tool.

CO3: Identify the best technique to make a decision related agri business problems

CO4: Understand the e-commerce technique.

CO5: Understand customer relationship to increase market potential

CO – PO Mapping

	PO1	PO2	PO3
CO1	3		3
CO2			
CO3		2	3
CO4		3	
CO5	3		3

References

1. Goyal, D.P., (2014), *Management Information Systems – Managerial Perspective,* Vikas Publishing Company, New Delhi.
2. Gupta, A.K., (2013), *Management Information Systems,* Sultan Chand and Sons, New Delhi.
3. James A., O. Brien, George M. Marakas and Ramesh Behl, (2017), *Management*

Information Systems, McGraw Hill, New Delhi.

4. Kenneth C. Laudon and Jane P. Laudon, (2017), *Management Information Systems*, Pearson Publishers, UK.

5. Lauden and Lauden, (2003),*Management Information System*, Pearson Educations,UK.

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7. Sadagopan, S., (2014), *Management of Information Systems,* Prentice Hall of India, New Delhi.

8. Sahil Raj, (2013), *Management Information Systems*, McGraw Hill, New Delhi.

9. Stephen Haag, (2012), *Management Information Systems for the Information Age*, McGraw-Hill, New Delhi.

10. Waman, S. Jawadekar, (2015), *Management Information Systems,* McGraw Hill, New Delhi.

ABM 814 Advances in Business Economics (2+1)

Learning Objective

- To impart the students the latest developments and advances in business economics.

Theory

Unit-I: Theory of Consumption

Theories of consumer behavior - Recent developments in the theory of market demand – dynamic version – demand functions –Linear expenditure System (LES) – Almost Ideal Demand System Model.

Unit-II: Theory of production

Production functions – returns to scale – law of variable proportion – technical progress and production functions – theory of costs and business applications of cost analysis.Risk analysis.

Unit-III: Theory of the firm

Perfect and imperfect markets – equilibrium of firm and pricing under dynamic changes in demand and costs – criticism of neo-classical theory of the firm – managerial and behavioural theories of firm.

Unit-IV; Strategic behaviour, information and externalities

Game theory and strategic behaviour – asymmetric information and decision making– network externalities – markets with network externalities – implication for business.

Unit-V: Macro environment of business

National income – its determinants, aggregate consumption function and multiplier – income level and consumption spending hypotheses – concept and phases of business cycle.Inflation –price indices and policies – impact of fiscal policies and monetary policies on business environment. **Current streams of thought**

Practical

Review of theory of consumer behaviour – calculation of elasticities and business applications – derivation of demand functions – derivation of supply functions – producer and consumer surplus and business implications – estimation of production function – least cost combination – derivation of cost curves from production function – risk analysis – equilibrium prices under different market conditions – monopoly, monopolistic competition and oligopoly– computation of factor prices and factor shares – analysis of trends in national income – inflation – calculation of price indices and policies – impact of fiscal policies on business environment – impact of monetary policies on business environment.

Theory lecture schedule

1. Theories of consumer behavior
2. Theory of market demand - introduction
3. Recent developments in the theory of market demand – dynamic version
4. Demand functions –types and forms
5. Linear expenditure System (LES)
6. Almost Ideal Demand System Model

7. Theory of production – introduction
8. Production functions – types and forms
9. Returns to scale
10. Law of variable proportion
11. Technical progress and production functions
12. Theory of costs and business applications of cost analysis
13. Risk analysis
14. Theory of the firm – introduction
15. Perfect and imperfect markets
16. Equilibrium of firm under different situations
17. Pricing under dynamic changes in demand and costs
18. **Mid Semester Examination**
19. Criticism of neo-classical theory of the firm
20. Managerial and behavioural theories of firm
21. Strategic behavior - information and externalities
22. Game theory and strategic behaviour
23. Asymmetric information and decision making
24. Network externalities – markets with network externalities
25. Micro environment of business
26. Macro environment of business
27. National income – its determinants
28. Aggregate consumption function and multiplier
29. Income level and consumption spending hypotheses
30. Phases of business cycle
31. Inflation –types, trend and impact of inflation on business growth
32. Price indices and policies
33. Impact of fiscal policies on business environment
34. Impact of monetary policies on business environment.

Practical schedule
1. Review of theory of consumer behaviour
2. Calculation of elasticities and business applications
3. Derivation of demand functions
4. Derivation of supply functions
5. Producer and consumer surplus and business implications
6. Estimation of production function
7. Least cost combination
8. Derivation of cost curves from production function
9. Risk analysis
10. Equilibrium price under monopoly market condition
11. Equilibrium price under monopolistic competition
12. Equilibrium price under oligopoly
13. Computation of factor prices and factor shares
14. Analysis of trends in national income
15. Inflation – calculation of price indices

16. Impact of fiscal policies on business environment
17. Impact of monetary policies on business environment.

Course Outcomes

At the end of the course students will be able to

CO1: To characterize different agribusiness.

CO2: Analyze operations of markets under varying competitive conditions.

CO3: Analyze the ethical and social justice dimensions of market and policy outcomes.

CO4: Apply game theories

CO5: Analyse macro environment in agri business

CO– PO Mapping

	PO1	PO2	PO3
CO1		3	3
CO2	2		
CO3	3		
CO4		2	
CO5	3		3

References
1. Bishop, M., (2004),*Privatization and Economic Performance*, Oxford University Press, New Delhi.
2. Dwivedi, D.N., (2002*), Managerial Economics*, Tata McGraw Hill, New Delhi.
3. Gupta, G.S., (1997), *Managerial Economics*, Tata McGraw Hill, New Delhi.
4. Hendrikse, G., (2003), *Economics and Management of Organizations: Co-ordination, Motivation and Strategy*, McGraw-Hill, New Delhi.
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7. Manker V.G., (2004), *Business Economics*, Macmillan Publishing India Ltd, New Delhi.

8. Mehtha, P.L., (2000), *Managerial Economics – Analysis, Problems and Cases*, Sultan Chand and Sons., New Delhi.

9. Milgrom, P, and J. Roberts, (2002), *Economics, Organizations and Management*, Prentice Hall of India, New Delhi.

10. Sankaran, (2001), *Business Economics*, Progressive Corporation Pvt. Ltd., Bombay.

Learning Objective

- To impart knowledge on advanced financial management tools and techniques and special emphasis on project formulation and management.

Theory

Unit-I: Financial functions and decisions

Objective of the firm – sustainable wealth creation. Strategic financial management investment or long term asset mix decisions – liquidity or short term mix decisions – efficiency of capital and money markets – shareholders versus management.

Unit-II: Asset valuation

Valuation of equity shares, preference shares, debentures and bonds, convertible securities. Approaches to valuations - earnings dividend growth model. Net asset value – meaning and interpretation.

Unit-III; Financial and profit analysis

The theory of capital structure – long and short term finance implications debt and equity – leasing versus borrowing – foreign finance – analysis of changes in financial position – cost – volume – profit analysis and operating leverage – break-even analysis, profit planning – fund flow and cash flow analysis.

Unit-IV: Project appraisal

Capital budgeting decisions – capital assets – replacement and acquisition – capital budgeting techniques – project life cycle – capital rationing – possibility of abandonment or expansions – impact of inflation – net work techniques – social cost benefit analysis – environment impact assessment – mutually exclusive projects.

Unit-V: Financial risk management

Risk assessment – risk aversion with many commodities – measures of risk aversion in the small and the large firms – their economic consequences – an aggregation theorem for securities markets – portfolio allocation with many risky assets – the role of securities in the optimal allocation of risk bearing – economic equilibrium under uncertainty – investment decisions under uncertainty – capital asset pricing model – the valuation of risky assets and the selection of risky investments in stock portfolios and capital budgets – incomplete financial markets – management of working capital – accounts receivable – inventories – accounts payable – overall working capital strategy.

Current streams of thought

Practical

Capital efficiency evaluation – asset valuation – approaches to valuation – earnings dividend growth model – valuation of net asset – cost – volume profit analysis

and operating leverage – capital budgeting techniques – capital rationing – analysis of impact of inflation on investment – risk assessment – economic equilibrium under uncertainty – Investment decision under uncertainty – capital asset pricing model – valuation of risky assets – working capital management – net working techniques – social cost benefit analysis – environment impact assessment – analysis of mutually exclusive projects.

Theory lecture schedule

1. Financial functions and decisions
2. Objective of the firm – sustainable wealth creation
3. Strategic financial management investment or long term asset mix decisions
4. liquidity or short term mix decisions
5. efficiency of capital and money markets
6. shareholders versus management
7. Asset valuation
8. Valuation of equity shares, preference shares, debentures and bonds, convertible securities.
9. Approaches to valuations
10. earnings dividend growth model
11. Net asset value – meaning and interpretation
12. Financial and profit analysis
13. Theory of capital structure
14. Long and short term finance implications
15. Debt and equity – leasing versus borrowing
16. Foreign finance – analysis of changes in financial position
17. Cost – volume – profit analysis and operating leverage
18. **Mid Semester Examination**
19. Break-even analysis, profit planning – fund flow and cash flow analysis
20. Project appraisal - capital budgeting decisions – capital assets – replacement and acquisition
21. Capital budgeting techniques
22. Project life cycle, capital rationing – possibility of abandonment or expansions, impact of inflation
23. Net work techniques
24. Social cost benefit analysis
25. Environment impact assessment, mutually exclusive projects
26. Financial risk management- assessment – risk aversion with many commodities
27. Measures of risk aversion in the small and the large firms – their economic consequences
28. Aggregation theorem for securities markets – portfolio allocation with many risky assets – the role of securities in the optimal allocation of risk bearing
29. Economic equilibrium under uncertainty
30. Investment decisions under uncertainty – capital asset pricing model
31. Valuation of risky assets and the selection of risky investments in stock portfolios and capital budgets
32. Incomplete financial markets

33.	Management of working capital – accounts receivable
34.	Inventories – accounts payable – overall working capital strategy

Practical schedule

1. Capital efficiency evaluation

2. Asset valuation

3. Approaches to valuation

4. Earnings dividend growth model

5. Valuation of net asset

6. Cost – volume profit analysis and operating leverage

7. Capital budgeting techniques

8. Capital rationing

9. Analysis of impact of inflation on investment

10. Risk assessment

11. Economic equilibrium under uncertainty

12. Investment decision under uncertainty

13. Capital asset pricing model

14. Valuation of risky assets

15. Working capital management

16. Networking techniques

17. Analysis of mutually exclusive projects.

Course Outcomes

At the end of the course students will be able to

CO1: Analyze financial statements using standard financial ratios.'

CO2: Identify major domestic financial management tools, techniques and practices.

CO3: Identify relevant cash flows for capital budgeting.

CO4: Analyse mutually exclusive projects

CO5: Assess and manage risk in agri business

CO– PO Mapping

	PO1	PO2	PO3
CO1		3	
CO2			3
CO3	2	3	
CO4	3		3
CO5			3

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ABM 822 Human Resource Management and Organizational Behaviour (2+1)

Learning **Objectives**

- To make scholars to be aware of the advancements in human resource Management

- To analyseresearch techniques with special reference to agribusiness sector.

Theory

Unit-I: Human Resource Management

Evolution of HRM – growth of HRM in the new millennium – systems approach to HRM – impact of technology on HRM – strategic HRM and competitive advantage – human resource planning and assessment.

Unit-II: Recruitment, selection, training and development

Job designing – concept – designing jobs to meet the needs of employer and employee – e-recruitment and their merits and demerits – strategies of recruitment – recruiting diverse work force – recent trends in recruitment – use of psychometric tests in selection – HR outsourcing and its impact on human resource practices – need and importance of training – checklist – areas and types of training – training need assessment – evaluation methods of training methods – recent trends in training – management development – need and methods of management development.

Unit-III: Career and performance management

Career development – career planning and development process – roles in career planning – management of career paths – standard of performance – performance metric – designing metrics – HR valuation – dimensions of performance – performance appraisal – methods – errors and biases – performance counselling – competency modelling.

Unit-IV: Understanding behaviour in organizations

Theories of behaviour – personality determinants and assessment – perceptual process – attitude and values measurement and application – expectancy theory – comparison of Maslow's and Alderfer's ERG theory. Predicting and controlling behaviour. Emotional intelligence and big five model personality. Groups and group dynamics. Team building research in team building – leadership – perspective theories and research domains. Communication, negotiation, NLP and conflict resolution strategies.

Unit-V; Organization culture

Organization culture, structure and organizational development – organizational effectiveness – cross cultural issues and impact of globalization on organizational behaviour. **Current streams of thought**

Practical

Application of HR forecasting techniques – testing the reliability and validity of psychometric tests – training needs assessment – evaluation methods of training – application of job evaluation methods – designing effective performance appraisal system – developing a competency model – establishing and fixing compensation – valuation of human capital - Lev & Schwartz model – tackling union issues – case studies – critical analysis on case studies of various corporate on the issues of HRM –

identification of research problem, reviewing the current research on HRM – presentation and writing articles – project work on HR issues – applications of management and behavioural sciences – personality determinants and assessment – emotional intelligence and big five model of personality – assessment of organizational effectiveness.

Theory lecture schedule

1. Human Resource Management – introduction
2. Evolution of HRM – growth of HRM in the new millennium
3. Systems approach to HRM
4. Impact of technology on HRM – strategic HRM and competitive advantage
5. Human resource planning and assessment
6. Recruitment, selection, training and development
7. Job designing – concept – designing jobs to meet the needs of employer and employee – e-recruitment and their merits and demerits
8. Strategies of recruitment – recruiting diverse work force – recent trends in recruitment
9. Use of psychometric tests in selection
10. HR outsourcing and its impact on human resource practices
11. Need and importance of training – checklist – areas and types of training
12. Training need assessment – evaluation methods of training methods – recent trends in training
13. Management development – need and methods of management development
14. Career and performance management
15. Career development – career planning and development process
16. Roles in career planning – management of career paths
17. Standard of performance – performance metric – designing metrics
18. **Mid Semester Examination**
19. HR valuation – dimensions of performance
20. Performance appraisal – methods – errors and biases
21. Performance counseling – competency modeling
22. Understanding behaviour in organizations
23. Theories of behaviour – personality determinants and assessment
24. Perceptual process – attitude and values measurement and application
25. Expectancy theory – comparison of Maslow's and Alderfer's theory
26. Predicting and controlling behavior
27. Emotional intelligence and big five model personality
28. Groups and group dynamics
29. Team building research in team building – leadership
30. Perspective theories and research domains
31. Communication, negotiation, NLP and conflict resolution strategies
32. Organization culture, structure and organizational development
33. Organizational effectiveness – cross cultural issues
34. Impact of globalization on organizational behaviour

Practical schedule

1. Application of HR forecasting techniques

2. Testing the reliability and validity of psychometric tests
3. Training needs assessment
4. Evaluation methods of training
5. Application of job evaluation methods
6. Designing effective performance appraisal system
7. Developing a competency model
8. Establishing and fixing compensation
9. Valuation of human capital - Lev & Schwartz model
10. Critical analysis on case studies of various issues of HRM
11. Identification of research problem
12. Reviewing the current research on HRM
13. Project work on HR issues
14. Applications of management and behavioural sciences
15. Personality determinants and assessment – emotional intelligence
16. Big five model of personality –
17. Assessment of organizational effectiveness.

Course Outcomes

At the end of the course students will be able to

CO1: Apply current and emerging information technologies to support the human

resource.

CO2: Understand role and status of trade unions.

CO3: Identify various welfare measures taken by agro industries for the benefit of their

workers.

CO4: Analyze individual and group behavior.

CO5: Understand the implications of organizational behavior on the process of

management.

CO – PO Mapping

	PO1	PO2	PO3
CO1	2		
CO2	3	3	3
CO3		3	
CO4	2		3
CO5		2	3

References

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Learning **Objectives**

- To update the scholars with various advancements in agribusiness sector
- To expose with needed management strategies
- To enhance performance of agro industries in the domestic and international contexts

Theory

Unit-I: Agri-Input Sector

Market structure – nature of competition – pricing – subsidy – government intervention for agri-inputs. Seeds – growth, issues and policies. Fertilizer – issues, supply, subsidy – micronutrients, pesticides – market for new fertilisers, herbicides and bio-control – market for machineries and implements. Food processing and bio-energy – market, subsidy and policies.

Unit-II: Food processing and manufacturing sectors

Trends in food processing and manufacturing – management problems of food processors – trends in food retail and wholesaling – specialization and diversification in food markets. Organic food industry in India – sugar, dairy and poultry sectors – issues and prospects.

Unit-III: Agri services

Agri-business consultancy and technology transfer, finance (venture capital, microfinance) – marketing services – research and development in agribusiness industries. Private sector initiatives in agri-service sectors – agribusiness information portals – nature of information offered and spread. Certification agencies in organic agriculture – food safety. Publications and periodicals in agribusiness.

Unit-IV: Exports and imports

Exports and imports of agricultural commodities – government policies on export and import of agricultural commodities – WTO regulations related to agribusiness and its implication on agribusiness industries.

Unit-V: Environment analysis

Economic environment and agribusiness development, climate change and agribusiness development – IPR and other regulations and agribusiness development. Government intervention – policies – agribusiness development. Public private partnership models for agribusiness development. Infrastructure and agribusiness development. **Current streams of thought**

Practical

Identifying agribusiness opportunities – market structure, conduct and performance analysis model – Porter's five forces model on competitiveness – seed sector analysis – sector analysis of fertilizer, pesticides, farm machineries, irrigation systems, non-conventional energy systems – brand management for processed food products – farmers' preference for agri consultancy firms – capital requirement assessment for agribusiness ventures – marketing services – policy analysis for agribusiness development – impact analysis of climate change and implications for

agribusiness – analysis of infrastructure requirement for agribusiness.

Theory lecture schedule
1. Agri-input Sector – introduction
2. Market structure – nature of competition
3. Pricing – subsidy – government intervention for agri-inputs
4. Seeds – growth, issues and policies
5. Fertilizer – issues, supply, subsidy
6. Micronutrients, pesticides – market for herbicides and bio-control
7. Market for machineries and implements
8. Food processing and bio-energy – market, subsidy and policies
9. Food processing and manufacturing sectors
10. Trends in food processing and manufacturing
11. Management problems of food processors
12. Trends in food retail and wholesaling
13. Specialization and diversification in food markets
14. Organic food industry in India – sugar
15. Dairy and poultry sectors – issues and prospects
16. Agri services - agri-business consultancy
17. Technology transfer, finance (venture capital, microfinance)
18. **Mid Semester Examination**
19. Marketing services
20. Research and development in agribusiness industries
21. Private sector initiatives in agri-service sectors
22. Agribusiness information portals - nature of information offered and spread
23. Certification agencies in organic agriculture – food safety
24. Publications and periodicals in agribusiness
25. Exports and imports of agricultural commodities
26. Government policies on export of agricultural commodities
27. Government policies on import of agricultural commodities
28. WTO regulations related to agribusiness and its implication on agribusiness industries
29. Environment analysis - economic environment and agribusiness development
30. Climate change and agribusiness development
31. IPR and other regulations and agribusiness development
32. Government intervention – policies – agribusiness development
33. Public private partnership models for agribusiness development
34. Infrastructure and agribusiness development

Practical schedule
1. Identifying agribusiness opportunities
2. Market structure, conduct and performance analysis model
3. Porter's five forces model on competitiveness
4. Seed sector analysis
5. Sector analysis of fertilizer
6. Sector analysis of pesticides
7. Sector analysis of farm machineries

8. Sector analysis of irrigation systems
9. Analysis of non-conventional energy systems
10. Brand management for processed food products
11. Farmers' preference for agri consultancy firms
12. Capital requirement assessment for agribusiness ventures
13. Marketing services
14. Policy analysis for agribusiness development
15. Impact analysis of climate change and implications for agribusiness
16. Analysis of infrastructure requirement for agribusiness
17. Case studies

Course Outcomes

At the end of the course students will be able to

CO1: Analyze the agri-input sector.

CO2: Know about the agri services regarding agribusiness consultancy and technology.

CO3: Know about the government policies on export and import of agricultural

commodities.

CO4: Identify the impact of globalization on agricultural development

CO5: Design PPP model for agri business development

CO–PO Mapping

	PO1	PO2	PO3
CO1	3		3
CO2			3
CO3	3	2	
CO4		3	2
CO5	3		3

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ABM824 Advances in Food Retail Management (2+1)

Learning Objective

- To assist students in understanding the structure and working of food marketing system in India
- To examine how the system affects farmers, consumers and middlemen
- To illustrate the response of this dynamic marketing system to technological, socio-cultural, political and economic forces over time.

Theory

Unit I: Retail market - introduction

Introduction to international food market, India's competitive position in world food trade, foreign investment in global food industry, retail management and food retailing, The nature of change in retailing, organized retailing in India, e-retailing and understanding food preference of Indian consumer, food consumption and expenditure pattern, demographic and psychographic factors affecting food pattern of Indian consumer.

Unit II: Food retailing

Value Chain in food retailing, principal trends in food wholesaling and retailing, the changing nature of food stores, various retailing formats, and pricing in food retailing, market implications of new retail developments, value chain and value additions across the chain in food retail, food service marketing.

Unit III: Marketing management

4 P's in food retail management, brand management in retailing, merchandise pricing, pricing strategies used in conventional and non-conventional food retailing, public distribution system, promotion mix for food retailing, management of sales promotion and publicity, advertisement strategies for food retailers.

Unit IV: Logistics management

Managing retail operations, managing retailers' finances, merchandise buying and handling, merchandise pricing, logistics, procurement of food products and handling transportation of food products.

Unit V: Retail sales management

Types of retail selling, salesperson selection, salesperson training, evaluation and monitoring, customer relationship management, managing human resources in retailing, legal and ethical issues in retailing **Current streams of thought**

Practical

Assignments on study of nature of changes in retailing, organized retailing in India. Study on types of retailers/ multi channel retailing. Visit to traditional wholesale and retail stores. Study on nature, characteristics and management of food stores. Store layout, design, location and visual merchandising, retail institutions by ownership and franchise, retailing formats-case studies. Practical exercises in merchandise management in retail stores, case studies on marketing mix of retail stores and developing merchandise plans, case studies on inventory management in

retail stores. Case studies on logistics management in retailing. Visit to organized retail-stores to study retail administration. Study on promotion mix of retail stores and sales management, case studies on financial management in retail stores. Study on fresh food retail logistics. Study on the inventory control of Fast Moving Consumer Goods, practical exercises in customer relationship and customer service management in retail stores-case studies. Exercises on retailing evaluation, monitoring and control in food retailing. Case studies in e-retailing - nature, scope and market potential.

Theory lecture schedule
1. Retail market –introduction to international food market
2. India's competitive position in world food trade
3. Foreign investment in global food industry
4. Retail management and food retailing
5. Nature of change in retailing
6. Organized retailing in India, e-retailing and understanding food preference of Indian consumer
7. Food consumption and expenditure pattern
8. Demographic and psychographic factors affecting food pattern of Indian consumer
9. Food retailing - introduction
10. Value chain in food retailing
11. Principal trends in food wholesaling and retailing
12. Changing nature of food stores, various retailing formats, and pricing in food retailing
13. Market implications of new retail developments
14. Value chain and value additions across the chain in food retail
15. Food service marketing
16. Marketing management- 4 P's in food retail management
17. Brand management in retailing
18. Mid Semester Examination
19. Merchandise pricing
20. Pricing strategies used in conventional food retailing
21. Pricing strategies used in non-conventional food retailing
22. Public distribution system
23. Promotion mix for food retailing
24. Management of sales promotion and publicity
25. Advertisement strategies for food retailers
26. Logistics management- managing retail operations
27. Managing retailers' finances
28. Merchandise buying and handling
29. Merchandise pricing, logistics
30. Procurement of food products and handling, transportation of food products
31. Retail sales management– types of retail selling
32. Sales person selection, salesperson training, evaluation and monitoring, customer relationship management
33. Managing human resources in retailing

34. Legal and ethical issues in retailing
   Practical schedule
   1. Nature of changes in retailing, organized retailing in India.
   2. Study on types of retailers/multi channel retailing
   3. Visit to traditional wholesale and retail stores
   4. Study on nature, characteristics and management of food stores
   5. Retail institutions by ownership and franchise, retailing formats-case studies
   6. Merchandise management in retail stores
   7. Case studies on marketing mix of retail stores and developing merchandise plans
   8. Case studies on inventory management in retail stores
   9. Case studies on logistics management in retailing
   10. Visit to organized retail-stores to study retail administration
   11. Study on promotion mix of retail stores and sales management
   12. Case studies on financial management in retail stores
   13. Study on fresh food retail logistics.
   14. Study on the inventory control of Fast Moving Consumer Goods
   15. Customer relationship and customer service management in retail stores-case studies
   16. Case studies on retailing evaluation, monitoring and control in food retailing
   17. Case studies in e-retailing-nature, scope and market potential.

Course Outcomes

At the end of the course students will be able to

CO1: Analyze the agri-output sector.

CO2: Know about the organized and unorganised retail stores.

CO3: Know about the government policies on fast moving consumer goods

CO4: Identify the impact of globalization on food retail sector

CO5: Know the logistics management in retailing

CO–PO Mapping

	PO1	PO2	PO3
CO1	2		
CO2			3
CO3	3		3
CO4		3	
CO5		2	2

References

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ABM 815 Supply Chain and Logistics Management in Agribusiness (2+1)

Learning **Objectives**

- To expose the scholars to various research prospects advancements available in supply chain
- To understand logistic management in agri business

Theory

Unit-I: Supply chain management

Supply Chain Management (SCM) – metrics/drivers and obstacles – SCM networks – distribution network – SC Inventories – inventory planning with known and uncertain demand – coordination in SCM – bullwhip effect – green and global supply chains.

Unit-II: Procurement management in agribusiness industries

Role of purchasing in business – purchasing control – budgeting – sourcing, quality control – contract buying, state and institutional purchasing, international buying, make or buy, negotiations, value analysis – measuring purchasing performance. Strategic purchasing management – developing lean supply, partnership sourcing – network sourcing, benchmarking – role of information technology in purchasing.

Unit-III: Performance measurement, controls and information technology for SCM

Performance modelling of supply chains using different techniques – mathematical programming models for supply chain planning, design, and optimization – best practice supply chain solutions – internet enabled supply chains web services, supply chain automation and integration.

Unit-IV: Commodity market analysis

Food grain markets – markets for fruits and vegetables – commodity market analysis – rice, wheat, spices, cotton, sugar, palmolein , turmeric, groundnut oil, maize – futures and option market in agriculture – seasonal commodity patterns – risk management in agriculture. Commodity markets – structural models of commodity price.

Unit-V: Logistics management

Organizing logistics function – measurement of performance of logistics functions – logistics operation, its importance and effectiveness – integrated logistics management – third party alliance – multimodaltransport system in India.Warehousing – classes of warehouse, functions and operations of a warehouse – third party logistics. **Current streams of thought**

Practical

Supply chain performance measurement – inventory planning with known and uncertain demand – bullwhip effect – quality management – value chain analysis measurement and analysis of customer satisfaction – mathematical programming models for supply chain planning, design, and optimization – supply chain integration – commodity markets – fundamental and technical analysis – customer relationship management – case study on warehousing and logistics management.

Theory lecture schedule

1. Supply chain management – introduction
2. Metrics/drivers and obstacles
3. SCM networks – distribution network
4. SC Inventories – inventory planning with known and uncertain demand
5. Coordination in SCM – bullwhip effect
6. Green and global supply chains
7. Procurement management in agribusiness industries
8. Role of purchasing in business – purchasing control
9. Budgeting – sourcing, quality control
10. Contract buying, state and institutional purchasing
11. International buying, make or buy, negotiations
12. Value analysis – measuring purchasing performance
13. Strategic purchasing management
14. Developing lean supply, partnership sourcing – network sourcing, benchmarking
15. Role of information technology in purchasing
16. Performance measurement, controls
17. Information technology for SCM
18. **Mid Semester Examination**
19. Performance modeling of supply chains using different techniques
20. Mathematical programming models for supply chain planning, design, and optimization
21. Best practice supply chain solutions
22. Internet enabled supply chains web services
23. Supply chain automation and integration
24. Commodity market analysis- food grain markets
25. Markets for fruits and vegetables
26. Commodity market analysis – rice, wheat, spices, cotton,
27. Sugar, palmolein , turmeric, groundnut oil, maize
28. Futures and option market in agriculture – seasonal commodity patterns – risk management in agriculture
29. Structural models of commodity price
30. Logistics management- organizing logistics function
31. Measurement of performance of logistics functions
32. Logistics operation, its importance and effectiveness
33. Integrated logistics management – third party alliance – multimodal transport system in India.
34. Warehousing – classes of warehouse, functions and operations of a warehouse – third party logistics.

Practical schedule

1. Supply chain performance measurement
2. Inventory planning with known and uncertain demand
3. Bullwhip effect
4. Quality management
5. Value chain analysis
6. Measurement and analysis of customer satisfaction
7. Mathematical programming models for supply chain planning, design, and optimization
8. Supply chain integration

9. Future market
10. Commodity markets – food grains
11. Commodity markets – horticultural products
12. Commodity market – dairy products
13. Commodity market – poultry products
14. Fundamental and technical analysis
15. Customer relationship management
16. Case study on warehousing management
17. Case study on logistics management

Course Outcomes

At the end of the course students will be able to

CO1: Apply logistics and purchasing concepts to improve supply chain operations.

CO2: Identify and assess trade off between the three by areas of transportations,

inventory and warehouse.

CO3: Recommendactionable plans and strategies.

CO4: Analyse food grain markets

CO5: Identify effective logistic management system

CO – PO Mapping

	PO1	PO2	PO3
CO1	3		2
CO2	3	2	
CO3		3	2
CO4	3		2
CO5		3	3

References

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Learning **Objectives**

- To inculcate the students a thorough knowledge on various aspects of international trade and intellectual property rights
- To prepare them to meet the challenges of agrl. sector in the present WTO regime

Theory

Unit-I: International trade – concepts

Basic concepts – classical trade theory – introduction to neo-classical trade theory – supply side analysis – opportunity cost: trade under increasing opportunity costs-factor endowments; trade and factor prices – factor price equalization. Demand side analysis; community indifference curves-demand and international trade-integration of demand and supply-offer curve analysis - general equilibrium-equilibrium in product and factor markets.

Unit-II: Theories in international trade

Application of trade theory-terms of trade – supply and demand shifts-technological change – factor supplies and trade; factor intensities; transport costs, location – trade with many goods and countries; Leontief paradox; human skills; technological gaps-product cycle – scale economies. Trade policies – instruments, impacts of trade policies – economic integration and regional groupings-introduction to international finance-balance of trade and balance of payments-foreign exchange market – transactions, determination of foreign exchange rates.

Unit-III: International trade organizations

International economic organizations – IMF, World Bank, IDA , IFC, ADB – their role in international trade and terms of trade-international trade agreements. Uruguay round – GATT, WTO – their role in promotion of trade. Agricultural export and import policies of India – role of State Trading Corporation– export promotion organizations-Export Promotion Zones (EPZ) – Agricultural Export Zones (AEZ) – EXIM bank.

Unit-IV: Intellectual property rights – meaning and concepts

Introduction to IPR – benefits of IPR – environment implications of IPR – status of India's IPR registration – TRIPS – WIPO – laws and acts related to IPR – Indian patent act – trademark act – geographical indications of good act – designs act – international intellectual property law – registration of plant varieties and essentially derived variety – license – tribunal – patent office – role of department of industrial policy and promotion - protection of plant varieties and farmers' rights act.

Unit-V: IPR in agriculture

IPR in agriculture – patents and copyrights – patents – patent system in India – designs – copyrights – trademark – geographical indications – India's plant variety bill – patent disputes – complete specification – bio piracy – patenting of microbiological inventions – bio safety protocol – economic implications of genetically modified organisms. **Current streams of thought**

Practical

Assessing the performance and export marketing strategies for fruits and vegetables, cut flowers, tea, coffee and medicinal and aromatic plants – market composition of commodity export – major destination and export instability – Markov chain analysis - export competitiveness – prices and non-price factors – import restraint and their impact on export – visiting a manufacturing center and observe production, packaging, quality control, labelling, method of pricing etc. –procedures for applying the patent application – case studies on basmati rice, turmeric, Bt cotton, Darjeeling tea, Kondapalli toys, Madurai jasmine etc. – direction of trade – India's foreign trade policy

Theory lecture schedule

1. International trade – basic concepts
2. Classical trade theory
3. Introduction to neo-classical trade theory
4. Supply side analysis: opportunity cost- trade under increasing opportunity costs
5. Factor endowments; trade and factor prices – factor price equalization
6. Demand side analysis; indifference curves-demand and international trade
7. Integration of demand and supply-offer curve analysis
8. General equilibrium-equilibrium in product and factor markets
9. Theories in international trade
10. Application of trade theory-terms of trade
11. Supply and demand shifts-technological change
12. Factor supplies and trade; factor intensities
13. Transport costs, location
14. Trade with many goods and countries - Leontief paradox
15. Human skills, technological gaps
16. Product cycle – scale economies
17. Trade policies – instruments, impacts of trade policies
18. Mid Semester Examination
19. Economic integration and regional groupings
20. Introduction to international finance - balance of trade and balance of payments
21. Foreign exchange market – transactions, determination of foreign exchange rates
22. International trade organizations
23. International economic organizations – IMF, World Bank
24. IDA , IFC, ADB – their role in international trade and terms of trade
25. International trade agreements - Uruguay round – GATT
26. WTO – their role in promotion of trade
27. Agricultural export and import policies of India – role of State Trading Corporation
28. export promotion organizations - Export Promotion Zones (EPZ) – Agricultural Export Zones (AEZ) – EXIM bank
29. Intellectual property rights – meaning and concepts– benefits of IPR – environment implications of IPR

30. Status of India's IPR registration – TRIPS – WIPO – laws and acts related to IPR
31. Indian patent act – trademark act – geographical indications of good act – designs act – international intellectual property law
32. Registration of plant varieties and essentially derived variety – license – tribunal – patent office – role of department of industrial policy and promotion - protection of plant varieties and farmers' rights act
33. IPR in agriculture – patents and copyrights – patents – patent system in India – designs – copyrights – trademark – geographical indications – India's plant variety bill – patent disputes – complete specification
34. Bio piracy – patenting of microbiological inventions – bio safety protocol – economic implications of genetically modified organisms.

Practical schedule

1. Assessing the performance and export marketing strategies for fruits and vegetables
2. Export performance of cut flowers
3. Export performance of tea, coffee
4. Export performance of medicinal and aromatic plants
5. Market composition of commodity export
6. Major destination and export instability
7. Markov chain analysis
8. Export competitiveness – prices and non-price factors
9. Import restraint and their impact on export
10. Visiting a manufacturing center and observe production, packaging, quality control, labeling, method of pricing etc.
11. Procedures for applying the patent application
12. Case studies on basmati rice, turmeric
13. Case studies on Bt cotton, Darjeeling tea
14. Case studies on Kondapalli toys, Madurai jasmine
15. Role of export promotion organisations
16. Direction of trade
17. India's foreign trade policy

Course Outcomes

At the end of the course students will be able to

CO1: Understanding the international business and management

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
CO1			2
CO2	2		3
CO3		3	
CO4	2		3
CO5		3	3

References

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9. RituDubey., (2007), *Global Marketing and Agricultural Exports*, Regal Publications, New Delhi.
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Objective

- This course is aimed for students to get an exposure ons concepts of statistical methods, probability distribution and statistical inference.

Theory

Unit–I: Probability

Theory of probability, Random variable, mathematical expectation. Discrete and continuous probability distributions. Binomial, poisson, negative binomial, normal distribution and their applications.

Unit–II: Sampling Methods

Concept of sampling; SRS, stratified sampling, cluster sampling, PPS sampling, multistage sampling. Concept of sampling distribution chi-square, t, F. Tests of significance based on normal, t, Y^2 and F.

Unit–III: Correlation and Regression

Correlation and Regression: Simple and multiple linear regression model, estimation of parameters, predicted values and residuals. Partial correlation and multiple correlations, rank correlation, test of significance of correlation coefficient and regression coefficients.

Unit–IV: Non-Parametric Tests

Non-parametric tests - single and two sample problems. Friedman two-way ANOVA. Distribution free tests - advantages - disadvantages - run test - test for randomness - Median test - Sign test - Mann Whitney U test for two samples - Kolmogrov Smimov one sample and two sample test, Kruskal - Walli's test - chi-square - correlation coefficients - regression coefficients - Standard Error - Significance tests - Student's t and F distribution.

Unit–V: Discriminant Function

Hotelling's T^2, classification problems, discriminant function. D^2 statistics and its applications. Principal component analysis, canonical correlations. Cluster analysis and factor analysis. Simulation methods: Resampling methods jack knife and the bootstrap. MCMC methods and Gibbs sampler.

Practical

Estimation-Determination of sample size in simple random sampling-stratified random sampling-Cluster Sample-selection- Estimation-Multistage sampling-Selection-Estimation of parameters in two stage sampling-Determination of sample size in two stage sampling-Application of double sampling-Method of least squares-Moving averages-Kolmogrov-

Smirnov test-Rank correlation coefficient-Forecasting using regression technique-Construction of index numbers of Agrl. production.

Theory Lecture Schedule

1. Theory of probability
2. Random variable
3. Mathematical expectation
4. Discrete and continuous probability distributions
5. Binomial
6. Poisson
7. Negative binomial
8. Normal distribution and their applications
9. Concept of sampling
10. SRS, stratified, cluster, PPS, multistage sampling
11. Concept of sampling distribution chi-square, t, F.
12. Tests of significance based on normal, t, Y^2 and F.
13. Correlation and Regression
14. Simple and multiple linear regression model
15. Estimation of parameters
16. Predicted values and residuals
17. **Mid semester examination**
18. Partial correlation
19. Multiple correlations
20. Rank correlation
21. Test of significance of correlation coefficient
22. Regression coefficients.
23. LS method
24. MLE method
25. Friedman two-way ANOVA
26. Hotelling's T^2
27. Discriminant function
28. D^2 statistics and its applications.
29. Principal component analysis
30. Canonical correlations
31. Cluster analysis and factor analysis.

32. Re-sampling methods jack knife and the bootstrap
33. Simulation methods
34. MCMC methods and Gibbs sampler

Practical Schedule

1. Sampling techniques - Simple random sampling - Estimation of mean and variance.
2. Cluster sampling, quota sampling, population proportionate to size sampling
3. Estimation of mean and variance in cluster sampling
4. Stratified sampling
5. Estimation of total and variance of total in two stage sampling with SRS at both stages
6. Estimation of moving trend by Moving average method and least square method
7. Estimation of seasonal variation by simple average method
8. Seasonal variation by ratio to trend method, Seasonal indices by link relative method
9. Non-parametric statistics an introduction
10. Run test and Sign test
11. Kolmogrov Smirnov one sample test and two sample test
12. Mann-Whitney U test and Kruskal Walli's test
13. Correlation coefficients of tests of significance
14. Regression coefficients of tests of significance
15. Construction of different weighted index numbers-Reversal test
16. Principal Component Analysis (PCA)
17. Cluster Analysis

Course Outcomes

CO1: It would enable the research students of agricultural sciences to understand the basic concepts of statistical methods.

CO2: To enhance the students' knowledge on fundamentals of sampling techniques and data analyses to make decision in the face of uncertainty.

CO3: It would give the exposure to perform the cause and effect relationship analysis to study the impact and influence of study variables are to be considered.

CO4: The students would be enriched their knowledge on non- parametric statistical analysis.

CO5: It would facilitate the students to pursue the advanced statistical analysis tools to apply in their research work.

CO – PO Mapping

	PO1	PO2	PO3
CO1			2
CO2	2		
CO3		3	2
CO4	2		3
CO5	2	3	3

References

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