MANDSAUR UNIVERSITY, MANDSAUR (M.P.)

Introduction

The 'Student READY' programme [Rural Entrepreneurship Awareness Development Yojana] was launched by the ICAR with thrust on RAWE, AIA and EL programmes.

RAWE programme is aimed at to reorient the graduates in agriculture to real life rural settings and develop awareness among them regarding the problems of farmers and rural population, as well as inculcate a professional attitude in handling real life issues. This is a unique opportunity for the students to work with farmers at their farms and identify and analyze various production, protection and marketing constraints. In addition, the programme is expected to develop the competence of students in the areas of technological, managerial and communication skills. RAWE, AIA and EL programmes may ensure employability and develop young entrepreneurs for the emerging knowledge-intensive agriculture. The programmes are mandatory prerequisites for the award of degree as well as may ensure hands-on-experience and practical training.

The components offered to B.Sc. (Hons.) Agriculture are:

7th semester

- Rural Agricultural Work Experience (RAWE)
- In-Plant Training/Agro-Industrial Attachment (AIA)

RAWE and AIA programmes shall be undertaken by the students for a total duration of 20 weeks with a weightage of 0 + 20 credit hours. It will comprise of general orientation and on-campus training of students by different faculties, followed by Village Attachment/Unit Attachment in the University/College/KVK/Research Station, field visits and plant clinic. The students would be attached with agro-industries to get exposure to industrial environment**.**

8th semester

- Experiential Learning (EL) Programme/ Hands on Training (HOT)

The EL programme shall be offered for a total duration of 24 weeks with a total weightage of 0 + 20 credit hours. EL is meant to build skills in project development and execution, decision making, individual and team coordination, approach to problem solving, accounting, marketing and resolving conflicts, etc. The programme has end-to-end approach. Carefully calibrated activities move participants to explore and discover their own potential. Both activities and facilitation play a critical role in enhancing team performance**.**

7th Semester

Rural Agricultural Work Experience (RAWE) &Agro-Industrial Attachment (AIA)

Credit Hours: 20 (0 + 20)

Component- I

Rural Agricultural Work Experience (RAWE) Credit Hours: 16 (0 + 16)

The RAWE helps the students primarily to understand the rural situations and enable them to gain rural experience. This may boost the student's confidence and enhance their on-farm problem solving abilities in real life situations, especially when in contact with farmers. Also, the students may understand the status of various agricultural interventions adopted by the farmers, prioritize farmer's problems and develop skills & attitude of working with farm families for overall rural development.

Objectives

1. To provide an opportunity to the students to understand rural setting in relation to the agriculture and allied activities;
2. To make the students familiar with socio-economic conditions of farmers and their problems;
3. To impart diagnostic and remedial knowledge to the students relevant to the real field situations through practical training;
4. To develop communication skills in students using extension teaching methods in the transfer of technology;
5. To develop confidence and competence in students to solve agricultural problems;
6. To acquaint students with extension and rural development programmes.

Component- II

Agro-Industrial Attachment (AIA) Credit Hours: 4 (0 + 4)

Technology and globalization are ushering an era of unprecedent change. The need for change and innovation is immense. To enrich the practical knowledge of students, in-plant/AIA training shall be mandatory in the 7th semester for a period of 3 weeks. In this training, the students will have to analyze a problem in industrial perspective and submit their reports to the Department. Such in-plant/AIA trainings will provide industrial exposure to the students as well as develop their career in high tech industries. In-plant training is meant to correlate theory and actual practices in industries. It is expected that the sense of running an industry may be articulated in right perspective through this type of industrial attachment mode.

Objectives

1. To expose the students to industrial environment;
2. To familiarize the students with various materials, machines, processes, products, etc, and their applications along with relevant aspects of shop management;
3. To make the students understand the psychology of workers, and approach to problems along with the practices followed at factory;
4. To understand the scope, function and job responsibilities in various departments of an organization;
5. To expose students to various aspects of entrepreneurship.

Duration-wise activities to be performed during RAWE & AIA

S. No.	Rural Agricultural Work Experience & Agro-industrial Attachment (RAWE & AIA)		
	Activities	**No. of weeks**	**Credit hours**
1.	General orientation & On-campus Training by different faculties	**1**	
2.	a) Village attachment b) Unit Attachment in Univ. /College/KVK/ Research Station Attachment c) Plant Clinic	**8** **5** **2**	**16**
3.	Agro-Industrial Attachment	**3**	
4.	Project Report Preparation, Presentation and Evaluation	**1**	**4**
	Total	**20**	**20**

RAWE activities

S. No.	Activity	Duration
1	Orientation & On-campus Training	1 weeks
2	Survey of Village	15 weeks
3	Agronomical Interventions	
4	Plant Protection Interventions	
5	Soil Improvement Interventions (Soil sampling and testing)	
6	Fruit and Vegetable Production Interventions	
7	Food Processing and Storage Interventions	
8	Animal Production Interventions	
9	Extension and Transfer of Technology Activities	

AIA Activity

- The students shall be placed in Agro- and Cottage-Industries for three weeks.
- The industries include Seed/Sapling Production, High-tech Agriculture Units, Pesticide Industry, Post-Harvest-Processing, Value Addition Unit, Agri-Finance Institutions, etc.

Eligibility for registration and other requirements

- The students pursuing B.Sc. Ag. (Hons.) degree programme at the Department of Agriculture in Mandsaur University shall be eligible to register RAWE & AIA programme at the end of 6th semester.
- A student will be kept under the administrative control of the Head of the Department no sooner he joins this programme. The Head of the Department will ensure that all the rules and regulations of ICAR/MU are strictly adhered to.
- A student will devote his whole time to the approved training and will not be allowed to accept or hold any another appointment/assignment.
- If a student shows unsatisfactory progress during the course of his training or gives up this programme before its completion without any prior permission from the Head of the Department or is irregular in attendance, the Head of the Department will cancel the admission of concerned student to the RAWE programme.
- The attendance of 85 per cent is compulsory for the students to accomplish RAWE programme, failing which they will have to repeat the programme.
- The students registered for RAWE shall not be allowed to leave the venue of their placement without written permission of Coordinator RAWE or Head of the Department of Agriculture. Permission will be granted only in emergency cases.
- The Head of the Department is expected to bring to the notice of the Council any adverse report that may have been necessitated due to habitual irregularity, misbehavior, participation in strikes, etc. or any unlawful activity suggesting suspension/ cancellation of his/her admission.
- Students who have cleared all the courses up to 7th Semester shall be eligible to take up the ELP/HOT. In special cases the student(s) having backlog/repeat courses may be allowed to take up the EL programme subject to the permission from competent authority of the University.

Monitoring

1. An Advisory Committee shall be constituted to monitor the successful implantation of RAWE programme. The Advisory Committee shall comprise of the following members:
    a. Head of the Department or his nominee (RAWE Coordinator).
    b. SMS (Subject Matter Specialist) from the Department, serving as Supervisor to the student's group during village/industrial attachment.
    c. Any other member as deemed necessary component-wise by the Department (i.e. a farmer, KVK scientist, Industrial staff, etc. wherever a student is attached).

   The Chairman of the concerned committee will be the overall in-charge of the programme.
2. The HR Department of MU will facilitate the arrangement and other transitional details from the Department of Agriculture to the Village Attachment/ AIA/KVK/Research Station etc. and vice versa.
3. The Chairmen of the Advisory Committee shall convene meeting of all students attached to the Village/KVK/Station/Unit at least once in a month and discuss the progress of the students.
4. The students will be required to maintain a daily diary. They shall produce their diaries to the visiting teachers for inspection and for recording their observation and suggestions. The visiting teachers shall verify the work and attest the diary.
5. The Advisory Committee shall monitor the activities of each individual student.
6. Students will be required to submit a final comprehensive report on or before the date specified in the academic calendar.

Evaluation

1. Students shall be evaluated component-wise under village attachment/agro-industrial attachment.
2. Department of Agriculture will designate a Coordinator for 'RAWE & AIA' and component-wise Evaluation Committees. These Committees will evolve a method of evaluation depending upon the components undertaken giving due weightage to the observations made by the concerned Committee of RAWE programme.
3. Since the credit hours allotted to the RAWE & AIA' programme are gradial, the minimum condition of attendance as indicated earlier and grading system (as per university norms) will apply to the programme.
4. It is expected that at the end of 'RAWE & AIA' programme, the students should gain competency for entrepreneurship. The Evaluation Committee must ensure the percent increase in competency at the end of the programme.

5. Each activity will be allotted a maximum of 50 marks and will be awarded by considering the satisfactory performance of student i.e. the work done in respective subject during village attachment with the host farmer, observation of teachers (recorded during visits), discipline, behavior, punctuality, enthusiasm, healthy relation with the host farmer/villagers and any other significant achievements of the student. All the course teacher will evaluate the comprehensive report, submitted by the student and conduct viva-voce examination as per their course.

S. No.	Activity	Credit(s)	Maximum Marks
	Component-I Rural Agricultural Work Experience (RAWE)		
1	Survey of Village	0 + 1	50
2	Agronomical Interventions*	0 + 3	50
3	Plant Protection Interventions	0 + 2	50
4	Soil Improvement Interventions (Soil sampling and testing)	0 + 2	50
5	Fruit and Vegetable Production Interventions*	0 + 3	50
6	Food Processing and Storage Interventions	0 + 1	50
7	Animal Production Interventions	0 + 1	50
8	Extension and Transfer of Technology Activities	0 + 3	50
	Component-II Agro-Industrial Attachment (AIA)		
9	Agro-Industrial Attachment	0 + 4	50
	Total	**0 + 20**	**450**

*Includes one credit hour of plant clinic

A student registered for RAWE will have to obtain a minimum of 50% marks to pass RAWE. The CGPA will be worked by the University as per the prescribed procedures. A student declared failed shall have to repeat the programme, next year as and when RAWE will be offered.

Implementation of Programme

The students from the Department of Agriculture will be placed in a Village/Research Institution/College/University/KVK/Agriculture-related Government and Non-Government Organization/Cooperative or Agri-financial Organizations. The students will be equally distributed (10-20) depending on the availability of enterprises and innovative host-farmers.

Orientation

The students shall have to report to the Coordinator RAWE programme as per the

prescribed schedule of work for orientation immediately after registration. The Heads of the Department will ensure that the students are well exposed to the latest practices/ technologies available in their respective fields before undergoing training on various interventions and extension & transfer of technology activities.

Programme of Work

The RAWE & AIA programmes comprise of nine components as under:

1. Survey of Village
2. Agronomical Interventions
3. Plant Protection Interventions
4. Soil Improvement Interventions (Soil sampling and testing)
5. Fruit and Vegetable Production Interventions
6. Food Processing and Storage Interventions
7. Animal Production Interventions
8. Extension and Transfer of Technology Activities
9. Agro-Industrial Attachment

1. Survey of Village

The students shall first take-up a thorough survey of the allotted village as per the prescribed scheduled. He will collect the data on overall condition of the village, resource endowment and its utilization, problems of labour, employment avenues and other important socio-economic aspects as detailed in the schedule provided to him by the Advisory Committee. The student shall also conduct a PRA (participatory rural appraisal) of the village.

2. Agronomical Interventions

In agronomical interventions, the students shall be exposed to various crops and different agronomical practices in the farmer's field. He/she will also involve himself/herself in production technology and management of various crops raised by the host farmer. The student shall maintain a record of work done in the prescribed sample proforma.

3. Plant Protection Interventions

Under this intervention, the students will be exposed to various plant diseases, insect-pests and physiological disorders prevalent in the area and monitor the plant protection measure followed by farmers. They shall also prescribe remedial measures as and when needed. The students shall record their observations as well.

4. Soil Improvement Interventions (Soil sampling and testing)

Under this component the students shall be involved in soil related activities i.e. soil testing, collection of soil samples by using geo-positioning system (GPS) and the use of soil health cards for fertilizer schedule. The student also shall gain experience on integrated nutrient management, soil quality improvement, problematic soils and their reclamation, natural resource management, role of bio-fertilizer, vermi-compost, green manures in improving soil health, water management, etc.

5. Fruit and Vegetable Production Interventions

In fruit and vegetable crops, the students shall involve themselves in field operations *viz*., seedbed preparation, nursery management, propagation, etc. along with their host farmers. The student shall maintain a record of work done and submit report at the end of semester in prescribed sample format.

6. Food Processing and Storage Interventions

Students shall involve themselves to study and collect the information related to the methods of food processing and preservation, importance of processing in fruits and vegetables, spices, condiments and flowers, packaging of horticultural commodities, methods of storage, post-harvest management, quality control in fruit and vegetable processing industry, methods of storage, traditional and modern storage structures, indigenous technological knowledge (ITK) used for food storage.

7. Animal Production Interventions

Under this intervention, the students shall collect the information on various aspects of livestock's i.e. daily maintenance, feeds used, feed expenses, milk/meat production, milk disposal, dairy products, egg, birds, etc.

8. Extension and Transfer of Technology Activities

The students shall involve themselves in extension-related activities i.e. participatory rural appraisal, identification of agricultural problems of village and training needs of farmers, conducting demonstrations of improved practices, organization of short duration farmers training camp, field visits and agricultural exhibitions, study of on-going rural and agriculture development programme in the village, arrange farmers meeting to discuss agricultural aspects, visit to various village institutions and study their role in development programmes, motivate farmers through various extension teaching methods, documentation of success stories, etc.

Each student shall prepare a report with respect to the activities indicated above and submit it to the Chairman of the Advisory Committee for its evaluation. The students shall be given an opportunity to acquaint themselves with on-going programme and activities of research, development, marketing, extension agencies and organizations in the village. The students will submit report on the institutions he/she has visited.

9. Agro-Industrial Attachment

During Agro-Industrial Attachment for 3 weeks period the students shall involve themselves in the activities and tasks *viz.*, acquaintance with industry and staff, study of structure, functioning, objective and mandates of industry, study of various processing units and hands-on trainings under supervision of industry staff, ethics of industry, employment generated by the industry, contribution of industry promoting environment, learning business network including outlets of the industry, skill development in all crucial tasks of industry, documentation of activities and task performed by the students.

8th Semester

Component-III

Experiential Learning (EL) Programme/Hands On Training (HOT)

Credits Hours: 20 (0 + 20)

This programme will be undertaken by the students in 8th semester for a total duration of 24 weeks with a weightage of 0 + 20 credit hours. The students will register in any of two identified modules of 0 + 10 credit hours each. A student undergoing EL/HOT may be allowed to register a maximum two courses only.

Objectives

1. EL to provide a student an excellent opportunity to develop analytical and entrepreneurial skills, and knowledge through meaningful hands on experience, confidence in their ability to design and execute project work;
2. To promote professional skills and knowledge through meaningful hands on experience;
3. To build confidence and to work in project mode;
4. To acquire enterprise management capabilities;

A separate certificate shall be issued to the students after successful completion of Experiential Learning programme/Hands on Training (HOT) course. Allotment of EL/HOT programmes amongst students to different modules shall strictly be done on the basis of merit of the students at the end of 5th semester.

Experiential Learning (EL) Programme / Hands on Training (HOT)

S. No.	Module	Credit Hr.
1.	Module – I	0 + 10
2.	Module – II	0 + 10
	TOTAL	**20 (0 + 20)**

Modules for Skill Development and Entrepreneurship Programme [Experiential Learning Programme/Hands on Training]

Module No.	Course No.	Title of the module	Credits hours
Module – I	GPB-060	Seed Production and Technology	0 + 10
Module – II	APP-050	Mushroom Cultivation Technology	0 + 10
Module – III	APP-060	Production Technology for Bio-agents and Bio-fertilizer	0 + 10
Module – IV	SAC-040	Soil, Plant and Water Testing	0 + 10
Module – V	ENT-040	Commercial Beekeeping	0 + 10
Module – VI	AHP-020	Poultry Production Technology	0 + 10
Module – VII	HRT-060	Commercial Horticulture	0 + 10
Module – VIII	HRT-070	Floriculture and Landscaping	0 + 10
Module – IX	HRT-080	Food Processing	0 + 10
Module – X	SAC-050	Agriculture Waste Management	0 + 10
Module – XI	AGR-110	Organic Production Technology	0 + 10
Module – XII	HRT-090	Nursery Management	0 + 10

MODULES TO BE OFFERED AND THEIR DETAILS

Module - I	**GPB-060 Seed Production and Technology**	**0 + 10**

Germination test, purity percent and quality parameters; Generation system of seed multiplication; Identification of suitable area/location for seed production; Ear to row method and nucleus seed production; Major characteristics of released and notified varieties; Hybrid seed production technology of important crops.

Module - II	**APP-050 Mushroom Cultivation Technology**	**0 + 10**

Construction cultivation room/structure and disinfection; Compost preparation and pasteurization; Procurement of mother culture and spawn preparation; Procurement of casing soil and preparation for production; Mushroom seeding; Casing with soil and maintenance, Harvesting, processing, grading, packing, marketing and cost economics of mushroom culture.

Module - III	**APP-060 Production Technology for Bio-agents and Bio-fertilizer**	**0 + 10**

Isolation and pure culture establishment of bio-fertilizers and bio-pesticides; Culture methods and substrates; Scale of methods for bio-fertilizers and bio-agents; Substrate preparation and mixing techniques; Quality analysis of bio-fertilizers and bio-pesticides; Testing the final product in small scale level; Storage, marketing and cost analysis of bio-fertilizers and bio-pesticides.

Module - IV	**SAC-040 Soil, Plant and Water Testing**	**0 + 10**

Collection and soil water and plant sample for analyses; Soil profile study; Bulk density, particle density, porosity, water holding capacity and soil texture; Estimation of soil moisture by gravimetric and volumetric methods; Lime requirement, Organic carbon, pH, EC and available major and micronutrient in soil and plant sample; Leaf area by leaf area meter; Relative water content of leaf; Specific leaf weight; Chlorophyll content of leaf, Irrigation water quality analysis; Measurement of soil water potential; Water flood measurement.

Module - V	**ENT-040 Commercial Beekeeping**	**0 + 10**

Beneficial insect; Scope of apiculture; Honey bee colony, different bee hives and apiculture equipment; Summer and winter management of colony; Honey extraction and bottling. Study of pests and disease of honey bees; Specifies of honey bees; Bee pasturage, Honey composition and value, Bee crop and tissue.

Module - VI	**AHP-020 Poultry Production Technology**	**0 + 10**

Important Indian and foreign breeds of poultry; Breeding management of chick, grower and layer birds; Incubation and hatching, management of incubator during incubation; Care and management of chicks, grown up birds; Equipment, feeders, drinker systems, housing programs; Farm knout, house design, orientation of shed, cross ventilation, lighting systems; Floor space requirements, brooder space, water space and feeding space at different age of broilers; Random weighing of chicks; commonly used major feed ingredients identification; Feed manufacturing, preparation of feed for different age groups

of broilers; Different methods of injection and procedure; Structure of poultry eggs, selection and care of hatching egg; Disease of poultry; Vaccination schedule.

Module - VII	**HRT-060 Commercial Horticulture**	**0 + 10**

Nursery production of fruit crops; Raising of rootstocks, grafting and budding of rootstocks; Management of grafted plants; Plant certification, packaging and marketing, quality control; Nursery production of ornamentals; Production of plantlets; Production of potted plants, management and maintenance, sale and marketing; Protected cultivation of vegetables and flowers; Nursery raising/procurement and transplanting, management and maintenance of the crop, postharvest handling, quality control and marketing.

Module - VIII	**HRT-070 Floriculture and Landscaping**	**0 + 10**

Preparation of project report, soil and water analysis, preparation of land and layout; Production and management of commercial flowers; Harvesting and post-harvest handling of produce; Marketing of produce, cost analysis, institutional management; Visit to flower growing areas and export house, attachment with private landscape agencies; Planning and designing, site analysis, selection and use of plant material for landscaping; Formal and informal garden, features, styles, principles and elements of landscaping; Preparation of landscape plans of home gardens, farm complexes, public parks, institutions, high ways, dams and avenues; Making of lawns, use of software in landscape; Making of bouquets, button hole, wreath, veni and gazaras, car and marriage palaces; Dry flower technology (identification of suitable species, drying, packaging and forwarding techniques).

Module - IX	**HRT-080 Food Processing**	**0 + 10**

Planning and execution of a market survey; Preparation of processing schedule; Preparation of project module based on market information; Calculation of capital costs; Source of finance, assessment of working capital requirements and other financial aspects; Identification of sources for procurement of raw material; Production and quality analysis of fruits and vegetables products at commercial scale; Packaging, labeling, pricing and marketing of product.

Module – X	**SAC-050 Agriculture Waste Management**	**0 + 10**

Analysis and design of systems for vermi-composting and compost; Collection, storage, treatment, transport and utilization of disposable organic water and waste waters; Operating system and laboratory evaluation of materials and processes; Mass and energy balance for process systems, water and water analysis; Physical, chemical and biological basis for waste treatment and recycling; Waste treatment systems; Management of dead animals rendering plants, incineration, disposal pits; Gaseous waste treatment.

Module - XI	**AGR-110 Organic Production Technology**	**0 + 10**

Concept and principles of organic production technology; Role of organic farming in national economy; Management of soil health with organic sources and nutrient recycling, green manuring crops, biomass production and nutrient accumulation by green manure crops; Management of insect-pest, weeds and diseases under organic production; Organic production of major crops – cereals, pulses, oilseeds, fodder, vegetable and fruit crops; Vermi-compost production methodology; Harvesting, storing and packing of vermin-compost; Management of residue under organic farming; Aerobic and anaerobic methods of compost making; Nursery raising of important agro-forestry and shelter belts tress; Indigenous technology knowledge (ITK); Quality analysis of organic inputs and products; Relative economics of organic production programmes; Socio-economic impacts, marketing and export potential of organic products; Quality standards, inspection, certification, labeling and accreditation procedures of organic farm produce; Visit to a nearby modern organic farm.

Module - XII	**HRT-090 Nursery Management**	**0 + 10**

Nursery raising in field, vegetable, flower and fruit crops; Seed treatments for breaking dormancy and inducing vigorous seedling growth; Media for nursery bed preparation and seed sowing; Nursery techniques, propagation of plants in nursery beds, pot and mist chamber; Propagation/nursery structures, humidifiers, greenhouses, glasshouses, hot beds, cold frames, poly-houses, nursery tools, implements; Growth regulators in seed and vegetative propagation; Nutrient and insect-pest/disease management in nursery; Propagation through specialized organs, corm, runners, suckers; Micropropagation, hardening of plants in nurseries; Maintenance of nursery records; Visit to tissue culture laboratory/ public and private nurseries.