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Meeting 8

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Circular

Date	17.05.2025	DOCID	DOC202505170007
Subject	Agenda for Board of Studies Meeting for Agriculture		

The meeting of the Board of Studies for Agriculture will be heldon **20 May, 2025 at 11:00 AM**in room number 16, Admin Block RNB Global University,Bikaner to discuss the following agenda:

Item No.	Agenda
Item No. 1:	Review of the Programme Scheme of B.Sc. (Hons) Agriculture (Interchange the subjects in different semester).
Item No. 2:	To discuss the Programme Scheme of M.Sc. Agriculture-Genetics and Plant Breeding.
Item No. 3:	Guidelines and Guide allotment to M.Sc. Ag.(Agronomy) students
Item No. 4:	Suggestions for the Industrial tie ups.
Item No. 5:	Any other item with the permission of the Chair.

RNB Global University Dean Bikaner

Dr. B.D. Sharma
(Convener)

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Date	20-05-2025	No.	DOC202505200008
Subject	MOM of Board of Studies Meeting of Agriculture		

MINUTES OF THE BOARD OF STUDIES MEETING FOR AGRICULTURE HELD AT ROOM NO. 16, ADMIN BLOCK, RNB GLOBAL UNIVERSITY, ON 20th May, 2025 AT 11:00AM

The following members were present:

S.No.	Name	Designation
1.	Prof B D Sharma	Convener
2.	Dr. Ravi KishanSoni	Member
3.	Dr. Ravi Kumar Bishnoi	Member
4.	Dr. Data Ram Kumhar	External Member
5.	Mr. Dharmveer Singh Rathore	External Member (Industry)

The meeting of the Board of Studies of the Agriculturewas held 20th May, 2025 AT 11:00 AMin room number 16, Admin Block, RNB Global University, Bikaner.

Prof B D Sharma, Convener, of the Board of Studies, welcomed all the members to the meeting. After confirming the quorum, the convenor presented the Action Taken Report of the last meeting held on 08-10-2024 and Committee confirmed the ATR of last meeting.

The following agenda items were taken up for discussion:

Item No. 1: Review of the Programme Scheme of B.Sc. (Hons) Agriculture (Interchange the subjects in different semester).

The ProgrammeScheme of B. Sc. (Hons) Agricultureof batch 2024-28 was revised as per 6thDeans' Committee recommendation except interchangeof one course i.e. Introductory Agro-forestry which was in V semester kept in I semester and course Farming System and Livelihood of I semester kept in V semester. From the batch 2025-29, School of Agriculture has proposed the Course entitled Introductory Agro-forestry in V semester and Farming

system and Livelihood in I semester (As per 6th Dean's Committee report). The matter was discussed and Committee recommends that Programme scheme may be prepared as per the 6th Deans report for 2025-29 batch.

Item No. 2: To discuss the Programme Scheme of M.Sc. Agriculture(Genetics and Plant Breeding).

The committee deliberated on the proposed Programme Scheme for the M.Sc. Agriculture – Genetics and Plant Breeding. The members reviewed the course structure, eligibility criteria, curriculum design, and relevance of the program in light of current academic and agricultural research trends.

After thorough discussion, the committee acknowledged the academic and practical importance of introducing this specialization to meet the growing demand for skilled professionals in the field of Genetics and Plant Breeding. Thus Committee recommends the opening of Master's degree in the Genetics and Plant Breeding programme in the School of Agriculture following the ICAR guidelines.

Item No. 3: Guidelines and Guide allotment to M.Sc. Ag. (Agronomy) students.

The committee discussed the process and guidelines for the allotment of guides to M.Sc. Agriculture (Agronomy) students. The discussion included the usage and purpose of the **White Form** (for guide approval) and **Yellow Form** (for guide allotment) as part of the formal procedure.

The committee reviewed the list of faculty members eligible to serve as guides based on qualifications, subject specialization, and availability.

Proper files of each student should be maintained in the Dean Research Office including the white form, green form, synopsis, *etc.* The Committee recommends that non accredited faculty members in the School of Agriculture may be accredited for teaching and guidance purposes following the standard guidelines. The Committee was also in the opinion that suitable faculty members from those institutions whose RNBGU has the MOUs can be opted for Co-Research guide for better exposure of the students.

Item No. 4: Suggestions for the Industrial tie ups.

The committee discussed the importance of enhancing practical exposure and industry interaction for students of the School of Agriculture. It was noted that industrial training plays a crucial role in bridging the gap between academic knowledge and real-world agricultural practices.

During the discussion, members emphasized the need to establish collaborations with local industries, agribusiness firms, seed companies, fertilizer and pesticide manufacturers, and food processing units. These partnerships will provide students with valuable hands-on training, internships and field experience during the course of their graduation.

Item No. 5: Any other item with the permission of the Chair.

No other items were brought forward. The meeting concluded with thanks to and from the Chair.

RNB Global University Dean Bikaner

Convener

Prof B D Sharma

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ATR –7th Meeting

The 7th meeting of the Board of Studies for School of Agriculture was held on 08-10-2024, in room number 16 Admin Block RNB Global City, Ganganagar Road, Bikaner at 11.00 A M.

SN	Item No.	Agenda	Action Taken
1.	1	Confirmation of the ATR of the 4th BoS meeting	ATR of the Proceedings of the meeting held on 12-06-2024 are confirmed
2.	2.	Implementation of 6th Deans' Committee Report for B.Sc. (Hons) Agriculture	The programme scheme for B.Sc. (Hons) Agriculture has been revised as the 6th Deans' Committee for batch 2024-28.

Convener
Dean
RNB Global University
Bikaner

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Attendance Sheet

Meeting	Board of Studies		
School /Forum/Etc	Basic and Applied Sciences		
Date	20-05-2025	Meeting No:	8
Venue	Room Number 16, Admin Block, RNBGU	Time	11:00 AM

S. No.	Name	Signature
1.	Prof B D Sharma	
2.	Dr. Ravi Kishan Soni	
3.	Dr. Ravi Kumar	
4.	Dr. Data Ram Kumhar	
5.	Mr. Dharmveer Singh Rathore	

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Course programme of Post Graduate Students
(All entries must be typed)

1. Degree in which admitted: -**M.Sc. (Ag)** Sub: -**Agronomy** Faculty: - **Agriculture**
2. Name of the Student in full: -
3. Father's Name: -
4. College of admission: -
5. Semester & Year of admission:- Categories: -
6. Date of Registration:- Enroll. No: -
7. Permanent address (brief):-
8. Institution last attended:-
9. Date & Place of Birth:- Citizenship:-
10. Qualifying degree: Aggregate % or OGPA:
11. Employer's name, if any:
12. Above information is correct.

Signature of student

13. Certified that the academic attainments of the student prior to joining of the aforesaid programme have been assessed properly and the advisory committee recommends the courses mentioned in the form including compulsory, deficient non-credit and or exempted courses:

S.No.	Advisory Committee:	Name & Designation	Accreditation Status	Signature
1.	**Major Advisor:**			
2.	**Member**			
3.	**Member:**			
4.	**Member (Dean Academic's Nominee)**			

FOR OFFICE USE ONLY

1. Date of comprehensive/preliminary. Exam----------OGPA----------
2. Date of submission of thesis----------Date of thesis viva----------
3. Forpreliminary examination, marks in written test----------
4. Title of thesis----------

DEAN, FOBAS

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DEPARTMENT OF AGRONOMY
School of Agriculture
(RNB Global University, Bikaner)
PERFORMA FOR APPROVAL OF ADVISORY COMMITTEE
(To be submitted in quadruplicate)

1. Name of student :
2. Enrolment No. and Date :
3. Enrolment No. :
4. Degree programme :
5. Name of Major Advisor :
6. No. of candidates registered with the Major Advisor including the present one :-
   (a)M.Sc (b) Ph.D.
   Proposed Advisory committee :

S.No.	Name	Designation	Accreditation Status	Signature
1.				
2.				
3.				

Signature of Major Advisor

Recommended and forwarded to the Dean, FOBAS, RNBGU, Bikaner for onward transmission to the Dean, Research, RNBGU, Bikaner for approval.

Head of Department

No. DOC..... Date: .....

Forwarded to the Dean Research, RNBGU, Bikaner for approval of Advisory committee.

DEAN

Nomination of advisor by the Dean, Research, RNBGU, Bikaner

S. No. Name Designation Accreditation Status

1. ....

Approved advisory committee as per PG, Rules **DEAN, Research**

Copy to:

1. The Dean, FOBAS, Bikaner
2. Head Department of SOA, RNBGU, Bikaner
3. Major Advisor .....

DEAN, Research

Detailed Program Scheme

Master of Science in Agriculture

(Genetics & Plant Breeding)

(2025- 27)

DOC202505xxxxxx

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RNB Global City, Ganganagar Road,

Bikaner, Rajasthan 334601

Document Release Notice	
Detailed Program Scheme for All Semesters **Release: Version1.0**	
Name of Program	Master of Science in Agriculture (Genetics & Plant Breeding)
Abbreviated Program Name	M.Sc. Ag. (Genetics & Plant Breeding)
Updated on	May 2025
Approved By	BOS

OVERVIEW

RNB Global University follows Semester System along with Choice Based Credit System as per latest guidelines of University Grants Commission (UGC). Accordingly, each academic year is divided into two semesters, **Odd (July-December) and Even (January-June)**. Also, the university follows a system of continuous evaluation along with regular updating in course curricula and teaching pedagogy. Kindly be noted that Lab Includes: Laboratory work / Field Work/Industry Visits/Practical/Hands on Experience.

Course Scheme

Name of Program	Master of Science Ag. (Genetics & Plant Breeding)
Duration of Program	2 years
Number of Semester	4
Total Credit of Program	73

DETAILED CREDIT STRUCTURE

Year1	**Semester I**	18 credits
	Semester II	17 credits
Year2	**Semester III**	17 credits
	Semester IV	21 credits
	Total Credits	**73 Credits**

SEMESTER WISE COURSE DETAILS

Semester–I

S. No.	Category	Course Code	Course Name	L	T	P	Credits
1.	M	MSPC42100	Principles of Genetics*	2	0	0	2
2.	M	MSPC42101	Principles of Genetics Lab*	0	0	2	1
3.	M	MSPC42102	Principles of Plant Breeding*	2	0	0	2
4.	M	MSPC42103	Principles of Plant Breeding Lab*	0	0	2	1
5.	Mi	MSPC51100	Physiology of Field Crops	2	0	0	2
6.	M	MSPC42104	Seed Production & Certification	1	0	0	1
7.	M	MSPC42105	Seed Production & Certification Lab	0	0	2	1
8.	M	MSPC42106	Breeding Vegetable Crops	2	0	0	2
9.	M	MSPC42107	Breeding Vegetable Crops Lab	0	0	2	1
10.	S	MSAC52100	Statistical methods for applied sciences	3	0	0	3
11.	S	MSAC52101	Statistical methods for applied sciences Lab	0	0	2	1
12.	C	MSAC55100	Library and information services Lab	0	0	2	1
Total				**12**	**0**	**12**	**18**

M: Major course; Mi: Minor course; S: Supporting course; C: Common course

Semester-II

S. No.	Category	Course Code	Course Name	L	T	P	Credits
1.	M	MSPC42150	Fundamentals Of Quantitative Genetics*	2	0	0	2
2.	M	MSPC42151	Fundamentals of Quantitative Genetics Lab*	0	0	2	1
3.	M	MSPC42152	Breeding for Stress Resistance and Climate Change	2	0	0	2
4.	M	MSPC42153	Breeding for Stress Resistance and Climate Change Lab	0	0	2	1
5..	Mi	MSPC51150	Plant Development Biology: Physiological and Molecular Basis	2	0	0	2
6.	Mi	MSPC51151	Plant Development Biology: Physiological and Molecular Basis Lab	0	0	2	1
7.	M	MSPC42154	Molecular Breeding and Bioinformatics*	2	0	0	2
8	M	MSPC42155	Molecular Breeding and Bioinformatics Lab*	0	0	2	1
9.	Mi	MSPC48150	Seed Production of Vegetable Crops	2	0	0	2
10	Mi	MSPC48151	Seed Production of Vegetable Crops Lab	0	0	2	1
11.	C	MSAC55150	Technical writing and communication skills Lab	0	0	2	1
12.	C	MSAC55151	Intellectual property and its management in agriculture	1	0	0	1
Total				**11**	**0**	**12**	**17**

M: Major course; Mi: Minor course; C: Common course

Semester-III

S. No.	Category	Course Code	Course Name	L	T	P	Credits
1.	M	MSPC42200	Germplasm Characterization and Evaluation	1	0	0	1
2.	M	MSPC42201	Germplasm Characterization and Evaluation Lab	0	0	2	1
3.	S	MSAC52200	Experimental Designs	2	0	0	2
4.	S	MSAC52201	Experimental Designs Lab	0	0	2	1
5.	C	MSAC55200	Basic concepts in laboratory techniques Lab	0	0	2	1
6.	C	MSAC55201	Agricultural research, research ethics and rural development programmes	1	0	0	1
7.		DAPE99249	Thesis Research	0	0	20	10
8.	E		Elective course (Non gradial)				
Total				**4**	**0**	**26**	**17**

M: Major course; S: Supporting course; C: Common course; E: Elective course

Semester- IV

S. No.	Category	Course Code	Course Name	L	T	P	Credits
1.		DAPE99299	Thesis Research	0	0	40	20
2.		WHNN99000	Seminar	1	0	0	1
3.	E		Elective course (Non gradial)				
4.			Comprehensive Examination				Non credit
Total				**1**	**0**	**40**	**21**

E: Elective course

Elective courses (Non-gradial)*							
S.No.	Category	Course Code	Course Name	L	T	P	Credits
1.	E	MSPE42100	Crop Breeding II Rabi Crops	2	0	0	2
2.	E	MSPE42101	Crop Breeding II Rabi Crops Lab	0	0	2	1
3.	E	MSPE42102	Crop Breeding I Kharif Crops	2	0	0	2
4.	E	MSPE42103	Crop Breeding I Kharif Crops Lab	0	0	2	1
5.	E	MSPE42104	Breeding For Quality and Special Traits	2	0	0	2
6.	E	MSPE42105	Breeding For Quality and Special Traits Lab	0	0	2	1
7.	E	MSPE42106	Genetic Enhancement for PGR Utilization	1	0	0	1
8.	E	MSPE42107	Genetic Enhancement for PGR Utilization Lab	0	0	2	1
9.	E	MSPE42108	Breeding Fruit Crops	2	0	0	2
10.	E	MSPE42109	Breeding Fruit Crops Lab	0	0	2	1
11.	E	MSPE42110	Breeding Ornamental Crops	2	0	0	2
12.	E	MSPE42111	Breeding Ornamental Crops Lab	0	0	2	1
13.	E	MSPE42112	Varietal Development and Maintenance Breeding	1	0	0	1
14.	E	MSPE42113	Varietal Development and Maintenance Breeding Lab	0	0	2	1
15.	E	MSPE42114	Principles of Cytogenetics	2	0	0	2
16.	E	MSPE42115	Principles of Cytogenetics Lab	0	0	2	1
17.	E	MSPE42116	Mutagenesis and Mutation Breeding	2	0	0	2
18.	E	MSPE42117	Mutagenesis and Mutation Breeding Lab	0	0	2	1
19.	E	MSPE42118	Hybrid Breeding	2	0	0	2
20.	E	MSPE42119	Hybrid Breeding Lab	0	0	2	1
*Student can choose any two elective courses (one in 3rd semester and one in 4th semester)							

E: Elective course

EVALUATION SCHEME - THEORY

The evaluation of the theory paper of M. Sc. Ag. (Genetics & Plant Breeding) program would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessments as follows:

Internal Assessment

The distribution of Internal Assessment Marks is as follows:

Type	Details	Marks
Mid Term	One Mid-term Sessional	25
Marks obtained in various Tests, Assignments, Presentations, Quiz, Tutorials, etc.	Average of marks obtained	20
Academic and Course involvement		5
	TOTAL	**50**

External Assessment

Type	Marks
Theory	50

EVALUATION SCHEME - PRACTICAL

The evaluation of the practical paper of M. Sc. Ag (Genetics & Plant Breeding) program would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessment is as follows:

Internal Assessment

Type	Details	Marks
Marks obtained in various manuals, practical file, participation, any model prepared, output of practical	Average of marks obtained	45
Academic and Course involvement		5
	TOTAL	**50**

External Assessment

Type	Marks
Practical	50

EVALUATION SCHEME –THESIS RESEARCH AND SEMINAR

The evaluation of the Thesis Research of M. Sc. Ag. (Genetics & Plant Breeding) program would be based on External Assessments. Detailed scheme of External Assessments as follows:

Assessment

The distribution of Assessment Marks is as follows:

Type	Details	Marks
Marks obtained Final thesis viva-voce	Average of marks obtained	1000
Research Seminar	Average of marks obtained	50
TOTAL	**1050**	

Evaluation of Thesis Research: Writing a research report (Thesis) on a particular concept or element within the syllabi and present that information in a published form. The procedure helps students gain experience in research, methodology, synthesis, evaluation and communication. The finished piece also illustrates these skills to potential employers after graduation. The M.Sc. Ag. (Agronomy) thesis is meant to shed new light on concepts or methods, perhaps suggesting different crop production models or implications of current aspects of the field applicable in the agriculture industry. Every student needs to take up a thesis project in the 3rd semester and should complete by the end of 4th semester. It carries 30 credits. The projects are mainly oriented

either on Primary Research within certain agro-climatic conditions. The project is to be pursued by him / her under the supervision of an Internal Faculty supervisor, which is to be appointed by the Dean. Prior to starting a research, students must go through the proposal stage, during which students will develop their proposal and have it reviewed by his/her research advisor. The student needs to submit his Project report (Thesis) in 4 copies at least four weeks prior to the commencement of the End Term Examination of the fourth Semester. For the ease of students understanding, Project (Thesis) is evaluated by the external examiner for a total of 100 marks including Presentation & Viva Voce. Marks obtained are later converted into grade & grade points as per the University Examination Policy.

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Detailed Program Scheme

Bachelor of Science (Hons.)

Agriculture

(2025- 2029)

DOCxxx

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RNB Global City, Ganganagar Road,
Bikaner, Rajasthan 334601

Document Release Notice	
Detailed Program Scheme for all Semesters **Release: Version 1.0**	
Name of Program	Bachelor of Science (Hons.) Agriculture
Abbreviated Program Name	B.Sc. (Hons.) Agri.
Updated on	XXXX
Approved By	BOS

OVERVIEW

RNB Global University follows Semester System along with Choice Based Credit System as per latest guidelines of University Grants Commission (UGC). Accordingly, each academic year is divided into two semesters, **Odd (July-December) and Even (January-June).** Also, the university follows a system of continuous evaluation along with regular updating in course curricula and teaching pedagogy. Kindly be noted that Lab Includes: Laboratory work / Field Work/Industry Visits/Practical/Hands on Experience. The curricular and the syllabi are as recommended by the Sixth Deans' Committee of Indian Council of Agricultural Research, New Delhi.

Course Scheme

Name of Program	Bachelor of Science (Hons.) Agriculture
Duration of Program	4 years
Number of Semester	8
Total Credit of Program	**180 + 10 (Online course/ MOOC)**

DETAILED CREDIT STRUCTURE

Year 1	Semester I	21 credits
	Semester II	21 credits
Year 2	Semester III	22 credits
	Semester IV	22 credits
Year 3	Semester V	27 credits
	Semester VI	22 credits
Year 4	Semester-VII	25 credits
	Semester-VIII	20 credits
Total Credits		**180 Credits + 10 (Online course/ MOOC)**

Executive Guidelines of 6th Deans Committee Report

New Education Policy-2020 (NEP-2020) of India proposed many changes in the education system of India, including higher agriculture education system. A national level Committee was constituted by ICAR to develop an implementation strategy to comply with various provisions of National Education Policy (NEP-2020). ICAR constituted the Sixth Deans' Committee to restructure the existing course curricula so as to enable implementation of NEP-2020 in agricultural education. As per the NEP- 2020 recommendations, the Sixth Deans' Committee has incorporated following several new initiatives in the proposed restructured UG curricula.

1.1 Classification of level of courses with targeted outcomes

The courses have been classified as per the level of teaching and also based on targeted outcome.

- The 1st year of the UG programme (NHEQF Level 4. 5) includes the Foundation courses, introductory courses and skills enhancement courses/training in the chosen area, ability enhancement courses. It is aimed that student/s will acquire the basic knowledge in respective disciplines and adequate skill in some selected areas, to enable them for employment/ entrepreneurship.
- The 2nd year (NHEQF Level 5) includes the basic core courses and additional skill enhancement in chosen areas/ courses. It is aimed that the student/s will acquire the higher-level knowledge in respective disciplines and adequate skills in some selected areas, to enable them employment at middle level/ supervisory level or for entrepreneurship.
- The 3rd year includes the advanced core subjects and their practical applications with an objective that the student will have deeper understanding of the subjects and their major application areas.
- The 4th year (NHEQF Level 6) will have the specialization/ elective courses and advanced skill enhancement through project and internship. The student will acquire advanced knowledge and skill in different areas so as to meet the higher order requirements of the society and industry as well as other prospective employers. It will also enable the graduates to become a job provider rather than a job seeker through establishment of enterprises in concerned fields.

1.2 Multiple Entry and Exit

There is provision of multiple entry and exit at different levels. The student/s will have the option to exit after the 1st year. He/ she/ ze has to complete 10 weeks of internship (10 credits) after 1st year (2 semesters) to be eligible for award of UG-Certificate.

The student has another option to exit after the 2nd year. The student has to complete another 10 weeks of internship (10 credits) after 2nd year (4 semesters) to be eligible for award of UG-Diploma.

After four years of study, the student will be awarded UG degree in concerned discipline. No exit after 3 years (6 semesters) is recommended considering the professional nature of the courses.

The lateral entry at 3rd semester will be for the candidates having UG-certificate or those who have completed Diploma (3 years course after 10th) in recognised HAEIs. The lateral entry in 5th semester will be for candidates who have completed UG-Diploma.

1.3 New courses for acquiring advanced knowledge and skill and for strengthening their cultural and ethical values and through choice-based programs

1.3.1 Deeksharambh (Induction—cum-foundation course)

A course entitled "Deeksharambh" (0+2) (Non-gradial) will be offered at the start of first semester for a duration of two weeks. This will create a platform for students to learn from each other's life experiences, help for cultural Integration of students from different backgrounds, know about the operational framework of academic process in university, instilling life and social skills, social awareness, ethics and values, team work, leadership, creativity, etc. It will also help in identifying the traditional values and indigenous cultures along with diverse potentialities both in indigenous and developed scenario. There will be sessions by alumni, business leaders, outstanding achievers in related fields, people with inspiring life experiences as well as the University academic and research managers.

1.3.2 Common Courses

The following common courses have been proposed to be offered across the disciplines. This will enable the student for better communication skills and personality development as well as to have a broader view of agriculture and allied sectors, which will allow them for future collaboration with other sectors to face the next generation challenges from a holistic point of view.

- Farming based livelihood systems
- Entrepreneurship Development and Business Management
- Agriculture Marketing and Trade
- Communication Skills
- Personality Development
- Environmental Studies and Disaster Management
- Agricultural Informatics and Artificial Intelligence

In addition to these common courses and Deekshyarambh, the courses such as Physical Education, First Aid, Yoga Practices, Meditation, NCC and NSS have also been made compulsory for students for better social awareness and health of the future generation.

1.3. 3 New Age Courses

New age courses like artificial intelligence, robotics, machine learning, etc. have been incorporated into the course curricula. Besides an array of elective courses have been included so that the student can get deeper knowledge and understanding in the subject of his/her/ze interest. Due emphasis has been given to include the latest topics and subjects in both core and elective courses. Practical exercises and teaching methodology are proposed to make the young generation more imaginative, innovative, ingenious, creative and competent.

1.3.4 Online/MOOC Courses

The students will have to take a minimum of 10 credits of online courses, comprising one or more courses, as a partial requirement for the UG programme. The online courses can be from any field such as Basic Sciences, Humanities, Psychology, Anthropology, Economics, Engineering, Business Management, Languages including foreign language, Communication skills/ Music, etc. and can be taken from any online portal. The objective is to allow the students to groom their passion or strengthen their knowledge and competency in any field beyond prescribed courses.

1.3.5 Elective Courses

The institutions will offer a bouquet of Elective courses to be offered to the students. The students will have the freedom to choose a subject among these courses. The institutions should develop capabilities to offer maximum of the Elective courses proposed in this report. The institutions will also have the liberty to develop new Elective courses as per local needs and available expertise.

1.4 Imparting Traditional Knowledge, Values and Ethics

Due emphasis has been given for imbibing the traditional knowledge, values and ethics among the students through different courses like the Deeksharambh, NCC/ NSS. It is proposed that Study tours shall be conducted across the country to make the student aware about the socio-cultural- economic status of the people of the country and develop respect for their values and ethics.

1.5 Entrepreneurship Development as a Career Path

The restructured undergraduate curricula are designed to enable the students to take up entrepreneurship as a career path. As per NEP- 2020, the curricula in all the disciplines of Agricultural education have been refined and fine-tuned with intensive focus on choice-based skill enhancement programs.

- Skill enhancement courses are included in different modes as follows:
- Skill enhancement courses in the 1st year and 2nd year as part of the course programs;
- Internship for exit programs after 1st year/ 2nd year; and
- Advanced skill enhancement through Student READY programs such as in-plant training/ internship/ projects in 4th year.

The skills acquired must make the students proactive, pioneering, prospect oriented during their internship or industrial attachment to serve as apprentices in the relevant field. It will empower them to grasp viable avenues of self-employment and entrepreneurship along with diversified career options in different facets of related domains.

1.5.1 Skill Enhancement Courses

Skill enhancement courses are essential requirements for any programme (UG-Certificate/ UG- Diploma or Degree). These will be choice based; student can choose the areas of skill enhancement from a bouquet of skill enhancement modules offered by the parent institution. The institutions will develop capabilities for offering such courses.

An institution is at liberty to (and in fact, it should) work in partnership with capable organizations/ companies/ NGOs/ progressive entrepreneurs/ farmers for running various skill enhancement programs.

The University/ HAEIs may also formulate and offer courses in any other areas as identified by it, based on institutional expertise/ capabilities/ resources. In addition, the skill enhancement courses suggested by the UGC, may also be offered.

1.5.2 Internship

Those students who wish to exit with UG-certificate after one year, has to undergo 10 weeks of internship programme (10 credits) after 1st Year. Similarly, the students who wish to exit with UG- Diploma after 2nd year, has to undergo 10 weeks of internship programme (10 credits) after 2nd Year. The goal of Internship at exit for UG-Certificate and UG-Diploma is to further strengthen skills in the chosen area/ subject.

Internship should be preferably arranged outside of the parent institution at any assigned organization/ industry/ research institution/ project or with a progressive farmer/ agri enterprise, etc.

1.5.3 Projects

For some disciplines, Projects have been kept as an integral part of the course programme. This will enable the students to develop required competencies and skill in either research or entrepreneurship or potential employment avenues rather than having only mere qualifications. They will be able to choose appropriate career in research or employment/ entrepreneurship, discover their interests, aptitudes and potentialities and maximise their potentialities and self-confidence. It will also add to creativity and critical thinking of the students.

1.6 Restructuring of UG Programs

The restructuring has been done based on the following NHEQF levels:

- Year 1, Certificate Course, NEP-NHEQF Level 4.5
- Year-2, Diploma Course, NEP-NHEQF Level 5.0
- Year 4, B.Sc. (Hons.)/ B. F. Sc. (Hons.)/ B. Tech. NEP-NHEQF Level 6.0

The restructured program for the undergraduate agriculture education with multiple entry and exit options is illustrated in Figure 1.6.

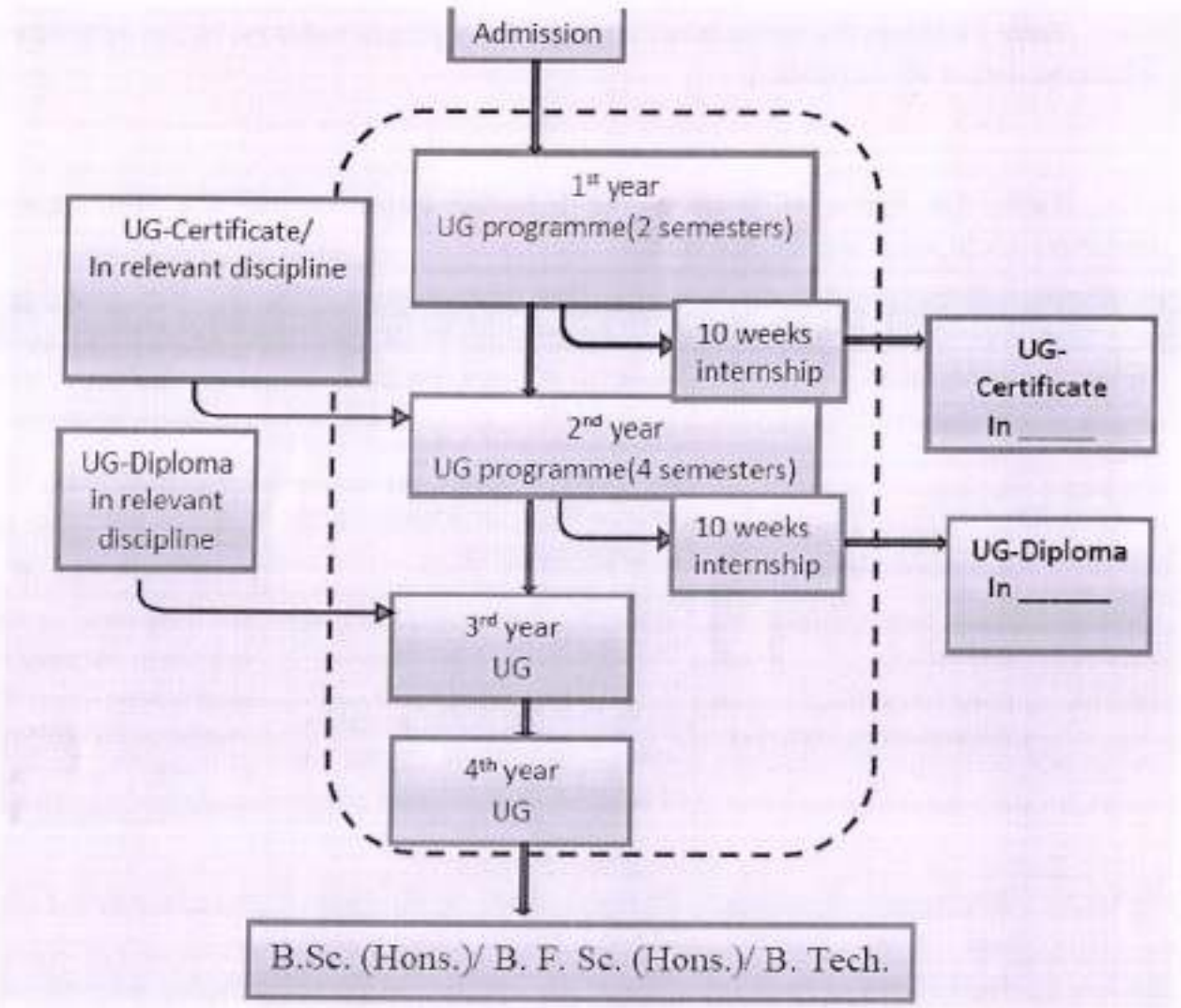

Figure 1.6 Framework of Undergraduate programmes

The eligibility for entry into the UG programs will be + 2 Science; the students will be admitted as per norms of ICAR/ SAUs/CAUs. The 1st year of the programme will be having the foundation, introductory and skill enhancement courses. The 2nd year will be having basic core courses with some more options for skill enhancement. The 3rd year of the programme will have advanced core courses. The 4th year programme will emphasize more on the specialisation and elective courses as well as advanced skill enhancement through internship.

There will be exit options after 1st year and 2nd year for UG-Certificate and UG-Diploma. However, the students opting to exit with UG-Certificate or UG-Diploma will have to take up 10 weeks internship after the 1st year (2 semester) and 2nd year (4 semesters), respectively.

Table 1.6 shows the restructured undergraduate programs for the higher agricultural educational institutions (HAEIs).

Table 1.6 Types of courses and learning outcomes for the restructured undergraduate programs for the HAEIs

Year	Types of courses	Learning outcome	Exit option
YEAR 1 NHEQF Level 4.5	Foundation courses, introductory courses and skills enhancement training/ training in the chosen area, ability enhancement courses	Students will acquire the basic knowledge in respective disciplines and adequate skill in some selected areas, to enable them for employment/ entrepreneurship	A student must complete 10 weeks of internship (10 credits) after 1st year if exit with UG-Certificate is opted
YEAR-2 NHEQF Level 5	Basic core courses and additional skill enhancement in chosen areas/ courses	Students will acquire the higher-level knowledge in respective disciplines and adequate skill in some selected areas, to enable them for employment at middle level/ supervisory level or for entrepreneurship	A student must complete 10 weeks of internship (10 credits) after 2nd year if exit with UG-Diploma is opted
YEAR-3	Advanced core subjects and their practical applications	Students will have deeper understanding of the subjects and their major application areas	No exit after 3rd year
YEAR-4 NHEQF Level 6	Specialization/ Elective courses and advanced skill enhancement through project and internship	Students will acquire advanced knowledge and skill in different areas so as to meet the higher order requirements of the society and industry as well as other prospective employers. It will also enable the graduates to become a job provider rather than being a job seeker through establishment of enterprises in concerned fields.	UG degree in concerned discipline

1.7 Credit Hours Allocation

A total of 166-174 credit hours is recommended for the four years of UG programs. The credit distributions for the different courses have been specified for individual disciplines. The general structure is given in Table 1.7

Table 1.7 General Credits Allocation Scheme of UG Programs (Credit hours)

Semester	Core Courses (Major+ Minor)	Multi-Disciplinary Course (MDC)	Value Added Course (VAC)	Ability Enhancement Course (AEC)	Skill Enhancement Course (SEC)	Internship/ Project/ Student READY	Total Credits	Non-Gradial	Online Courses / MOOC
I	12	3(2)		1(3) + 2(4)	4	-	22	2(1)	
II	10	3(5)	3(6)	1(3) + 2(7)	4	-	23	-	
Post-II semester						10(12)			
III	16	----		2(8)	2	-	20		
IV	12	3(9)	3 (10)	----	2	-	20	-	
Post-IV semester						10(13)			10
V	21	-	-	-	-	-	21	2(11)	
VI	21	-	-	-	-	-	21	-	
VII	20	-	-	-	-	-	20	-	
VIII	-	-	-	-	-	20	20	-	
Total	112	9	6	8	12	20	167	4	10

(1) Deeksharambh (Induction-cum-Foundation Course) of 2 credits (2 weeks duration).
(2) Farming based Livelihood systems
(3) NCC/NSS; (4) Communication Skills; (5) Entrepreneurship Development and Business Management
(6) Environmental Studies and Disaster Management;
(7) Personality Development; (8) Physical Education, First Aid, Yoga Practices and Meditation.
(9) Agriculture Marketing and Trade; (10) Agriculture Informatics and Artificial Intelligence
(11)Study tour (10-14 days).
(12)Only for those opting for an exit with UG-Certificate. (13) Only for those opting for an exit with UG-Diploma
One multidisciplinary course in Agricultural Engineering discipline is different from the above common courses keeping in view the discipline specific requirement.

Note:

- The credit hours mentioned in the Table 4.2 include both theory and practical.
- The total credit allocation and the allocation for different types of courses including online courses for some disciplines such as Agricultural Engineering, Dairy Technology and Food Technology are slightly different than those mentioned in the Table 4.2, so as to accommodate the specific need of these disciplines.
- Also, some minor deviations in the courses and credits allocations are allowed across disciplines considering the specific nature of the courses.
- The three-year course curricula of all disciplines of agricultural and allied sciences do not cover the teaching of elective/ specialized courses, that in fact qualify the students in specializing in a particular subject in which the student intends to do further studies. These courses have been presently listed under the 7th and 8th semesters (in IV year). Therefore, the Sixth Deans' Committee is of the view that the option of B. Sc. (Hons.) with research may lead to deficiency of the knowledge and learning of the elective / specialized subjects needed for PG studies. For
- B. Tech. programs, the framework prescribed by AICTE/ UGC may be applicable. Under such circumstances, the Committee recommends that the launching of UG degree with research should be deferred for the time being. ICAR may consider about this aspect along with considering restructuring PG/ Ph.D. programs. Also considering the professional nature of the courses, the exit after at the end of 3rd year (at the end of 6th semester) is not recommended.
- Each class (contact hour) will be of 50 min duration and one practical will be of two contact hours.
- If the student has to take up any deficiency course(s), that has to be satisfactorily completed within the first year.

1.8 Deeksharambh (Introduction- cum-foundation course)

The goal of higher education is to nurture students by blossoming their hidden potentials to pursue the academic and professional studies in a diligent, honest and responsible manner. It is possible by facilitating them to develop a sense of integrity with diverse faculties and build linkages with peers, society and community as a whole and lastly be proficient in earning livelihood independently along with sustaining society and nature.

A course entitled Deeksharambh (0+2) (Non-gradial) will be offered at the start of first semester for a duration of two weeks. This will be a part of first semester for all purposes including the calculation of Net Instruction Days (NIDs).

The goal of Deeksharambh is to inculcate life skills, develop bonding with mentors, peers and seniors, familiarize with institutional academic framework and functioning, It must educate students to explore their potentials and understand the purpose of their life with reference to serving the community, nation and global society.

Often the incoming undergraduate students are influenced by their parents and relatives to join higher studies, without understanding their own interests and talents.

Therefore, the very purpose of initiating Deeksharambh: the induction cum foundation course is to acclimatize the student with the new surroundings, develop bond with fellow students and teachers. It is the time when a student should become clear as to what he/she/ze is going to study in a particular discipline, or even it is time to quit and join another discipline of his/ her choice. They must develop sensitivity towards various issues of social relevance and imbibe human values to become responsible citizens.

Thus, ensuring a well-designed Induction-cum-foundation program by the institutions shall be designed to become helpful to both teachers and students for setting the pace of productive teaching and learning experiences.

Four Pillars of Deeksharambh
Socializing: Meeting new students, senior students, attend lectures by Eminent People.
Associating: Visits to university / college, visits to Dept./Branch/ Program of study and important places on campus, local area, city and so on.
Acclimatizing with rules and regulations, student support system, etc.
Experiencing: Subject lectures, study skills, small-group activities, physical activity, creative and performing arts, literary activities, universal human values, etc.

Deeksharambh will create a platform for students to:

- learn from each other's life experiences,
- help for cultural integration of students from different backgrounds,
- know about the operational framework of academic process in university,
- instilling life and social skills,
- social awareness, ethics and values, team work, leadership, creativity, etc., and
- identify the traditional values and indigenous cultures along with diverse potentialities both in indigenous and developed scenario.

There will be sessions by alumni, business leaders, outstanding achievers in related fields, people with inspiring life experiences as well as the University academic and research managers.

Steps will be taken by the institutions to identify the strength and weakness of students (with remedial measures) and diverse potentialities and to enhance cultural Integration of students from different backgrounds.

1.9 Common courses

The following common courses have been proposed to be offered across the disciplines, which in addition to giving the students a broader view of agriculture and allied sectors, will enable them for better communication skills and personality development.

Besides, this will also help them to look beyond the boundaries of their own subject/ discipline, and collaborate in future with other sectors to face the next generation challenges from a holistic point of view.

- Farming based livelihood systems
- Entrepreneurship Development and Business Management
- Agriculture Marketing and Trade
- Communication Skills
- Personality Development
- Environmental Studies and Disaster Management
- Agricultural Informatics and artificial Intelligence

In addition to these common courses and Deeksharambh, the courses as Physical Education, First Aid, Yoga Practices and Meditation, NCC and NSS have also been made compulsory for students for improving social awareness, ethics, moral values and health of the future generation.

1.10 New age courses

Courses like artificial intelligence, robotics, machine learning, etc. have been incorporated into the course curricula. Besides an array of elective courses have been included so that the student can get deeper knowledge and understanding in the subject of his interest. Emphasis has also been given to include the latest topics and subjects in both core and elective courses. Practical exercises and pedagogy are proposed to make the next generation more imaginative, innovative, ingenious, creative and competent.

1.11 Deficiency courses

If the student has to take up any deficiency course(s), it has to be completed within the first year.

1.12 Entrepreneurship development

Entrepreneurship is a key driver of the economy of a nation, which has been encouraged through NEP-2020. Expectation is that an early orientation of the young minds towards skill enhancement and entrepreneurship will inculcate entrepreneurial mind set, allowing them to have first-hand experience of working with institutions, organizations, companies, industrial setup and investors so as to understand their dynamics in the real-world setting.

The restructured undergraduate curricula are designed to enable the students to take up entrepreneurship as a career path. As per NEP-2020, the curricula in all the disciplines of Agricultural education have been refined and fine-tuned with intensive focus on choice-based skill enhancement programs.

- Skill enhancement courses are included in following different modes:
- Skill enhancement courses in the 1st year and 2nd year as part of the course programs;
- Internship for exit programs after 1st year/ 2nd year; and
- Advanced skill enhancement through Student READY: Experiential Learning/Hands on Training/Skill development/ RAWE/ Industrial attachment/IPT/ student project and Internship etc. in 4th year.

Internship can be seen as a mini capsule of intense learning for a student, a way to apply the theory into practice, expand their knowledge base and a platform to integrate all learnings of formal classroom setup.

Addition of new age courses related to Agriculture, Forestry, Fisheries, Agricultural Engineering, Community Science, Food Nutrition and Dietetics, etc., and incorporation of choice based online courses, which can be taken up from NPTEL, moo KIT, edX, Coursera, SWAYAM or any other portal in open digital learning environment. Practical exercises and teaching methodology are so designed to make the young generation more imaginative, innovative, ingenious, creative and competent.

The skill set acquired must make them proactive, pioneering, prospect oriented during their internship or industrial attachment to serve as apprentices in the relevant field. This will empower them to grasp viable avenues of self-employment and entrepreneurship along with diversified career options in different facets of related domains.

1.12.1 Skill Enhancement Courses

The skill enhancement programs will be choice based; student can choose the areas of skill enhancement from a bouquet of skill enhancement modules offered by the parent institution. The institutions will develop capabilities for offering such courses.

An institution is at liberty to (and in fact, it should) work in partnership with capable organizations/ companies/ NGOs/ progressive entrepreneurs/ farmers for running various skill enhancement programs.

In the report, for each discipline the list of Skill Enhancement Courses (SEC) has been suggested. The University/ HAEIs may also formulate and offer courses in any other areas as identified by it, based on institutional expertise/ capabilities/ resources. In addition, the skill enhancement courses suggested by the UGC, as listed, may also be offered.

The evaluation of the skill enhancement programs will be as per the evaluation criteria of courses with only practical. However, for the internship programs, the evaluation will be done jointly by the host and parent organisations/ institutions.

1.12.2 Internship

The internship proposed under NEP-2020 have been an integral part of agricultural education (as proposed by Fifth Deans' Committee) under the broad category of Student READY programs. It includes various activities such as Experiential Learning/ Hands-on Training, Skill Development Training, Rural Agriculture Work Experience (RAWE), In-Plant Training/ Industrial Attachment and Students' Projects. Therefore, in the recommended structure, the student READY is further strengthened as per NEP-2020 guidelines.

Those students who wish to exit with UG-certificate after one year, has to undergo 10 weeks of internship programme (10 credits) after 1st Year. Similarly, the students who wish to exit with UG-Diploma after second year, has to undergo 10 weeks of internship programme (10 credits) after 2nd Year. The goal of Internship at exit for UG-Certificate and UG-Diploma is to further strengthen skills in the chosen area/ subject.

Internship should be preferably arranged outside of the parent institution at any assigned organization/ industry/ research institution/ project or with a progressive farmer/ agri enterprise, etc.

HAEIs will ensure that the Internship program is aligned with the course that the student has chosen. It is recommended that each HAEI appoints one or more Coordinators for the internship programs. The coordinator must plan/execute/ monitor internship programme implementation at the institution level.

1.12.3 Projects

For some disciplines, projects have been kept as an integral part of the course programme. This will enable the students to develop required competencies and skill in either research or entrepreneurship or potential employment avenues rather than having only mere qualifications, choose appropriate career in research or employment/ entrepreneurship, discover their interests, aptitudes and potentialities and maximise his/ her/ze potentialities and self-confidence. It will also add to creativity and critical thinking of the students. This will also help the students gain research skills and be more innovative in planning, executing, reporting and presenting the things.

1.13 Study tour

There will be a study tour of 10-14 days' duration during the 5th semester of the UG programme. The students will preferably visit the leading industries/ enterprises/ institutions/ organisations and other places of academic interest outside the state (of location of the institution). This, in addition to exposing the students to the indigenous as well as the latest technologies in their related fields, will also help the students to know about the socio

economic-cultural variations within the country. The course will be of 0+2 credits, non-gradial.

1.14 Online / MOOC courses

The students will have to take a minimum of 10 credits of online courses, which will comprise of one or more courses, as a partial requirement for the UG programme.

(As per UGC guideline, a 1- to 3- credit SWAYAM course is expected to be covered in 4-12 weeks' duration including the assessment component, in which it should be 40 hours for 3-credit courses to 80 hours for a 6-credit course for the learning from e-content, reading references material, discussion forum posting and assignment.)

The online courses can be from any field such as Basic Sciences, Humanities, Psychology, Anthropology, Economics, Engineering, Business Management, Languages including foreign language, Communication skills/ Music, etc., and can be taken from NPTEL, mooKIT, edX, Coursera, SWAYAM or any other portal.

The objective is to allow the students to groom their passion or strengthen their knowledge and competency in any field beyond prescribed courses.

The courses will be non-gradial as separate certificates would be issued by institutes offering the courses. These can be taken any time during the duration of UG program, but preferably during the 3rd and 4th years.

The University/ institute will keep a record of such courses registered and completed by each student and will indicate the title of the (successfully completed) courses in final transcript issued to the student.

The requirement of credits for online courses for B. Tech. programs is different due to the specific need of the disciplines.

1.15 Elective courses

The institutions will offer a bouquet of Elective courses to be offered to the students. The students will have the freedom to choose a subject among these courses. The institutions should develop capabilities to offer maximum of the Elective courses proposed in this report. The institutions will also have the liberty to develop and offer more Elective courses relevant to the subject as per local/ regional needs and available expertise. The elective courses can be offered from other disciplines in a Universality/HAEI.

1.16 Imparting Traditional Knowledge, Values and Ethics

Due emphasis has been given for imbibing the traditional knowledge, values and ethics among the students through different courses like the Deeksharambh, NCC and NSS. It is proposed the Study tour shall be conducted across the country to be aware about the socio-cultural-economic status of the people of the country and develop respect for their values and ethics.

1.17 Exit Option

There will be three exits during the restructured UG programme.

Exit after 1st year: A student may opt to exit after the 1st year of UG programme. However, he/ she/ze has to complete 10 weeks of internship (10 credits) to be eligible for being awarded UG- Certificate degree. (The students going to the higher level need not take 10 weeks internship at this stage.)

Exit after 2nd year: A student may opt to exit after the 2nd year of UG programme. However, he/ she/ze has to complete 10 weeks of internship (10 credits) to be eligible for being awarded UG- Certificate degree. (The students going to the higher level need not take 10 weeks internship at this stage.)

Exit after 4-years programme leading to B.Sc. (Hons.)/ B.F.Sc. (Hons.)/ B. Tech. degree.

1.18 Maximum residential period

Students who exit with a UG- Certificate or UG- Diploma are permitted to re-enter within three academic years and complete the degree programme.

Students may be permitted to take a break from the study during the period of study but the total duration for completing the programme shall not exceed 7 years.

SEMESTER WISE COURSE DETAILS

Semester –I

S. No.	Course Code	Course Category	Course Name	L	T	P	Credits
1	ICFC99001		Deeksharambh (Induction cum Foundation course)	2 weeks (NG) Non-gradial			
2	SECA77001	SEC-I	Bio-fertilizer and Bio- pesticide Production	0	0	4	2
3	SECA77002	SEC-II	Mushroom Production Technology	0	0	4	2
4	AECA55001	AEC-1	Communication Skills	1	0	0	1
5	AECA55002	AEC-2	Communication Skills Lab	0	0	2	1
6	BSAE41005	AEC-16	Farming based livelihood systems	2	0	0	2
7	BSAE41006	AEC-17	Farming based livelihood systems Lab	0	0	2	1
8	BSAC50100	DSCAC-1	Rural Sociology and Educational Psychology	2	0	0	2
9	BSAC41100	DSCAG-1a	Fundamentals of Agronomy	2	0	0	2
10	BSAC41101	DSCAG-1b	Fundamentals of Agronomy Lab	0	0	2	1
11	BSAC43100	DSCSO-1a	Fundamentals of Soil Science	2	0	0	2
12	BSAC43101	DSCSO-1b	Fundamentals of Soil Science Lab	0	0	2	1
13	BSAC48100	DSCHO-1a	Fundamentals of Horticulture	2	0	0	2
14	BSAC48101	DSCHO-1b	Fundamentals of Horticulture Lab	0	0	2	1
15	WHNN99000	AEC-3	National Service Scheme (NSS-I)	0	0	2	1
16	BSAC55101	DSERB-1	Introductory Biology*/	1	0	2	2Non-gradial
	BSAC55102	DSERM-2	Introductory Mathematics*	2	0	0	
			Total	**11**		**20**	**21**

(Introductory Biology/ Elementary Mathematics)*: any one to be taken based on subject not learnt in 12th Standard

Semester -II

S. No.	Course Code	Course Category	Course Name	L	T	P	Credits
1.	SECA77003	SEC-III	Seed Production Technology Lab	0	0	4	2
2.	SECA77004	SEC-IV	Post-harvest processing technology Lab	0	0	4	2
3.	BSAC50150	AEC-4	Personality Development	1	0	0	1
4.	BSAC50151	AEC-5	Personality Development Lab	0	0	2	1
5.	BSAC57150	AEC-6	Environmental Studies and Disaster Management	2	0	0	2
6.	BSAC57151	AEC-7	Environmental Studies and Disaster Management Lab	0	0	2	1
7.	BSAC43150	DSCSO-2a	Soil Fertility Management	2	0	0	2
8.	BSAC43151	DSCSO-2b	Soil Fertility Management Lab	0	0	2	1
9.	BSAC44150	DSCEN-1a	Fundamentals of Entomology	2	0	0	2
10.	BSAC44151	DSCEN-1b	Fundamentals of Entomology Lab	0	0	2	1
11.	BSAC53200	DSCAP-1a	Livestock and poultry Management	1	0	0	1
12.	BSAC53201	DSCAP-1b	Livestock and poultry Management Lab	0	0	2	1
13.	BSAC47150	DSCPP-1a	Fundamentals of Plant Pathology	2	0	0	2
14.	BSAC47151	DSCPP-1b	Fundamentals of Plant Pathology Lab	0	0	2	1
15.	WHNN99151	AEC-8	National Service Scheme (NSS-II)	0	0	2	1
			Total	**10**	**0**	**22**	**21**

Semester – III

S. No.	Course Code	Course Category	Course Name	L	T	P	Credits
1.	SECA77005	SEC-V	Beneficial insect farming Lab	0	0	4	2
2.	AECA55007	AEC-9	Entrepreneurship Development and Business Communication	2	0	0	2
3.	AECA55008	AEC-10	Entrepreneurship Development and Business Communication Lab	0	0	2	1
4.	AECA55009	AEC-11	Physical Education, First Aid, Yoga Practices and Meditation Lab	0	0	4	2
5.	BSAC42150	DSC PB-1a	Principle of Genetics	2	0	0	2
6.	BSAC42151	DSC PB-1b	Principle of Genetics Lab	0	0	2	1
7.	BSAC41200	DSC AG-3a	Crop Production Technology -I (Kharif crops)	1	0	0	1
8.	BSAC41201	DSC AG-3b	Crop Production Technology-I (Kharif crops) Lab	0	0	4	2
9.	BSAC48252	DSC HO-2a	Production Technology of Fruit and Plantation Crops	1	0	0	1
10.	BSAC81253	DSC HO-2b	Production Technology of Fruit and Plantation Crops Lab	0	0	2	1
11.	BSAC50150	DSC AC-2a	Fundamentals of Extension Education	1	0	0	1
12.	BSAC50151	DSC AC-2b	Fundamentals of Extension Education Lab	0	0	2	1
13.	BSAC56200	DSC NE-1a	Fundamentals of Nematology	1	0	0	1
14.	BSAC56201	DSC NE-1b	Fundamentals of Nematology Lab	0	0	2	1
15.	BSAC41202	DSC AG-4a	Principles and Practices of Natural Farming	1	0	0	1
16.	BSAC41203	DSC AG-4b	Principles and Practices of Natural Farming Lab	0	0	2	1
17.	WHNN99000		Workshop & Seminars / Human Value & Social Service / NSS	-	-	-	1
			Total	**09**		**24**	**22**

Semester – IV

S. No.	Course Code	Course Category	Course Name	L	T	P	Credits
1.	SECA77006	SEC-VI	Horticulture nursery management	0	0	4	2
2.	AECA55010	AEC-12	Agricultural Informatics and Artificial Intelligence (AI)	2	0	0	2
3.	AECA55011	AEC-13	Agricultural Informatics and Artificial Intelligence (AI) Lab	0	0	2	1
4.	BSAC48200	DSCHO-3a	Production Technology of Vegetables and Spices	1	0	0	1
5.	BSAC48201	DSCHO-3b	Production Technology of Vegetables and Spices Lab	0	0	2	1
6.	BSAC45252	DSCEC-1	Principles of Agricultural Economics and Farm Management	2	0	0	2
7.	BSAC41250	DSCAG-5a	Crop Production Technology-II (Rabi Crops)	1	0	0	1
8.	BSAC41251	DSCAG-5b	Crop Production Technology-II (Rabi Crops) Lab	0	0	4	2
9.	BSAC46200	DSCAE-1a	Farm Machinery and Power	1	0	0	1
10.	BSAC46201	DSCAE-1b	Farm Machinery and Power Lab	0	0	2	1
11.	BSAC41255	DSCAG-6a	Water Management	1	0	0	1
12.	BSAC41256	DSCAG-6b	Water Management Lab	0	0	2	1
13.	BSAC43250	DSCSO-3a	Problematic Soils and their management	1	0	0	1
14.	BSAC43251	DSCSO-3b	Problematic Soils and their management Lab	0	0	2	1
15.	BSAC42200	DSCPB-2a	Basics of Plant Breeding	2	0	0	2
20.	BSAC42201	DSCPB-2b	Basics of Plant Breeding Lab	0	0	2	1
21.	WHNN99000		Workshop & Seminars / Human Value & Social Service / NSS	-	-	-	1
			Total	**11**		**20**	**22**

Semester – V

S. No.	Course Code	Course Category	Course Name	L	T	P	Credits
1.	BSAC45300	AEC-14	Agricultural Marketing and Trade	2	0	0	2
2.	BSAC45301	AEC-15	Agricultural Marketing and Trade Lab	0	0	2	1
3.	BSAC57300	DSCMT-1a	Introduction to Agro-meteorology	1	0	0	1
4.	BSAC57301	DSCMT-1b	Introduction to Agro-meteorology Lab	0	0	2	1
5.	BSAC51152	DSCBI-1a	Fundamentals of Crop Physiology	2	0	0	2
6.	BSAC51153	DSCBI-1b	Fundamentals of Crop Physiology Lab	0	0	2	1
7.	BSAC44302	DSCEN-2a	Pest management in crops and stored grains	2	0	0	2
8.	BSAC44303	DSCEN-2b	Pest management in crops and stored grains Lab	0	0	2	1
9.	BSAC47304	DSCPP-2a	Diseases of Field and Horticultural Crops and their Management	2	0	0	2
10.	BSAC47305	DSCPP-2b	Diseases of Field and Horticultural Crops and their Management Lab	0	0	2	1
11.	BSAC42300	DSCPB-3a	Crop Improvement (kharif crops) – I	1	0	0	1
12.	BSAC42301	DSCPB-3b	Crop Improvement (kharif crops) – I Lab	0	0	2	1
13.	BSAE41003	DSCAG-7a	Weed Management	1	0	0	1
14.	BSAE41004	DSCAG-7b	Weed Management Lab	0	0	2	1
15.	BSAC48300	DSCHO-4a	Ornamental Crops, MAPs and Landscaping	1	0	0	1
16.	BSAC48301	DSCHO-4b	Ornamental Crops, MAPs and Landscaping	0	0	2	1
17.	BSAC54100	DSCAG-2a	Introductory Agro-forestry	1	0	0	1
18.	BSAC54101	DSCAG-2b	Introductory Agro-forestry Lab	0	0	2	1
19.	IAPC99347	IAPC-1	Summer Internship and Report	-	-	-	4
20.	WHNN99000		Workshop & Seminars / Human	-	-	-	1

			Value & Social Service / NSS				
			Total	**13**		**18**	**27**

Semester- VI

S. No.	Course Code	Course Category	Course Name	L	T	P	Credits
1.	BSAC58350	DSCBT-1a	Fundamentals of Agricultural Biotechnology	2	0	0	2
2.	BSAC58351	DSCBT-1b	Fundamentals of Agricultural Biotechnology Lab	0	0	2	1
3.	BSAC52350	DSCST-1b	Basic and Applied Agricultural Statistics	2	0	0	2
4.	BSAC52351	DSCST-2b	Basic and Applied Agricultural Statistics Lab	0	0	2	1
5.	BSAC42350	DSCPB-4a	Crop Improvement (Rabi crops)-II	1	0	0	1
6.	BSAC42351	DSCPB-4b	Crop Improvement (Rabi crops)-II Lab	0	0	2	1
7.	BSAC46352	DSCAE-2a	Renewable energy in Agriculture and Allied Sector	1	0	0	1
8.	BSAC46353	DSCAE-2b	Renewable energy in Agriculture and Allied Sector Lab	0	0	2	1
9.	BSAC41353	DSCAG-8a	Dryland agriculture/ Rainfed agriculture and watershed management	1	0	0	1
10.	BSAC41354	DSCAG-8b	Dryland agriculture/ Rainfed agriculture and watershed management Lab	0	0	2	1
11.	BSAC47352	DSCPP-3a	Agricultural Microbiology and Phyto-remediation	1	0	0	1
12.	BSAC47353	DSCPP-3b	Agricultural Microbiology and Phyto-remediation Lab	0	0	2	1
13.	BSAC45350	DSCEC-2a	Agricultural Finance and Cooperation	1	0	0	1
14.	BSAC45351	DSCEC-2b	Agricultural Finance and Cooperation Lab	0	0	2	1
15.	BSCA51350	DSCBi-2a	Essentials of Plant Biochemistry	2	0	0	2
16.	BSCA51351	DSCBi-2b	Essentials of Plant Biochemistry Lab	0	0	2	1
17.	BSAC42352	DSCPB-5a	Fundamentals of Seed Science and Technology	1	0	0	1
18.	BSAC42353	DSCPB-5b	Fundamentals of Seed Science and Technology Lab	0	0	2	1
19.	WIINN99000		Workshop & Seminars / Human Value & Social Service / NSS	-	-	-	1
		Total		**12**	**0**	**18**	**22**

Semester – VII

Five Elective Courses (major or minor) each of 4 (3+1) credits or total 20 credits for B.Sc. (Hons) Agriculture degree

S. No.	Course Code	Course Category	Course Name	L	T	P	Credits
.a	BSAE45000	DSCEC-3a	Agri-Business Management	3	0	0	3
.b	BSAE45001	DSCEC-3b	Agri-Business Management Lab	0	0	2	1
.a	BSAE43000	DSCSO-4a	Management of natural resources	3	0	0	3
.b	BSAE43001	DSCSO-4b	Management of natural resources Lab	0	0	2	1
.a	BSAE47000	DSCPP-4a	Agrochemicals	3	0	0	3
.b	BSAE47001	DSCPP-4b	Agrochemicals Lab	0	0	2	1
.a	BSAE50000	DSCAC-3a	Agricultural Journalism	3	0	0	3
.b	BSAE50001	DSCAC-3b	Agricultural Journalism Lab	0	0	2	1
.a	BSAE48000	DSCHO-5a	Landscaping	3	0	0	3
.b	BSAE48001	DSCHO-5b	Landscaping Lab	0	0	2	1
.a	BSAE42000	DSCPB-6a	Commercial Plant breeding	3	0	0	3
.b	BSAE42001	DSCPB-6b	Commercial Plant breeding Lab	0	0	2	1
.a	BSAE48002	DSCHO-6a	Food safety and standards	3	0	0	3
.b	BSAE48003	DSCHO-6b	Food safety and standards Lab	0	0	2	1
.a	BSAE47002	DSCPP-6a	Bioformulation and Nanoformulation	3	0	0	3
.b	BSAE47003	DSCPP-6b	Bioformulation and Nanoformulation Lab	0	0	2	1
.a	BSAE47004	DSCPP-7a	Biopesticides and Biofertilizers	3	0	0	3
.b	BSAE47005	DSCPP-7b	Biopesticides and Biofertilizers Lab	0	0	2	1
.a	BSAE41005	DSCAG-9a	System Simulation and Agroadvisory	3	0	0	3
0.b	BSAE41006	DSCAG-9b	System Simulation and Agroadvisory Lab	0	0	2	1
1.a	BSAE48004	DSCHO-7a	Hi-tech Horticulture	3	0	0	3
1.b	BSAE48005	DSCHO-7b	Hi-tech Horticulture Lab	0	0	2	1
2.a	BSAE48006	DSCHO-8a	Protected cultivation	2	0	0	2
2.b	BSAE48007	DSCHO-8b	Protected cultivation Lab	0	0	2	1
3.a	BSAE57000	DSCMT-2a	Climate Resilient Agriculture	2	0	0	2
3.b	BSAE57001	DSCMT-2b	Climate Resilient Agriculture Lab	0	0	2	1
4.a	BSAE58000	DSCBT-2a	Biotechnology of Crop Improvement	2	0	0	2
4.b	BSAE58001	DSCBT-2b	Biotechnology of Crop Improvement Lab	0	0	2	1

15.a	BSAE43002	DSCSO-5a	Geoinformatics and remote sensing, precision farming	3	0	0	3
15.b	BSAE43003	DSCSO-5b	Geoinformatics and remote sensing, precision farming Lab	0	0	2	1
16.a	BSAE58002	DSCBT-3a	Micro-propagation Technologies	3	0	0	3
16.b	BSAE58003	DSCBT-3b	Micro-propagation Technologies Lab	0	0	2	1
17.a	BSAE42002	DSCPB-7a	Commercial Seed Production	3	0	0	3
17.b	BSAE42003	DSCPB-7b	Commercial Seed Production Lab	0	0	2	1
18.a	BSAE41007	DSCAG-10a	Principles and Practices of Organic Farming and Conservation Agriculture	1	0	0	1
18.b	BSAE41008	DSCAG-10b	Principles and Practices of Organic Farming and Conservation Agriculture Lab	0	0	2	1
19.a	BSAE49000	DSCBT-4a	Food Science and Nutrition	3	0	0	3
19.b	BSAE49001	DSCBT-4b	Food Science and Nutrition Lab	0	0	2	1
20.a	BSAE48008	DSCHO-9a	Post Harvest Technology and Value Addition	1	0	0	1
20.b	BSAE48009	DSCHO-9b	Post Harvest Technology and Value Addition Lab	0	0	2	1
21.	IAPCC99348	IAPC-II	Summer Internship and Report	-	-	-	4
22.	WHNN99000		Workshop & Seminars / Human Value & Social Service / NSS	-	-	-	1
			Total				**25**

Semester VIII

Student READY:

Course Code	Course Name	Credits
RDYC99448	**Student READY:** RAWE/ Industrial Attachment /Experiential Learning / Hands-on Training/ Project Work / Internship	**20**

Activities	No. of weeks	Credits
Student READY: 9 RAWE/ Industrial Attachment /Experiential Learning / Hands-on Training/ Project Work / Internship		20
(A) **RAWE (Rural Agricultural Work Experience)**		10
1. General orientation & On campus training by different faculties	1	
2. (a) Village attachment training programme	6	
i. Orientation and Survey of Village		
ii. Agronomical Interventions		
iii. Plant Protection Interventions		
iv. Soil Improvement Interventions (Soil sampling and testing)		
v. Fruit and Vegetable production interventions		
vi. Food Processing and Storage interventions		
vii. Animal Production Interventions		
viii. Extension and Transfer of Technology activities		
(b) Attachment in University/College/KVK/research Station	5	
(B) **Internship-AIA (Agro Industrial Attachment)**	4	5
Students shall be placed in Agro-and Cottage industries and Commodities Boards. (Industries include Seed/Sapling production, Pesticides-insecticides, Post-harvest processing-value addition, Agri-finance institutions, etc.)		
Activities and Tasks during Agro-Industrial Attachment Programme		
Acquaintance with industry and staff		
Study of structure, functioning, objective and mandates of the 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 the industry promoting environment		
Learning business network including outlets of the industry		
Skill development in all crucial tasks of the industry		

Documentation of the activities and task performed by the students		
Performance evaluation, appraisal and ranking of students		
Project Preparation Modules for AIA		
1. Topic/ title of case study.		
2. Student name/ ID No.		
3. Name of Instructor/ Supervisor/Designation.		
4. Department/Section		
5. Detail of Agro Industry Promoter/Place/Address of Industry		
6. Relevance of case study		
7. Objective of case study		
8. Functioning of Agro Industry/Structure of Industry/type of technology used/type of machinery used		
9. Case study out put		
10. Future prospects of case study & suggestions		
11. Recommendations for beneficiaries/farmers about case study		
12. References/Appendices.		
(C)Experiential Learning & Hands on Training	4	5
Project Preparation Modules for Experiential Learning/Hands of Training		
1. Project Title.		
2. Student name/ ID No.		
3. Department/ Section		
4. Name of Guide/ Instructor/ Supervisor/ Designation/ Department		
5. Justification/ Relevance of Project		
6. Project Activities/ Methodologies		
7. Project of Output/results		
8. Summary & Conclusion		
9. Future prospects of case study & suggestions		
10. References		
11. Appendices.		
	20	20

EVALUATION SCHEME- THEORY

The evaluation of the theory paper of B.Sc. (Agriculture) would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessments as follows:

Internal Assessment – Semester I

Type	Details	Marks
Mid Term	One Mid-term Sessional	25
Marks obtained in various Tests, Assignments, Presentations, Quiz, Tutorials, etc.	Average of marks obtained	20
Academic and course involvement		5
TOTAL	**50**	

Internal Assessment- Semester II to VII

The distribution of Internal Assessment Marks is as follows:

Type	Details	Marks
Mid Term	Two Mid-term Sessional of 15 marks each (15+15)	30
Marks obtained in various Tests, Assignments, Presentations, Quiz, Tutorials, etc.	Average of marks obtained	15
Academic and course involvement		5
TOTAL	**50**	

External Assessment

Type	Marks
Theory	50

EVALUATION SCHEME -PRACTICAL

The evaluation of the practical paper of B.Sc. (Agriculture) would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessment is as follows:

Internal Assessment

Type	Details	Marks
Marks obtained in various manuals, practical file, participation, any model prepared, output of practical	Average of marks obtained	45
Academic and course involvement		5
TOTAL	**50**	

External Assessment

Type	Marks
Practical	50

Examination Scheme of BSc Agri VIII Semester Student READY Programme

Course code	Course Name	Credit	Maximum Number
RDYC99448	Rural Agricultural Work Experience (RAWE)	20	500
	Agro-Industrial Attachment (Internship)		250
	Experiential Learning & Hands-on Training		250
	Total	**20**	**1000**

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Circular

Date	07.10.2024	DOCID	DOC202410070008
Subject	Agenda for Board of Studies Meeting for Agriculture		

The meeting of the Board of Studies for Agriculture will be held on **8th October, 2024 at 11:00 AM** in room number 16, Admin Block RNB Global University, Bikaner to discuss the following agenda:

Item No.	Agenda
Item No. 1:	Confirmation of ATR of 4th BoS meeting
Item No. 2:	Implementations of 6th Dean's Committee Report for B.Sc. (Hons) Agriculture.
Item No. 3:	Any other item with the permission of the Chair.

RNB Global University Dean Bikaner

Dr. B.D. Sharma

(Convener)

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Date	08-10-2024	No.	DOC20241008-0016
Subject	MOM of Board of Studies Meeting of Agriculture		

MINUTES OF THE BOARD OF STUDIES MEETING FOR AGRICULTURE HELD AT ROOM NO. 16, ADMIN BLOCK, RNB GLOBAL UNIVERSITY, ON 8thOCTOBER, 2024 AT 11:00PM

The following members were present:

S.No.	Name	Designation
1.	Prof B D Sharma	Convener
2.	Dr. Ravi Kishan Soni	Member
3.	Dr. Ravi Kumar Bishnoi	Member
4.	Dr. Amar Singh Godara	External Member
5.	Mr. Dharmveer Singh Rathore	External Member (Industry)

The meeting of the Board of Studies of the Agriculture was held 8thOctober, 2024 AT 11:00 PMin room number 16, Admin Block, RNB Global University, Bikaner.

Prof B D Sharma, Convener, of the Board of Studies, welcomed all the members to the meeting. After confirming the quorum, the following agenda items were taken up for discussion:

Item No. 1: Implementations of 6th Dean's Committee Report for B.Sc. (Hons) Agriculture.

The programme scheme of B. Sc. (Hons) Agriculture was revised as per 6thDeans' Committee recommendation.

Some new changes in B.Sc. (Hons) Agriculture Programme

- UG Certificate in Agriculture (Exit after 1st year completion of 10week's Internship)

The programme scheme of B. Sc. (Hons) Agriculture was revised as per 6thDeans' Committee recommendation.

Some new changes in B.Sc. (Hons) Agriculture Programme

- UG Certificate in Agriculture (Exit after 1st year+ completion of 10week's Internship)
- UG Diploma In Agriculture (Exit after 2nd year+ completion of 10week's Internship
- B.Sc.(Hons) Agriculture(on successful completion of four degree requirements)
- In VII Semester 5 Elective Courses (major or minor) each of 4 (3+1) credits for B.Sc. (Hons) Agriculture degree
- In VIII Semester For B.Sc. (Hons)Agriculture Degree Student READY :RAWE/ Industrial Attachment /Experiential Learning / Hands-on Training/ Project Work / Internship
- Ability and Skill Enhancement Course in every semester

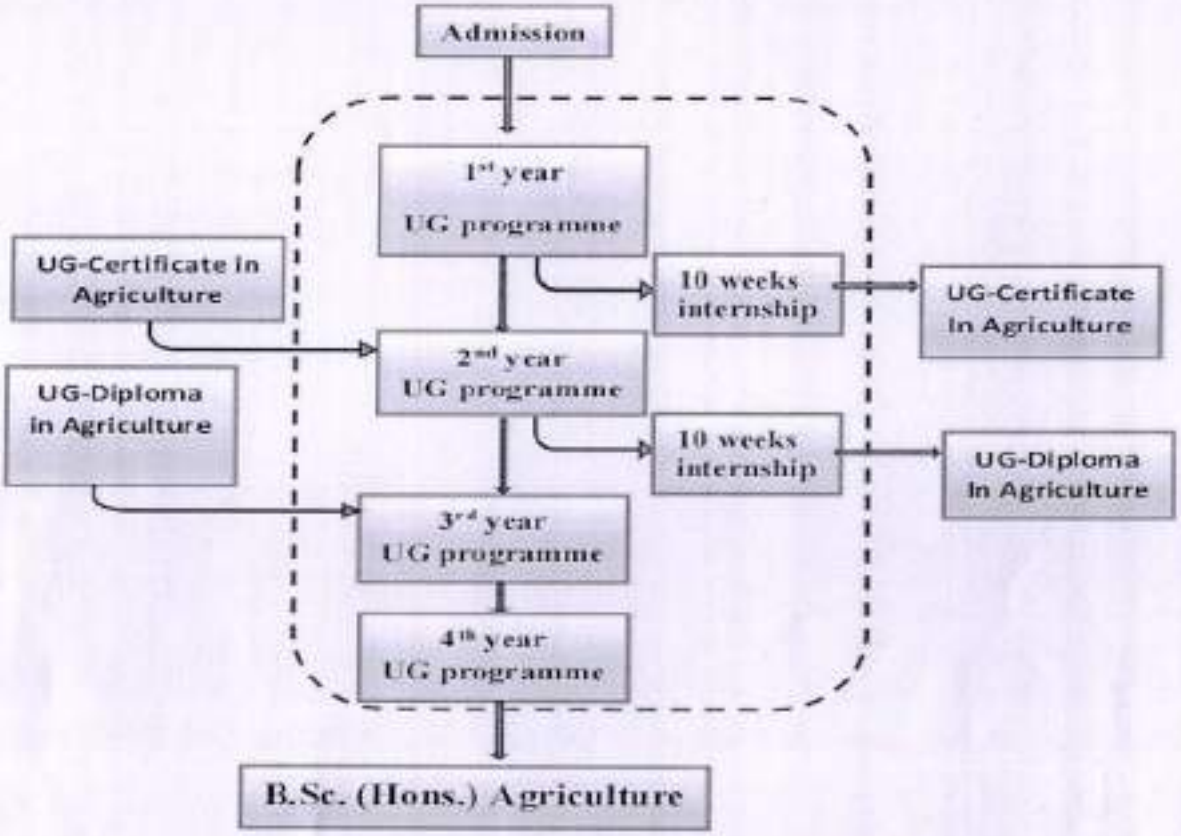

Fig. 1 Entry and Exit options for the UG programme in Agriculture

Item No. 3: Any Other Item with the Permission of the Chair

As there was no other item to discuss the meeting and ended with vote of thanks to and from the chair.

RNB Global University Dean Bikaner

Convener

Prof B D Sharma

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ATR -6th Meeting

The 6th meeting of the Board of Studies for School of Agriculture was held on 14-06-2024, in room number 16 Admin Block RNB Global City, Ganganagar Road, Bikaner at 11.30 A M.

SN	Item No.	Agenda	Action Taken
1.	1	Review of Programme scheme of B.Sc. (Hons.) Agriculture	The programme scheme of B.Sc. (Hons) Agriculture has been revised for the academic session 2024-25
2.	2.	Discussion on the syllabus of B.Sc. (Hons) Agriculture for addition of new courses	Since syllabus was found as the Vth Deans' committee and hence no action is required.
3.	3	Discussion on discipline-specific elective courses in B.Sc. (Hons) Agriculture	Since syllabus was found as the Vth Deans' committee and hence action no is required.
4.	4	Review of Programme scheme of M.Sc. Agriculture	As per the recommendation of Board, during 2024-25, M.Sc. Ag. (Agronomy) course has been started.
5.	5	Educational tour	It will be planned and executed during 2024-25.
6.	6	Discussion regarding RAWE within the university	As per the board decision student for RAWE are going to different KVKs of the Universities and NGOs.
7.	7	Value added certificate courses offered by the department	The university is sending their student s to the value added courses to different universities.

8.	8	Discussion on the event calendar for academic year 2024-25	The event calendar for the year 2024-25 has been prepared and various activities are being executed as per the event calendar.
9.	9	Suggestion for MOUs with different Institutions	The SOA has made the MOUs with SKRAU, Bikaner, ICAR-CIAH, Bikaner. We are also pursuing for MOU with RAJUVAS, Bikaner and Government Dungar College, Bikaner.
10.	10	Suggestion for industrial tie ups	The SOA has tie ups with different private industries for internship of the students.

Convener

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Attendance Sheet

Meeting	Board of Studies		
School /Forum/Etc	Basic and Applied Sciences		
Date	08-10-2024	**Meeting No:**	7
Venue	Room Number 16, Admin Block, RNBGU	**Time**	11:00 AM

S.No.	Name	Signature
1.	Prof B D Sharma	
2.	Dr. Ravi Kishan Soni	
3.	Dr. Ravi Kumar	
4.	Dr. Amar Singh Godara	
5.	Mr. Dharmveer Singh Rathore	

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BoS for School of Agriculture

Meeting 6

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Circular

Date	12.06.2024	DOCID	DOC202406120004
Subject	Agenda of Board of Studies Meeting for Agriculture		

The meeting of the Board of Studies for Agriculture will be held on **14th June, 2024 at 11:30 AM** in room number 16, Admin Block, RNB Global University, Bikaner to discuss the following agenda:

Item No.	Agenda
Item No. 1:	Review of the Programme Scheme of B.Sc. (Hons) Agriculture.
Item No. 2:	To discuss the syllabus of B.Sc. (Hons) Agriculture for addition of new courses.
Item No. 3:	To discuss the Discipline-specific elective courses in B.Sc. (Hons) Agriculture.
Item No. 4:	To discuss the Programme Scheme of M.Sc. Agriculture in Agronomy
Item No. 5:	Educational Tour 2(0+2)
Item No. 6:	Discussion regarding RAWE with in University.
Item No. 7:	To discuss the value-added Certificate courses offered by the department.
Item No. 8:	To discuss the event calendar for Academic year 2024-2025
Item No. 9:	Suggestions for the MoUs with different Institution.
Item No. 10:	Suggestions for the Industrial tie ups.
Item No. 11:	Any other item with the permission of the Chair.

Dr. B.D. Sharma
(Convener)

RNB Global University Dean Bikaner

Copy to : Concerned Members

The members reviewed the syllabus of added some courses for the academic session 2024-25 and found in accordance to the Vth Dean's Committee.

Item No. 3: Discussion on Discipline-specific Elective Courses in B.Sc. (Hons) Agriculture

The members reviewed the elective courses and found appropriate for the academic session 2024-25.

Item No. 4: Review of the Programme Scheme of M.Sc. Agriculture

The matter was discussed before the Board and it was opined that looking to the available facilities in terms of faculties, laboratories and experimental fields the university should initiate the PG programmes.

Item No. 5: Educational Tour 2(0+2)

Dr. Ravi Kishan Soni emphasized the importance of practical exposure through educational tours. It was agreed that the educational tour should be planned to prominent Agricultural Research Centres and Universities in isoclimatic regions.

Item No. 6: Discussion Regarding RAWE within the University

Dr. BD Sharma discussed the Rural Agricultural Work Experience (RAWE) programme among the members. The board decided to enhance collaboration with local universities to provide hands-on experience to students.

Item No. 7: Value-added Certificate Courses Offered by the Department

The board members discussed the value-added certificate courses offered by the Department. The courses are in demand as it will enable learners to run their own business. The Board members agreed to the same.

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ATR –5th Meeting

The 5th meeting of the Board of Studies for School of Agriculture was held on 21-04-2023, in room number 109 Academic Block RNB Global City, Ganganagar Road, Bikaner at 11.00 A M.

SN	Item No.	Agenda	Action Taken
1.	1	ICAR Accreditation of School of Agriculture	For ICAR Accreditation, SSR for 6.4 and 6.5 (Programme and School of Agriculture have been submitted to Coordination Accreditation of ICAR, New Delhi
2.	2.	Revision of UG course of Agriculture	Considering the Vth Dean's Committee courses i.e. 1. Introductory Agro-Meteorology & Climate Change, 2. Introductory Agro-Meteorology & Climate Change Lab introduced
3.	3	PG courses in Genetics & Plant Breeding and Plant Pathology	PG courses can be initiated after ICAR accreditation
4.	4	Diploma course in Agriculture	Can be considered after receiving the VIth Dean's Committee recommendtions

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Attendance Sheet

Meeting	Board of Studies		
School /Forum/Etc	Basic and Applied Sciences		
Date	14-06-2023	**Meeting No:**	6
Venue	Room Number 16, Admin Block, RNBGU	**Time**	11:30 AM

S.No.	Name	Signature
1.	Prof B D Sharma	
2.	Dr. Ravi KishanSoni	
3.	Dr. Ravi Kumar	
4.	Dr. Amar Singh Godara	
5.	Mr. Dharmveer Singh Rathore	

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Notice

Date	17-04-2023	No.	DOC202304170002
Subject	V Board of Studies Meeting of Agriculture		

The fifth meeting of the Board of Studies of School of Agriculture, will be held on 21st April 2023 AT 11.00 AM at room number 109, Academic Block, RNB Global Uiversity, Bikaner to discuss the following agenda:

Item No. **Agenda**

Item No. 1: ICAR Accreditation of School of Agriculture

Item No. 2: The syllabus of the UG course

Item No. 3: Start of PG courses in Genetics and Plant Breeding and Plant Pathology.

Item No. 4: One-year Diploma Course in agriculture

RNB Global University Bikaner

Convener

Prof S S Shekhawat

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Date	21-04-2023	No.	DOC20230421XXXX
Subject	V Board of Studies Meeting of Agriculture		

MINUTES OF THE BOARD OF STUDIES MEETING OF AGRICULTURE HELD At Room No. 109 ON 21st April 2023 AT 11.00 AM

The following members were present:

S.No.	Name	Designation
1.	Dr. S.S. Shekhawat	Convener
2.	Dr. Rakesh Bhargava	Member
3.	Dr. Ravi Kishan Soni	Member
4.	DR. Amar Singh Godara	External Member

Prof. S S Shekhawat, Dean, School of Agriculture, RNB Global University, and Convener of the Board of Studies welcomed all the members in the meeting. After confirming the quorum, the agenda was taken up for discussion. In the meeting, the following points were discussed:

Item No. 1. ICAR Accreditation of School of Agriculture was discussed. All efforts are to be made to get the accreditation.

Item No. 2: The syllabus of the UG course of agriculture was discussed and it was emphasized to be according to the VIth Deans' Committee Report of ICAR. The following new courses are introduced with updated syllabus.

B.Sc Ag IV	20026400	Introductory Agro-meteorology & Climate Change
B.Sc Ag IV	20026500	Introductory Agro-meteorology & Climate Change Lab

Item No. 3: It was felt that from the coming session 2023-24, some PG courses can be started. For example, the beginning can be done with the start of two courses, viz. Genetics and Plant Breeding and Plant Pathology. The teaching of the courses is possible by the existing staff.

Item No. 4: One-year Diploma Course in agriculture can be started with the existing staff.

Conclusion/Decision Conveyed: The Chair advised that the decisions taken in this meeting can be executed.

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ATR –4th Meeting

The 4th meeting of the Board of Studies for School of Agriculture was held on 13-05-2022, in room number 16 Admin Block RNB Global City, Ganganagar Road, Bikaner at 03.30 PM (Online).

SN	Item No.	Agenda	Action Taken
1.	1	Syllabus of B.Sc. (Hons) Agriculture (i) Removal of courses (ii) Addition of courses (iii) Credit hours (iv) Inclusion of educational tour	The syllabus of B.Sc. (Hons.) Agriculture has been amended as same as ICAR syllabus.

Convener

RNB Global University
Dean
Bikaner

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Attendance Sheet

Meeting	Board of Studies Meeting for Agriculture		
School	School of Agriculture		
Date	21-4-2023	**Meeting No.**	2023/01
Venue	Room No. 109 of Academic Block	**Time**	11.00 AM to 12.00 noon

S. No	Name	Signature
1.	Dr. S.S. Shekhawat	P
2.	Dr. Rakesh Bhargava	P
3.	Dr. Ravi Kishan Soni	P
4.	DR. Amar Singh Godara	P

Please note: Handwritten attendance is attached.

Name & Signature

RNB Global University Dean

Convener: Dr. S. S. Shekhawat

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Attendance Sheet

Event	Meeting of Board of Studies	**Date**	21.04.2023
Venue	RNBGU,	**Time**	11.00 a.m.

SN	Name	~~Batch~~ Designation	Signature
1	Dr. S. S. Shekhawat	Convener	Sd/-
2	Prof. Rakesh Bhargava	Member	Sd/-
3	Dr. Ravi Kumar Soni	Member	Sd/-
4	Dr. Amar Singh Godara	External Member	Sd/-

Sd/-
(S. S. Shekhawat)

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Circular

Date	12.05.2022	DOCID	DOC202205120002
Subject	Agenda for Board of Studies Meeting for School of Agriculture		

The 4th meeting of the Board of Studies for Agriculture will be held on **13-05-2022 at 03:30 PM** online to discuss the following agenda:

Item No.	Agenda
Item No. 1:	Confirmation of ATR of 3rd BoS meeting
Item No. 2:	Syllabus of B. Sc. (Hons) Ag.
Item No. 3:	Any other item with the permission of the Chair.

Dr. S. S. Shekhawat
(Convener)

RNB Global University Dean Bikaner

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Date	13-05-2022	No.	DOC20220513000X
Subject	Minutes of Meeting of Board of Studies of School of Agriculture		

MINUTES OF MEETING OF BOARD OF STUDIES OF SCHOOL OF AGRICULTURE HELD ONLINE ON 13TH MAY 2022 AT 03:30 PM

The following members were present:

S. No.	Member	Designation
1.	Dr. S. S. Shekhawat	Dean- SOA
2.	Dr. Rakesh Bhargava	Dean-Research
3.	Dr. A. S. Godara	Associate Professor, External Member

Item No. 1: Syllabus of B.Sc. (Hons.) Ag.

All the members were of the opinion that the syllabus of B. Sc. (Hons.) Ag. should be according to the ICAR Fifth Deans' Committee Report. Dr. Shekhawat reported that more than 95% of the syllabus of RNBGU is according to the syllabus of ICAR. However, some differences were observed related to the following points, which may be corrected if possible:

1. Courses, which are not in ICAR syllabus but are included in RNBGU syllabus.
2. Courses, which are in ICAR syllabus but are not included in RNBGU syllabus.
3. Some courses have different names compared to ICAR syllabus.
4. The maximum number of credit hours in a semester should be 21-22 in order to provide time for library consultation and other activities like assignments, seminars and project preparation etc. At RNBGU, the credit hours are more than 22 in six semesters out of the eight semesters.
5. The total number of credit hours in 8 semesters including Student READY programme should range between 170 to 183 for the programme according to ICAR syllabus. At RNBGU, total credit hours of eight semesters are 221.
6. Educational tour is also not included in RNBGU syllabus, although it is conducted.

Conclusion/Decision Conveyed: The syllabus may be amended if it is required to be completely similar to ICAR syllabus.

The meeting ended with a vote of thanks to the Chair.

Meeting			
School	School of Agriculture		
Date	13-05-2022	Meeting No.	2022/01
Venue	Online	Time	3.30 PM to 04:30 PM

Courses, which are not in ICAR and SKRAU syllabus but are included in RNBGU syllabus:

1. Irrigation and Farm Management : Semester II; Course Code: 20001800 and; Credits: 3
2. Natural Resources and Farm Management: Semester II; Course Code: 20002000; Credits: 2
3. Food Safety and Standards: Semester IV; Course Code: 20017800 and 20017900; Credits: 2

Courses, which are in ICAR and SKRAU syllabus but are not included in RNBGU syllabus:

1. Geoinformatics and Nanotechnology and Precision Farming: Vth semester at SKRAU; Credit Hrs: 2(1+1)
2. Introductory Biology: Credit Hrs: 2(1+1)
3. Elementary Mathematics: Credit Hrs: 2(2+0)
4. Farming System and Sustainable Agriculture; Credit Hrs: 1(1+0)

Different names of courses

1. In RNBGU syllabus, names of the following courses are different compared to the ICAR report. For example: Microbiology in place of Agricultural Microbiology

Other recommendations of ICAR, which are not being followed at RNBGU:

1. The maximum number of credit hours in a semester should be 21-22 in order to provide time for library consultation and other activities like assignments, seminars and project preparation etc. At RNBGU, the credit hours are more than 22 in six semesters out of the eight semesters.
2. The total number of credit hours in 8 semesters including Student READY programme will range between 170 to 183 for all the programmes. At RNBGU, total credit hours of eight semesters are 221.

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S. No.	Member	Attendance
1.	Dr. Surendra Singh Shekhawat	P
2.	Dr. Rakesh Bhargava	P
3.	Dr. A. S. Godara	P

Name & Signature
(Dean/Chair): Dr. S. S. Shekhawat

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ATR –3rd Meeting

The 3rd meeting of the Board of Studies for School of Agriculture was held on 02-02-2021, in room number 16 Admin Block RNB Global City, Ganganagar Road, Bikaner at 11.30 AM.

SN	Item No.	Agenda	Action Taken
1.	1	To discuss syllabus of B.Sc. (Agri.) if any change required.	As per the recommendation of the Board, Fundamentals of Agronomy and Meteorology course has been divided in two courses i.e. Fundamentals of Agronomy in first semester and Meteorology in fourth semester.
2.	2	To discuss syllabus of B.Sc. (Agri./Agro.) for addition of any new value added course if required.	No other value added course is added in syllabus of B>Sc. (Agri./Agro.)
3.	3	To recommend the names of paper setters and external examiners for practical .	Panels of paper setter and practical examination prepared and shared with examination cell.
4.	4	Suggestion for the industrial tie ups.	Suggestion for the industrial tie up has been kept pending upto RAWE and 8th semester.
5.	5	To suggest the guest lectures, workshop, seminars, etc.	Guest lectures by the concerned faculties were arranged on time to time from the examiners coming for practical examinations.
6.	6	To discuss short term projects/dissertation work	In the form of assignments and vermicompost practical have been incorporated.
7.	7.	Discussion on number of paper sets for Sessional examination.	As per the Board recommendations, two sets of question paper was adopted by examination cell.

8.	8	Mentors of each 10 students for locl guardian	Recommendation has been adopted as such for betterment of students.
9.	9	Class biometric may be considered	In due course of time, it will be considered.
10.	10	Providing of class notes to the students	Teachers are giving the PPT presentation to the students.
11.	11	Question paper setting	University is following the practice of external paper setter for end semester examination.
12.	12	Discussion regarding RAWE	University is allotting the Nodal officer from university faculty for RAWE programme.

Convener

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Annexure

School of Agriculture

List of Syllabus Revisions

2022-23

B.Sc (Agriculture) Sem I (22-23) – The syllabus of the following subjects are revised :-

- Principles of Agronomy and Meteorology (20000100) is revised as Fundamentals of Agronomy (20023400)
- Principles of Agronomy and Meteorology Lab (20000200) is revised as Fundamentals of Agronomy Lab (20023500)
- Introduction to Soil Science (20000300) is revised as Fundamentals of Soil Science (20023600)
- Introduction to Soil Science Lab (20000400) is revised as Fundamental of Soil Science Lab (20023700)
- Fundamentals of Plant Biochemistry and Biotechnology (20026600) subject introduced.
- Fundamentals of Plant Biochemistry and Biotechnology Lab (20026700) subject introduced.
- a. Introductory Biology (20024000) and b. Elementary Mathematics (20025100) subjects introduced as a Remedial course : any one to be taken based on subject not learnt in 12 th Standard
- Introduction to Horticulture (20000800) is revised as Fundamentals of Horticulture (20024100)
- Introduction to Horticulture Lab (20000900) is revised as Fundamentals of Horticulture Lab (20024200)
- Rural Sociology and Educational Psychology (20025500) is introduced in I Semester
- Elementary Genetics (20000500) subject omitted
- Elementary Genetics Lab (20000600) subject omitted
- Statistical Methods (20000700) subject omitted
- Principles of Agricultural Economics (20001000) subject omitted

B.Sc (Agriculture) Sem II (22-23) – The syllabus of the following subjects are revised :-

21-22 (All courses repealed)	22-23 (All courses newly introduced)
20001200 Plant Biochemistry	20023800 Fundamentals of Genetics
20001300 Plant Biochemistry Lab	20023900 Fundamentals of Genetics Lab
20001400 Microbiology	20024300 Fundamentals of Agricultural Economics
20001500 Microbiology Lab	20024800 Agricultural Microbiology
20001600 Introduction to Entomology and Nematology	20024900 Agricultural Microbiology Lab
20001700 Introduction to Entomology and Nematology Lab	20025300 Fundamentals of Entomology
20001800 Irrigation & Water Management	20025400 Fundamentals of Entomology Lab
20001900 Rural Sociology and Educational Psychology	20001800 Irrigation & Water Management
	20025600 Soil & water Conservation Engineering (transferred from III Semester)

20002000 Natural Resources And Farm Management 20002100 Fundamentals of Plant Breeding (transferred to III Semester) 20002200 Fundamentals of Plant Breeding Lab (transferred to III Semester) 99001900 Environmental Studies 20002300 Ability and Skill Enhancement - II 99002800 Workshops & Seminars 99002700 Human Values & Social Service/NCC/NSS	20012500 Soil & water Conservation Engineering Lab (transferred from III Semester) 20025700 Fundamentals of Crop Physiology 20013500 Fundamentals of Crop Physiology Lab 20026200 Fundamentals of Plant Pathology 20026300 Fundamentals of Plant Pathology Lab 20026000 Fundamentals of Agricultural Extension Education 20026100 Fundamentals of Agricultural Extension Education Lab 20002300 Ability & Skill Enhancement – II 99003300 Workshops & Seminars/Human Values & Social Service/NCC/NSS

B.Sc (Agriculture) Sem III (22-23) – The syllabus of the following subjects are revised :-

21-22	22-23
20012200 Crop Production Technology – I (Kharif Crops) 20012400 Soil & water Conservation Engineering (transferred to II Semester) 20012500 Soil & water Conservation Engineering Lab (transferred to II Semester) 20012600 Agricultural Finance and Cooperation 20012700 Agricultural Finance and Cooperation Lab 20012800 Agri- Informatics 20012900 Agri- Informatics Lab 20013000 Farm Machinery and Power 20013100 Farm Machinery and Power lab 20013200 Production Technology for Vegetables and Spices 20013300 Production Technology for Vegetables and Spices Lab 20013400 Fundamentals of Crop Physiology 20013500 Fundamentals of Crop Physiology Lab 20013600 Fundamentals of Plant Pathology 20013700 Fundamentals of Plant Pathology Lab 20013800 Livestock and Poultry Management 20013900 Livestock and Poultry Management Lab 20014000 Agriculture Heritage & Human Values & Ethics (transferred to IV Semester) 20014100 Ability and Skill Enhancement -III	20012200 Crop Production Technology – I (Kharif Crops) [Syllabus divided into two units] 20002100 Fundamentals of Plant Breeding (transferred from II Semester) 20002200 Fundamentals of Plant Breeding Lab (transferred from II Semester) 20012600 Agricultural Finance and Cooperation (Syllabus divided into three units) 20012700 Agricultural Finance and Cooperation Lab 20012800 Agri- Informatics 20012900 Agri- Informatics Lab 20013000 Farm Machinery and Power 20013100 Farm Machinery and Power lab 20013200 Production Technology for Vegetables and Spices ***(Syllabus divided into two units)*** 20013300 Production Technology for Vegetables and Spices Lab ***20025200 Environmental Studies & Disaster Management (new course)*** 20000700 Statistical Methods 20013800 Livestock and Poultry Management ***(Syllabus divided into two units)*** 20013900 Livestock and Poultry Management Lab 20014100 Ability and Skill Enhancement -III 99003300 Workshops & Seminars/ Human Values & Social Service/NCC/NSS

99003300 Workshops & Seminars/ Human Values & Social Service/NCC/NSS	

B.Sc (Agriculture) Sem IV (22-23) – The syllabus of the following subjects are revised :-

- 20015300 Plant Biotechnology (Omitted)
- 20015400 Plant Biotechnology Lab (Omitted)
- 20014000 Agriculture Heritage & Human Values & Ethics (transferred from III Semester)
- 20016000 Agribusiness Management (Syllabus divided into two units)
- 20016200 Agrochemicals (Syllabus divided into three units)
- 20016400 Commercial Plant Breeding (Syllabus divided into two units)
- 20016500 Commercial Plant Breeding Lab (Syllabus revised and practical visits included)
- 20016600 Landscaping (Syllabus divided into two units)
- 20026400 Introductory Agro-meteorology & Climate Change (New subject introduced)
- 20026500 Introductory Agro-meteorology & Climate Change Lab (New subject introduced)
- 20026800 Farming System & Sustainable Agriculture (New subject introduced)

B.Sc (Agriculture) Sem V (22-23) – The following subjects are re-defined :-

- 20016800 Principles of Integrated Pest and Disease Management – The entire syllabus of the subject is reclassified into two units.
- 20017000 Manures, Fertilizers and Soil Fertility Management - The entire syllabus of the subject is reclassified into three units.
- 20017100 Manures, Fertilizers and Soil Fertility Management lab -
- 20017200 Pests of Crops and Stored Grain and their Management - The entire syllabus of the subject is reclassified into two units.
- 20017300 Pests of Crops and Stored Grain and their Management Lab -
- 20017400 Diseases of Field and Horticultural Crops and their Management -I - The entire syllabus of the subject is reclassified into two units.
- 20017600 Crop Improvement-I (Kharif Crops) - The entire syllabus of the subject is reclassified into two units.
- 20017700 Crop Improvement-I Lab (Kharif Crops) - The entire syllabus of the subject is reclassified into two units.
- 20017800 Food Safety & standards - The entire syllabus of the subject is reclassified into two units.
- 20018300 Intellectual Property Rights - The entire syllabus of the subject is reclassified into two units.
- 20018600 Elective -II - Geoinformatics, Nano-technology and Precision Farming - The entire syllabus of the subject is reclassified into two units.
- 20019000 Weed Management Lab – Syllabus added.
- 20019100 Micro propagation Technologies - The entire syllabus of the subject is reclassified into two units.

- 20018000 Biopesticides & Biofertilizers - The entire syllabus of the subject is reclassified into three units.

B.Sc (Agriculture) Sem VI (22-23) – The following subjects are revised :-

- 20025900 Post-harvest Management and Value Addition of Fruits and Vegetables – new syllabus adopted.

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Circular

Date	23.01.2021	No.	DOC202101230037
Subject	Meeting of the Board of Studies for the Department of Agriculture		

The Meeting Of The Board Of Studies- Agriculture Will Be Held Online, Rnb Global University, Rnb Global City, Ganganagar Road, Bikaner (Rajasthan) On Saturday 2nd February 2021 At 11:30 Am

Item 1: To discuss syllabus of B.Sc. (Agri./Agro.) if any change required

Item 2: To discuss syllabus of B.Sc. (Agri./Agro.) for addition of any new value added course if required

Item 3: To recommend the names of paper setters and external examiners for practical's as per Authority University discussion.

Item 4: Suggestions for the industrial tie ups

Item 5: To suggest the Guest Lectures, workshops, seminars etc.

Item 6:. To discuss short term projects/ dissertation work assignment, Vermi Compost practical.

Item 7: According to committee members two sets of question paper is sufficient for 1 and 2 sessional and final exam.

Item 8: Mentors of each 10 students for local guardian

Item 9: Class biometric attendance is may be considered

Item 10: As per the external members of BoS/internal members class notes can be provided by the teachers and distributed to the students in English and Hindi for better understanding of agriculture course contents only for first two semesters.

Item 11: Question Paper setting.

Item 12: Discussion regarding RAWE

Item 13: Any other item with the permission chair.

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Dr. Karan Verma
(Convenor)

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Circular

Date	02-02-2021	No.	DOC202102020005
Subject	Minutes of Meeting of the Board of Studies for the Department of Agriculture		

MINUTES OF THE MEETING OF THE BOARD OF STUDIES- AGRICULTURE HELD ONLINE, RNB GLOBAL UNIVERSITY, RNB GLOBAL CITY, GANGANAGAR ROAD, BIKANER (RAJASTHAN) ON SATURDAY 2ND FEBRUARY 2021 AT 11:30 AM

Following members were present:

S.No.	Faculty Member	Designation
1.	Dr. Karan Verma (Assistant Professor, RNB Global University)	Convener
2.	Dr. Pradeep Pilania (Assistant Professor, RNB Global University)	Member
3.	Dr. Amar Singh Godara (Associate Porfessor, Agro. SKRAU BKN)	External Member

Item 1: To discuss syllabus of B.Sc. (Agri./Agro.) if any change required

According to external examiner in the First semester Fundamentals of Agronomy course is followed with 4 credits as per ICAR Delhi/SKRAU Bikaner but in RNBGU the same course has got merged with Fourth semester course i.e Principles of Agronomy and Meteorology. In this the meteorology concepts belongs to Fourth semester. It is difficult to cover both agronomy and meteorology contents in one semester. So as per the advisory committee and external examiner we suggest removing meteorology from first semester and include in the fourth semester. (*Refer Annexure*)

Item 2: To discuss syllabus of B.Sc. (Agri./Agro.) for addition of any new value added course if required

All good and agree.

Item 3: To recommend the names of paper setters and external examiners for practical's as per Authority University discussion.

Item 4: Suggestions for the Industrial tie ups

Yes, can do in 8th semester and RAWE

Item 5: To suggest the Guest Lectures, workshops, seminars etc.

As per the subject handling faculty.

Item 6:. To discuss short term projects/ dissertation work

Assignment, Vermi Compost practical.

Item 7: According to committee members two sets of question paper is sufficient for 1 and 2 sessional and final exam.

Item 8: Mentors of each 10 students for local guardian

Yes. If mentors are allotted the students will get good guidance and it will improve the communication skills as some students are hesitant to speak.

Item 9: Class biometric attendance is may be considered

As per university decision.

Item 10: As per the external members of BoS/internal members class notes can be provided by the teachers and distributed to the students in English and Hindi for better understanding of agriculture course contents only for first two semesters.

Item 11: Question Paper setting.

For end semester examination question papers can be accepted from external members.

Item 12: Discussion regarding RAWE

Professors should be allotted at the time of RAWE.

Item 13: Any other item with the permission chair?

The meeting ended with a vote of thanks

Dr. Karan Verma
(Convenor)

ATTENDENCE SHEET

Meeting	Board of Studies		
Department	AGRICULTURE		
Date	02.02.2021	Meeting no	
Venue	Online	Time	11:30 AM

Board of Studies for Agriculture

1.	Dr. Karan Verma	Convener
2.	Dr. Pradeep Pilania	Member
3.	Dr. Amar Singh Godara	External Member

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ATR -2nd Meeting

The 2nd meeting of the Board of Studies for School of Agriculture was held on 27-11-2019, in room number 16 Admin Block RNB Global City, Ganganagar Road, Bikaner at 2.00 PM.

SN	Item No.	Agenda	Action Taken
4.	1	To discuss syllabus of Genetics and Plant Breeding B.Sc. (Hons) Agri. If any change required	The syllabus of Genetics and Plant Breeding B.Sc. (Hons) Agri. Has been adopted as such since course curriculum corresponds to ICAR syllabus.
5.	2	Finalization of syllabus for upcoming even semester	The syllabus for even semester has been implemented as such recommended by board
6.	3	To discuss M.Sc. Agri. (Genetics and Plant Breeding) syllabus	Syllabus covers all the sub disciplines of agriculture, hence no action required
7.	4	To recommend the names of paper setters and external examiners for practical	Recommended panels was taken care by Examination cell
8.	5	Suggestion for the industrial tie ups.	Suggestion for the industrial tie up has been kept pending upto RAWE and 8th semester.
9.	6	To suggest the guest lectures, workshop, seminars, etc.	Guest lectures by the concerned faculties were arranged on time to time from the examiners coming for practical examinations.
10.	7.	Use of new technologies and webinars in teaching	PPT presentations and assignments have been made by students on important topics given by the faculty.

Convener

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Annexure

List of New courses introduced in 2020-21

B.Sc. Agriculture

Year III - Semester V and VI

B.Sc Ag V	20016800	Principles of Integrated Pest and Disease Management
B.Sc Ag V	20016900	Principles of Integrated Pest and Disease Management Lab
B.Sc Ag V	20017000	Manures, Fertilizers and Soil Fertility Management
B.Sc Ag V	20017100	Manures, Fertilizers and Soil Fertility Management lab
B.Sc Ag V	20017200	Pests of Crops and Stored Grain and their Management
B.Sc Ag V	20017300	Pests of Crops and Stored Grain and their Management Lab
B.Sc Ag V	20017400	Diseases of Field and Horticultural Crops and their Management -I
B.Sc Ag V	20017500	Diseases of Field and Horticultural Crops and their Management -I Lab
B.Sc Ag V	20017600	Crop Improvement-I (Kharif Crops)
B.Sc Ag V	20017700	Crop Improvement-I Lab (Kharif Crops)
B.Sc Ag V	20017800	Food Safety & standards
B.Sc Ag V	20017900	Food Safety & standards Lab
B.Sc Ag V	20018000	Bio pesticides & Bio fertilizers
B.Sc Ag V	20018100	Bio pesticides & Bio fertilizers Lab
B.Sc Ag V	20018200	Practical Crop Production – I (Kharif crops)
B.Sc Ag V	20018300	Intellectual Property Rights
B.Sc Ag V	20018400	Ability and Skill Enhancement -V
B.Sc Ag V	20018500	Summer Internship and Report
B.Sc Ag V	20018600	Geoinformatics and Nano-technology and Precision Farming (Elective)
B.Sc Ag V	20018700	Geoinformatics and Nano-technology and Precision Farming Lab (Elective)
B.Sc Ag V	20018800	Farming System & Sustainable Agriculture (Elective)
B.Sc Ag V	20018900	Weed Management (Elective)
B.Sc Ag V	20019000	Weed Management Lab (Elective)
B.Sc Ag V	20019100	Micro propagation Technologies (Elective)
B.Sc Ag V	20019200	Micro propagation Technologies Lab (Elective)
B.Sc Ag VI	20019300	Rainfed Agriculture & Watershed Management
B.Sc Ag VI	20019400	Rainfed Agriculture & Watershed Management lab
B.Sc Ag VI	20019500	Protected Cultivation and Secondary Agriculture
B.Sc Ag VI	20019600	Protected Cultivation and Secondary Agriculture lab
B.Sc Ag VI	20019700	Diseases of Field and Horticultural Crops and their Management-II
B.Sc Ag VI	20019800	Diseases of Field and Horticultural Crops and their Management-II Lab
B.Sc Ag VI	20019900	Post-harvest Management and Value Addition of Fruits and Vegetables

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B.Sc Ag VI	20020000	Post-harvest Management and Value Addition of Fruits and Vegetables lab
B.Sc Ag VI	20020100	Management of Beneficial Insects
B.Sc Ag VI	20020200	Management of Beneficial Insects lab
B.Sc Ag VI	20020300	Crop Improvement-II (Rabi crops)
B.Sc Ag VI	20020400	Crop Improvement-II (Rabi crops) Lab
B.Sc Ag VI	20020500	Practical Crop Production –II (Rabi crops)
B.Sc Ag VI	20020600	Principles of Organic Farming
B.Sc Ag VI	20020700	Principles of Organic Farming lab
B.Sc Ag VI	20020800	Farm Management, Production & Resource Economics
B.Sc Ag VI	20020900	Farm Management, Production & Resource Economics Lab
B.Sc Ag VI	20021000	Principles of Food Science and Nutrition
B.Sc Ag VI	20021100	Ability and Skill Enhancement VI
B.Sc Ag VI	20021200	Hi-tech. Horticulture (Elective)
B.Sc Ag VI	20021300	Hi-tech. Horticulture Lab (Elective)
B.Sc Ag VI	20021400	Protected Cultivation (Elective)
B.Sc Ag VI	20021500	Protected Cultivation Lab (Elective)
B.Sc Ag VI	20021600	System Simulation and Agro- advisory (Elective)
B.Sc Ag VI	20021700	System Simulation and Agro- advisory Lab (Elective)
B.Sc Ag VI	20021800	Agricultural Journalism (Elective)
B.Sc Ag VI	20021900	Agricultural Journalism Lab (Elective)

Annexure

School of Agriculture

List of Syllabus Revisions

2020-21

B.Sc (Agriculture) Sem IV (20-24) – The syllabus of the following subjects are revised :-

- Fundamentals of Agriculture Extension Education
- Fundamentals of Agriculture Extension Education Lab

B.Sc (Agriculture) Sem VI (20-24) – The syllabus of the following subjects are REVISED :-

- (20026900) Diseases of Field and Horticultural Crops and their Management-II

Course Name: Diseases of Field and Horticultural Crops and their Management-II

Course Code: 20026900

Course Outline

Unit I

Symptoms, etiology, disease cycle and management of major diseases of following crops: Field crops: Wheat: Rusts, loose smut, karnal bunt, flag smut and ear cockle & tundu. Barley: Stripe, covered smut and molya disease. Sugarcane: Red rot, whip smut, grassy shoot, ratoon stunting and Pokkah boeng. Lentil: Wilt. Mustard: Alternaria blight, white rust and Sclerotinia rot. Gram: Root rot, wilt and Ascochyta blight. Isabgol: Downy mildew. Coriander: Stem gall. Cumin: Wilt, powdery mildew and Alternaria blight. Fenugreek: Powdery mildew.

Unit II

Horticultural crops: Mango: Malformation and black tip. Citrus: Canker, dieback and gummosis. Grape vine: Downy mildew and anthracnose. Apple: Scab. Ber: Powdery mildew. Aonla: Rust. Potato: Late blight, black heart, golden nematode and leaf roll. Onion: Purple blotch. Chillies: Anthracnose and leaf curl. Cabbage: Alternaria leaf spot and black rot. Pea: powdery mildew. Carrot: Alternaria blight. Rose: Dieback and powdery mildew. Marigold: Blight.

Course Name: Diseases of Field and Horticultural Crops and their Management-II Lab

Course Code: 20027000

Course Outline

1.Wheat: Rusts, loose smut, karnal bunt and ear cockle.
2.Barley: Stripe, covered smut and molya disease.
3.Sugarcane: Red rot.
4. Lentil: Wilt.
5. Mustard: Alternaria blight, white rust and Sclerotinia stem rot.
6. Gram: Root rot, wilt and Ascochyta blight.
7. Isabgol: Downy mildew.
8. Cumin: Wilt, powdery mildew and Alternaria blight.
9. Fenugreek: Powdery mildew.
10. Mango: Malformation Citrus: Canker, dieback
11. Ber: Powdery mildew.
12. Potato: Late blight, black heart
13. Onion: Purple blotch.
14. Chillies: Anthracnose and leaf curl.

Note: Students should submit 20 pressed and well-mounted specimens.

Symptoms, etiology, disease cycle and management of major diseases of following crops: Field Crops: Rice: blast, brown spot, bacterial blight, sheath blight, false smut, khaira and tungro; Maize: stalk rots, downy mildew, leaf spots; Sorghum: smuts, grain mold and anthracnose, Bajra :downy mildew and ergot; Groundnut: early and late leaf spots, wilt Soybean: Rhizoctonia blight, bacterial spot, seed and seedling rot and mosaic; Pigeonpea: Phytophthora blight, wilt and sterility mosaic; Finger millet: Blast and leaf spot; black & green gram: Cercospora leaf spot and anthracnose, web blight and yellow mosaic; Castor: Phytophthora blight; Tobacco: black shank, black root rot and mosaic. Horticultural Crops: Guava: wilt and anthracnose; Banana: Panama wilt, bacterial wilt, Sigatoka and bunchy top; Papaya: foot rot, leaf curl and mosaic, Pomegranate: bacterial blight; Cruciferous vegetables: Alternaria leaf spot and black rot; Brinjal: Phomopsis blight and fruit rot and Sclerotinia blight; Tomato: damping off, wilt, early and late blight, buck eye rot and leaf curl and mosaic; Okra: Yellow Vein Mosaic; Beans: anthracnose and bacterial blight; Ginger: soft rot; Colocasia: Phytophthora blight; Coconut: wilt and bud rot; Tea: blister blight; Coffee: rust

to be fragmented in Units & the crop of Rajasthan specially of Bikaner region are to be added

Course Name: Diseases of Field and Horticultural Crops and their Management-II Lab

Course Code: 20019800

Course Outline

1. Identification and histopathological studies of selected diseases of field and horticultural crops covered in theory.
2. Field visit for the diagnosis of field problems.
3. Collection and preservation of plant diseased specimens for Herbarium;

Note: Students should submit 50 pressed and well mounted Specimens.

Course Name: Post-harvest Management and Value Addition of Fruits and Vegetables

Course Code: 20019900

Course Outline

Unit I

Importance of Postharvest Technology in horticultural crops. Maturity indices, harvesting,
handling, grading of fruits, vegetables, cut flowers, plantation crops, spices, medicinal and aromatic plants. Pre harvest factors affecting quality, factors responsible for deterioration of horticultural produce, physiological and bio-chemical changes, hardening and delaying ripening process. Postharvest treatments of horticultural crops.

Unit II

8. Field demonstration on construction of water harvesting structures. Visit to rainfed research station/watershed.

Course Name: Protected Cultivation and Secondary Agriculture

Course Code: 20019500

Course Outline

Green house technology: Introduction, Types of Green Houses; Plant response to Green house environment, Planning and design of greenhouses, Design criteria of green house for cooling and heating purposes. Green house equipments, materials of construction for traditional and low cost green houses. Irrigation systems used in greenhouses, typical applications, passive solar green house, hot air green house heating systems, green house drying. Cost estimation and economic analysis. Important Engineering properties such as physical, thermal and aero & hydrodynamic properties of cereals, pulses and oilseed, their application in PHT equipment design and operation. Drying and dehydration; moisture measurement, EMC, drying theory, various drying method, commercial grain dryer (deep bed dryer, flat bed dryer, tray dryer, fluidized bed dryer, recirculatory dryer and solar dryer). Material handling equipment; conveyer and elevators, their principle, working and selection.

Course Name: Protected Cultivation and Secondary Agriculture Lab

Course Code: 20019600

Course Outline

1. Study of different type of green houses based on shape.
2. Determine the rate of air exchange in an active summer winter cooling system.
3. Determination of drying rate of agricultural products inside green house.
4. Study of green house equipments.
5. Visit to various Post Harvest Laboratories.
6. Determination of Moisture content of various grains by oven drying & infrared moisture methods.
7. Determination of engineering properties (shape and size, bulk density and porosity of biomaterials).
8. Determination of Moisture content of various grains by moisture meter.
9. Field visit to seed processing plant.

Course Name: Diseases of Field and Horticultural Crops and their Management-II

Course Code: 20019700

Course Outline

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Notice

Date	25-11-2019	No.	DOC201911250005
Subject	Meeting of the Board of Studies for School of Agriculture		

A meeting of the Board of Studies for the Department of Genetics and Plant Breeding (SOA) will be held on **Wednesday 27th November 2019 at 2:00 PM** in Admin Block in Room No.16 to discuss the following Agenda items:

Item No. 1: To discuss syllabus of Genetics and Plant Breeding, B.Sc. (Hons.) Agriculture if any change required

Item No. 2: Finalization of Syllabus for upcoming even semester

Item No. 3: To discuss M.Sc. Agriculture (Genetics and Plant Breeding) syllabus

Item No. 4: To recommend the names of paper setters and External Examiners for Practicals

Item No. 5: Suggestions for the industrial tie ups

Item No. 6: To suggest the Guest Lectures, workshops seminars etc.

Item No. 7: Use of new technologies and webinars in teaching

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Registrar

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Date	27-11-2019	No.	DOC201911270011
Subject	Minutes of Meeting of the Board of Studies for School of Agriculture		

A MEETING OF THE BOARD OF STUDIES OF THE SCHOOL OF AGRICULTURE WAS HELD IN ROOM NO. 16 ADMIN BLOCK, RNB GLOBAL UNIVERSITY, BIKANER (RAJASTHAN) ON WEDNESDAY 27th NOVEMBER 2019 AT 2:00 PM

BOS members are as follows:

S.No.	Faculty Member	Designation
1.	Dr. Rohit Mishra	Dean
2	Dr.Dipali Gupta	Convener
3	Dr. Pradeep Pilania	Member
4	Dr. Aditya Kulshreshtha	External Member

A meeting of the Board of Studies of the Department of Genetics and Plant Breeding, School of Agriculture was held on 27th November 2019 in Admin Block Room Number 16 at 02.00 PM to prepare and finalize the syllabi for B.Sc. (Hons.) Agriculture.

At the outset Dr. Rohit Mishra welcomed the members, highlighted the learning objectives and emphasized on the relevance of the course contents being presented before the Board.

The Board took up the following agenda for discussion:

Item No. 1: To discuss syllabus of Genetics and Plant Breeding, B.Sc. (Hons.) Agri. if any change required

Detailed program scheme of B.Sc. (Hons.) Agriculture was discussed by the Chair among the members. As the course curriculum corresponds to ICAR syllabus, all the members have shown satisfaction with the present syllabus and no change has been recommended by members of board.

Item No. 2: Finalization of Syllabus for upcoming even Semester

The syllabus of Genetics and Plant Breeding for even semesters of B.Sc. (Hons.) Agriculture was tabled by Dr. Rohit Mishra. It was as such recommended by board members. (*Refer Annexure*)

Item No. 3: To discuss M.Sc. Agri. (Genetics and Plant Breeding) syllabus

The board discussed that Syllabus of M.Sc. Agri. (Genetics and Plant Breeding) must incorporate course curriculum that covers ASRB NET, ICMR, DBT syllabus. The committee observed that the syllabus covers all the subdisciplines of Agriculture.

Item No. 4: To recommend the names of paper setters and External Examiners for Practicals

The Board recommended the panel of examiners for the Genetics and Plant Breeding, School of Agriculture. The names were also suggested for the practical examinations.

Item No. 5: Suggestions for the industrial tie ups

Dr. Aditya Kulshreshtha suggested some institutes for internship; Institute of Himalayan Bioresource Technology, Palampur (IHBT) and Indian Agricultural Research Institute, New Delhi. Industry and ICAR laboratories visit should be incorporated in the curriculum of B.Sc. Agriculture.

Item No. 6: To suggest the Guest Lectures, workshops seminars etc.

The names of guest lecturers were also suggested by Dr. Kulshreshtha, as experts in different fields from IARI labs and IHBT Palampur.

Item No.7: Use of new technologies and webinars in teaching

New technologies included for lectures and classes should be more interactive. The names of experts were also suggested for webinar.

The meeting came to an end with a vote of thanks to the Chair.

RNB Global University
Registrar
Bikaner

Attendance Sheet

Meeting	Board of Studies		
School	SOA		
Date	27.11.2019	Meeting number	
Venue	R016	Time	2:00 p.m.

S. No.	Name	Signature
1.	Dr. Aditya Kulshresth, Indian Agricultural Research Institute, N. Delhi	Aditya 27/11/19
2.	Dr. Dipali Gupta, Registrar	Dipali
3.	Dr. Rohit Kumar Mishra, Convener	
4.	Dr. Pradeep Pilania, Member	27/11/19

Suggestions By :- Dr. Aditya for :- B.Sc. Agri.

1) To increase lab visit

(1) Plant Biochemistry - Aditya Kulshreshtha

(2) Plant Pathology - Dr. Vipin Hallan, CSIR-IHBT, Palampur
Dr. Kalyan K. Mondal, Division of Plant Pathology, IARI, New Delhi

(3) Educational Trips in various Institutes

(4) Dr. Ganesh Waglen, IIIT, Delhi → for Guest lecture

(5) Dr. Ashish Srivastava, INSPIRE faculty, Amity University.

(6) Sun Pharma, Dr. Reddy, Biocon, Mother Dairy, Agrigenome

(7) Webinar
(Plant Biotechnology, Plant Virology, Plant-Microbe interactions
Recombinant DNA Technology)

Aditya 29/11/19

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ATR –1st Meeting

The 1st meeting of the Board of Studies for School of Agriculture was held on 25-06-2018, in room number 15 Admin Block RNB Global City, Ganganagar Road, Bikaner at 1.00 PM.

SN	Item No.	Agenda	Action Taken
1.	1	Discussion over the Recommendation of ICAR 5th Dean,s Committee	The ICAR 5th Dean's Committee Report has been accepted for B.Sc. (Hons) Agriculture Programme
2.	2	Discussion over the implementation of course content/curriculum as suggested by ICAR 5th Dean Committee	After consideration of Vth Dean Committee Report, Programme scheme and syllabus of all semester of B.Sc. (Hons) Agriculture have been prepared
3.	3	Allocation of of the Responsibilities for the implementation of course content as suggested by 5th Dean's Committee	The course content of different courses have been developed considering the 5th Dean's Committee by deputed faculties

Convener

RNB Global University Dean Bikaner

Annexure

List of New courses introduced in 2019-20

B.Sc. Agriculture

Year II - Semester III and IV

B.Sc Ag III	20012200	Crop Production Technology – I (Kharif Crops)
B.Sc Ag III	20012300	Crop Production Technology – I Lab(Kharif Crops)
B.Sc Ag III	20012400	Soil & water Conservation Engineering
B.Sc Ag III	20012500	Soil & water Conservation Engineering Lab
B.Sc Ag III	20012600	Agricultural Finance and Cooperation
B.Sc Ag III	20012700	Agricultural Finance and Cooperation Lab
B.Sc Ag III	20012800	Agri- Informatics
B.Sc Ag III	20012900	Agri- Informatics Lab
B.Sc Ag III	20013000	Farm Machinery and Power
B.Sc Ag III	20013100	Farm Machinery and Power lab
B.Sc Ag III	20013200	Production Technology for Vegetables and Spices
B.Sc Ag III	20013300	Production Technology for Vegetables and Spices Lab
B.Sc Ag III	20013400	Fundamentals of Crop Physiology
B.Sc Ag III	20013500	Fundamentals of Crop Physiology Lab
B.Sc Ag III	20013600	Fundamentals of Plant Pathology
B.Sc Ag III	20013700	Fundamentals of Plant Pathology Lab
B.Sc Ag III	20013800	Livestock and Poultry Management
B.Sc Ag III	20013900	Livestock and Poultry Management Lab
B.Sc Ag III	20014000	Agriculture Heritage & Human Values & Ethics
B.Sc Ag III	20014100	Ability and Skill Enhancement Module-III
B.Sc Ag IV	20014200	Crop Production Technology –II (Rabi Crops)
B.Sc Ag IV	20014300	Crop Production Technology –II (Rabi Crops) Lab
B.Sc Ag IV	20014400	Production Technology for Ornamental Crops, MAP and Landscaping
B.Sc Ag IV	20014500	Production Technology for Ornamental Crops, MAP and Landscaping Lab
B.Sc Ag IV	20014600	Renewable Energy and Green Technology
B.Sc Ag IV	20014700	Renewable Energy and Green Technology Lab
B.Sc Ag IV	20014800	Problematic Soils and their Management
B.Sc Ag IV	20014900	Production Technology for Fruit and Plantation Crops
B.Sc Ag IV	20015000	Production Technology for Fruit and Plantation Crops Lab
B.Sc Ag IV	20015100	Principles of Seed Technology
B.Sc Ag IV	20015200	Principles of Seed Technology lab
B.Sc Ag IV	20015300	Plant Biotechnology
B.Sc Ag IV	20015400	Plant Biotechnology Lab
B.Sc Ag IV	20015500	Agricultural Marketing Trade & Prices
B.Sc Ag IV	20015600	Agricultural Marketing Trade & Prices Lab
B.Sc Ag IV	20015700	Fundamentals of Agriculture Extension Education
B.Sc Ag IV	20015800	Fundamentals of Agriculture Extension Education Lab
B.Sc Ag IV	20015900	Ability and Skill Enhancement IV

RNB Global University Registrar Bikaner

B.Sc Ag IV	20016000	Agribusiness Management (Elective)
B.Sc Ag IV	20016100	Agribusiness Management Lab (ELEctive)
B.Sc Ag IV	20016200	Agrochemicals (Elective)
B.Sc Ag IV	20016300	Agrochemicals Lab (Elective)
B.Sc Ag IV	20016400	Commercial Plant Breeding (Elective)
B.Sc Ag IV	20016500	Commercial Plant Breeding Lab (elective)
B.Sc Ag IV	20016600	Landscaping (elective)
B.Sc Ag IV	20016700	Landscaping Lab (Elective)

Detailed Course Scheme

Bachelor of Science (Hons.)

Agriculture

Semester- II

(2019- 20)

DOC201901070030

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RNB Global City, Ganganagar Road,
Bikaner, Rajasthan 334601

OVERVIEW

RNB Global University follows Semester System along with Choice Based Credit System as per latest guidelines of University Grants Commission (UGC). Accordingly, each academic year is divided into two semesters, **Odd(July-December) and Even (January-June).**Also, the university follows a system of continuous evaluation along with regular updating in course curricula and teaching pedagogy.

The Curriculum for B. Sc Agriculture program for (January-June) Even Semester 2019 along with examination pattern is as follows:

Course Scheme

Semester –II

S. No.	Course Code	Course Name	L	T	P	Credits
1.	20001200	Plant Biochemistry	2	0	0	2
2.	20001300	Plant Biochemistry Lab	0	0	2	1
3.	20001400	Microbiology	2	0	0	2
4.	20001500	Microbiology Lab	0	0	2	1
5.	20001600	Introduction to Entomology and Nematology	2	1	0	3
6.	20001700	Introduction to Entomology and Nematology Lab	0	0	2	1
7.	20001800	Irrigation & Water Management	2	1	0	3
8.	20001900	Rural Sociology and Educational Psychology	2	1	0	3
9.	20002000	Natural Resources And Farm Management	2	0	0	2
10.	20002100	Fundamentals of Plant Breeding	2	0	0	2
11.	20002200	Fundamentals of Plant Breeding Lab	0	0	2	1
12.	99001900	Environmental Studies	3	1	0	4
13.	20002300	Ability and Skill Enhancement - II	2	0	0	2
14.	99002800	Workshops & Seminars	-	-	-	1
15.	99002700	Human Values & Social Service/NCC/NSS	-	-	-	1
		Total	**19**	**4**	**8**	**29**

EVALUATION SCHEME - THEORY

The evaluation of the theory paper of B.Sc. Agriculture program would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessments as follows:

Internal Assessment

The distribution of Internal Assessment Marks is as follows:

Type	Details	Marks
Mid Term	Two Mid-term Sessional of 15 marks each (15+15)	30
Marks obtained in various Tests, Assignments, Presentations, Quiz, Tutorials, etc.	Average of marks obtained	15
Attendance	75%+ : 5 marks	5
TOTAL	**50**	

External Assessment

Type	Marks
Theory	50

EVALUATION SCHEME - PRACTICAL

The evaluation of the practical paper of B.Sc. Agriculture program would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessment is as follows:

Internal Assessment

Type	Details	Marks
Marks obtained in various manuals, practical file, participation, any model prepared, output of practical	Average of marks obtained	45
Attendance	75%+ : 5 marks	5
TOTAL	**50**	

External Assessment

Type	Marks
Practical	50

EVALUATION SCHEME- WORKSHOPS & SEMINARS & NCC/NSS

1. NCC/NSS will be completed from Semester I – Semester IV. It will be evaluated internally by the institute. The credit for this will be given at the end of Semester.

2. The students have to join club/clubs with the active participation in different activities of club. The students would be continuously assessed from Semester-I to Semester-IV and credits and marks would be given after the end of Semester.

CURRICULUM

Course Name: Plant Biochemistry

Course Code: 20001200

Course Outline

Unit I

Biochemistry –Introduction and importance. Plant cell-Structure & organellar functions. Bio-molecules – Structure, Properties & reactions: amino acids, peptides and proteins, lipids, carbohydrates, nucleotides and nucleic acids.

Unit II

Enzymes – Factors affecting the activity, classification, immobilization and other industrial applications.

Unit III

Metabolism – Basic concepts, glycolysis, citric acid cycle, pentose phosphate pathway, b-oxidation of fatty acid, electron transport and oxidativephosphorylation. General reactions of amino acid degradation.

Metabolic regulation. Secondary metabolites-terpenoids alkaloids, phenolic

Suggested Readings

1. Plant Biochemistry- V. Arun Kumar, N. Senthil Kumar and K. Siva Kumar, 2010, APH Publishing Corporation, New Delhi.
2. Biotechnolgy-Expanding Horizons, B.D. Singh, 2014, Kalyani Publishers, Ludhiana
3. Principles and Techniqes of Biochemistry and Molecular Biology, Eds. Keith Wilson and John Walker, 7th Edition, 2010, Cambridge University Press
4. A Textbook of Biotechnology, Revised Edtion, 2014, R.C. Dubey, S. Chand Publishing Company, New Delhi
5. Lehninger Principles of Biochemistry by Albert Lehninger, David Nelson and Michael Cox, Seventh Edition, 2017 Macmillan Publishers.

Course Name: Plant Biochemistry Lab

Course Code: 20001300

Practical

1. Protein denaturation- heat, pH, precipitation of proteins with heavy metals,
2. Estimation of crude protein,
3. Estimation of protein by Lowry method;
4. Enzyme assay; Extraction of nucleic acids;
5. Extraction of oil from oilseeds;
6. Estimation of crude fat;
7. Estimation of iodine number and saponification value of an oil;
8. Quantitative determination of sugars;
9. Paper chromatography for the separation of sugars;
10. Determination of phenols, chlorophyll, phosphorus and ascorbic acid

Suggested Readings

1. Nayar. K.K, Ananthakrishnan .T.N. and David.B.V. 1976.General and Applied Entomology.Mcgraw Hill publishing Co. Ltd. New Delhi.
2. Richards O.W. and Davies R.G. 1977. Imm's General Text Book of Entomology, Vol.I & II. Chapman and Hall, London.
3. Pant. N.C. and Ghai, S. 1981. Insect Physiology and Anatomy, ICAR, New Delhi.
4. Chapman .R.F.1974. Insect Structure and Function, ELBS Publishers New Delhi.
5. Snodgrass.R.E .2001. Principles of Insect Morphology.
6. Mathur and Upadhyay, 2000. A Text Book of Entomology, Aman Publishing House, Meerut.
7. Reddy, P.P. (1993). A treatise on phyto nematology, Agricol.Publ. Academy, N. Delhi.
8. Walia, R.K. and Bajaj, H.K. (2003). Introduction plant Nematology, ICAR Publication, KrishiBhawan, New Delhi.
9. Laboratory Manual of Elementary Nematology (Correspondence to course No. NEMAT-411) by Dr. R.L. Midha and Dr. G.L. Sharma (2007).

Course Name: Introduction to Entomology and Nematology Lab

Course Code: 20001700

Course Outline

1. Insect collection and preservation. Identification of important insects.
2. General body organization of insects. Study on morphology of grasshopper or cockroach. Preparation of permanent mounts of mouth parts, antennae, legs and wings.
3. Dissection of grasshopper and caterpillar for study of internal morphology.
4. Observations on metamorphosis of larvae and pupae.
5. Dissection of cockroaches.
6. Study of compound microscope along with other laboratory necessaries,
7. Survey and Collection of soil and plant samples,
8. Extraction of nematodes from soil and roots, killing and fixing of nematodes, staining and separation of nematodes in plants tissue,
9. Preparation of temporary and semi-permanent mounts of nematodes,
10. Identification of important plant parasitic nematodes,
11. Collection and preservation of nematode diseased plant samples;
12. Nematicides and their uses.

Course Name: Irrigation and Water Management

Course Code: 20001800

Course Outline

Unit I
Irrigation: definition and objectives; Water resources and irrigation development in India and Rajasthan; Soil moisture constants and theories of soil water availability; Methods of soil moisture estimation; Evapo transpiration and crop water requirement; Scheduling of irrigation;

Unit-II
Methods of irrigation: surface, sprinkler and drip irrigation; Irrigation efficiency and water use efficiency, Irrigation water quality and its management including conjunctive use of water; Water management of different crops (rice, wheat, maize, groundnut, sugarcane, pearl millet, chickpea, mustard); Agricultural drainage.

Unit-III
Importance of water in crop production Soil Moisture constant Estimation of potential evapo-transpiration and consumptive useWater requirement of crops and factors affecting it Approaches of irrigation scheduling , . Systems and methods of irrigation – drip, sprinkler and mist Irrigation, Quantity and quality of irrigation, Measurement of irrigation water, Elementary idea of drainage on farms.

Suggested Readings:

1. Land and Water Management Engineering. 1982. Murthy V.V.N. Kalyani Pubhliers, New Delhi.
2. Irrigation: Theory and Practices.2012. Michael A.M. Vikas Publishing House Pvt. Ltd., New Delhi.
3. Principles of Agricultural. Engineering. Vol. II. 2012. Michael A.M. and T.P. Ojha. Jain Brothers, New Delhi.
4. Soil and Water Conservation Water Management. 2010. Mahnot, S.C., Singh P.K. and Chaplot, P.C.,. Apex Publication House, Udaipur.

Course Name: Rural Sociology and Educational Psychology

Course Code: 20001900

Course Outline

Unit-I
Sociology and Rural Sociology- Meaning, Definition, Scope, Importance of rural sociology in Agricultural Extension and Interrelationship between Rural Sociology and Agricultural Extension. Indian Rural Society, Important characteristics, differences & Relationship between Rural and Urban societies.
Social Groups: Meaning, Definition, Classification, Factors considered in formation and organization of groups. Social Stratification – Meaning, Definition, Functions, Forms of Social stratification.

Unit-II

Cultural concepts - Culture, Customs, Folkways, Mores, Taboos, Rituals and Traditions - Meaning, Definition and their role in Agricultural Extension. Social Values and Attitude - Meaning, Definition, Types and Role of social values and Attitudes in Agricultural Extension.

Social Institutions - Meaning, Definition, Major institutions in Rural society, Functions. Social Control - Meaning, Definition, Need and Means of Social control. Social change - Meaning, Definition, Nature of Social change and factors of social change. Leadership- Meaning, Definition, Classification, Roles of Leader, Methods of selection of leaders.

Unit-III

Psychology and Educational psychology- Meaning, Definition, Scope and Importance of Educational Psychology in Agricultural Extension. Intelligence - Meaning, Definition, Types, Factors affecting intelligence. Personality- Meaning, Definition, Types, Factors influencing the Personality and Role of Personality in Agricultural Extension.

Teaching- Learning process- Meaning and Definition of Teaching, Learning, Learning experience and Learning situation, Elements of learning situation and its characteristics

Suggested Readings

1. Chitambar, J.B. 1973. Introductory rural sociology.New York, John Wilex and Sons.
2. Desai, A.R. 1978. Rural sociology in India. Bombay, Popular Prakashan, 5th Rev. ed.
3. Doshi, S.L. 2007. Rural sociology.Rawat Publishers, Delhi.
4. Jayapalan, N. 2002. Rural sociology.Altanic Publishers, New Delhi.
5. Sharma, K.L. 1997. Rural society in India.Rawat Publishers, Delhi.
6. Bhatia, H.R. 1965. A Text Book of Educational Psychology, Asia Publishing House, New Delhi.
7. Pujari, D. 2002. Educational Psychology in Agriculture, Agrotech Publishing Academy, Udaipur (Raj.)
8. Bhushan, V. and Sachdeva, D.R. 2010. An introduction to Sociology, KitabMahal , New Delhi.
9. Rao, C.N.S. 2015. Sociology, S.Chand & Company, New Delhi.
10. Maslow, A.H. 1970. Motivation and personality. Harper and Row publishers , New York.
11. Mondal, S. 2014. Text Book of Rural Sociology and Educational Psychology.Kalyani Publishers, New Delhi.
12. Sharma O. P. and Somani L. L. 2012. Fundamentals of Rural Sociology and Educational Psychology.Agrotech Pub. Co., Udaipur.

Course Name: Natural Resources and Farm Management

Course Code: 20002000

Course Outline:

Unit-I

Concept, Subject matter and importance of natural resource economics, Classifications of natural resources and basic terms and concepts of natural resource economics: ecology-ecosystem, biomass, biosphere, reserves, environment, pollution, etc.

Unit-II

Natural resources management and conservation, issues in natural resources and management. Approaches to natural resource problems. Important issues in economics and management of land, water and forest resource and the environment. Factors mitigating natural resources scarcity.

Natural resources administration and policy formulations. International environmental issues, climate change.

Suggested Readings

1. Environmental and natural resource economics: Theory, policy and the sustainable society: M.E. Sharpe, Armonk NY
2. The economics of natural resource use :Hartiwick JM and Olewiler ND
3. Natural resource economics : Theory and applications in India- Korr JM, Marothia D.K., Katar Singh, Ramaswamy C. and Bentley WR
4. Environmental and natural resource economics :Tietonberg T. S

Course Name : Fundamentals of Plant Breeding

Course Code: 20002100

Course Outline

Unit 1

Historical development, concept, nature and role of plant breeding, objectives of plant breeding, major achievements and future prospects; Genetics in relation to plant breeding, modes of reproduction, pollination and apomixes, self – incompatibility and male sterility- genetic consequences, cultivar options. Domestication, Acclimatization, introduction; Centre of origin/diversity.

Unit II

Component of Genetic variation; Heritability and genetic advance; Genetic basis and breeding methods in self- pollinated crops- mass and pure line selection, pedigree, bullk, SSD and backcross methods, hybridization techniques and handling of segregating population; Multiline concept.

Concepts of population genetics and Hardy-Weinberg Law, Genetic basis and methods of breeding cross pollinated crops, modes of selection; Heterosis and inbreeding depression, development of inbred lines and hybrids, composite and synthetic varieties;

Unit III

Breeding methods in asexually propagated crops, clonal selection and hybridization; Wide hybridization and pre-breeding; Polyploidy in relation to plant breeding, mutation breeding-methods and uses;
Breeding for important biotic and abiotic stresses; Biotechnological tools-DNA markers and marker assisted selection. Participatory plant breeding; Development and release of varieties

Suggested Readings:

1. Alard, R.W. 2000.Principles of Plant Breeding. John Willey & Sons, New York.
2. Chahel, G.S. and S.S. Ghosal.2002.Principles and Procedures of Plant Breeding, Biotechnological and Conventional Approaches. Narosa Publishing House, New Delhi.
3. Singh, B.D. 2005. Plant Breeding.Kalyani Publishing House, New Delhi.
4. Singh, P. 2001.Essentials of Plant Breeding-Principles and Methods. Kalyani Publishing House, New Delhi.
5. Jain,H.K. and M.C. Kharkwal.2004. Plant Breeding- Mendelian to Molecular Approach.Narosa Publishing House, New Delhi.
6. Sharma, A.K. 2005. Breeding Technology of Crop Plants (Edt.).Yash Publishing House, Bikaner.
7. Shekhawat, S. S. (ed) (2016). Advances and Current Issues in Agriculture, Vol.III. Shiksha Prakashan, S. M. S. Highway, Jaipur.

Course Name: Fundamentals of Plant Breeding Lab

Course Code: 20002200

Practical:

1. Plant Breeder's kit, Study of germplasm of various crops.
2. Study of floral structure of self pollinated and cross pollinated crops.
3. Emasculation and hybridization techniques in self & cross pollinated crops.
4. Consequences of inbreeding on genetic structure of resulting populations.
5. Study of male sterility system.
6. Handling of segregating populations.
7. Methods of calculating mean, range, variance, standard deviation, heritability.
8. Designs used in plant breeding experiment, analysis of Randomized Block Design and components of genetic variance.
9. To work out the mode of pollination in a given crop and extent of natural out crossing. Prediction of performance of double cross hybrids.

Suggested Readings:

1. Alard, R.W. 2000.Principles of Plant Breeding. John Willey & Sons, New York.

2. Chahel, G.S. and S.S. Ghosal.2002.Principles and Procedures of Plant Breeding, Biotechnological and Conventional Approaches. Narosa Publishing House, New Delhi.
3. Singh, B.D. 2005. Plant Breeding.Kalyani Publishing House, New Delhi.
4. Singh, P. 2001.Essentials of Plant Breeding-Principles and Methods. Kalyani Publishing House, New Delhi.
5. Jain,H.K. and M.C. Kharkwal.2004. Plant Breeding- Mendelian to Molecular Approach.Narosa Publishing House, New Delhi.
6. Sharma, A.K. 2005. Breeding Technology of Crop Plants (Edt.).Yash Publishing House, Bikaner.
7. Shekhawat, S. S. (ed) (2016). Advances and Current Issues in Agriculture, Vol. III. ShikshaPrakashan, S. M. S. Highway, Jaipur.

Course Name: Environmental Studies

Course Code: 99001900

Course Outline

Unit I

The Multidisciplinary Nature of Environmental Studies Definition, scope and importance need for public awareness. Natural Resources Renewable and Non-renewable Resources: Natural resources and associated problems. (a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people. (b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. (c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. (d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, Case studies. (e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources. Case studies. (f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources.Equitable use of resources for sustainable lifestyles.

Unit II

Ecosystems. Concept of an ecosystem.Structure and function of an ecosystem.Producers, consumers and decomposers.Energy flow in the ecosystem.Ecological succession.Food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of the following ecosystem: (a) Forest ecosystem (b) Grassland ecosystem (c) Desert ecosystem (d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).

Unit III

Biodiversity and Its Conservation. Introduction, definition: genetic, species and ecosystem diversity. Biogeographical classification of India. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. Biodiversity

at global, National and local levels.India as a mega-diversity nation.Hot-spots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity: in-situ and ex-situ conservation of biodiversity.

Unit IV

Environmental Pollution. Definition.Causes, effects and control measures of (a) Air pollution (b) Water pollution (c) Soil pollution (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards. Solid waste management: Causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution.Pollution case studies. Disaster management: Foods, earthquake, cyclone and landslides.

Unit V

Social Issues and the Environment.From unsustainable to sustainable development. Urban problems related to energy. Water conservation, rain water harvesting, watershed management. Resettlement and rehabilitation of people; its problems and concerns.Case studies. Environmental ethics: Issues and possible solutions. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies. Waste land reclamation. Consumerism and waste products.Environment Protection Act.Air (Prevention and Control of Pollution) Act.Water (Prevention and Control of Pollution) Act.Wildlife Protection Act.Forest Conservation Act. Issues involved in enforcement of environmental legislation. Public awareness.

Unit VI

Human Population and the Environment .Population growth, variation among nations. Population explosion—Family Welfare Programme. Environment and human health.Human rights.Value education.HIV/AIDS.Women and Child Welfare.Role of Information Technology in environment and human health.Case Studies.

Field Work. Visit to a local area to document environmental assets - river/forest/grassland/hill/mountain. Visit to a local polluted sites - Urban/Rural/Industrial/Agricultural. Study of common plants, insects, birds. Study of simple ecosystems—pond, river, hill slopes, etc .

Suggested Readings

1. Environmental Geography, H.M. Saxena, Rawat Pub.
2. A Textbook of Environment, K.M. Agrawal; P.K. Sikdar; S.C. Deb, McMillanPub.
3. A Textbook of Environmental Studies, D K Asthana & MeeraAsthana, S. Chand Pub.
4. Environmental Studies, V. K. Ahluwalia, The Energy and Resources Institute, Pub, (2012).
5. Environmental Chemistry, A.K. Dey, New Age Pub.
6. Environmental Biology, K.C. Agarwal, Nidi Pub. Ltd. Bikaner

Course Name: Ability and Skill Enhancement - II

Course Code: 20002300

Course Outline - Final Assessment – Debate/Group Discussion

Unit I: Phonetics

Phonetic symbols and the International Phonetic Alphabets (IPA), The Description and Classification of Vowels (Monophthongs& Diphthong) Consonants, Phonetic Transcription & Phonology, Syllable, Stress & Intonations, and Reading aloud, recording audio clips.

Unit II: Vocabulary Building

Idioms and Phrases, Words Often Confused, One word Substitution, Word Formation: Prefix & Suffix.

Unit III: Ethics & Etiquettes

What are ethics, what are values, difference between ethics and morals, Business ethics, workplace ethics, what are virtues for e.g. civic virtues, etc. Human ethics and values- 5 core human values are: right conduct, living in peace, speaking the truth, loving and care, and helping others. Etiquette awareness, Importance of First Impression, Personal Appearance & Professional presence, Personal Branding, Dressing Etiquette, Dining Etiquette.

Unit IV: Reading & Writing Skills

Reading Comprehension, News Reading, Picture Description, Paragraph Writing, News Writing.

Unit V : Listening & Speaking Skills

Public Speaking, Debate, Inspirational Movie Screening, Skit Performance.

Note: The review of Syllabus happens on periodic basis for the benefit of the students. In case there are changes in curriculum due to review, students would be intimated in writing.

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Detailed Course Scheme

Bachelor of Science

(Agriculture)

Semester-IV

(2019-20)

DOC201901070032

RNB GLOBAL UNIVERSITY

Educating stars for tomorrow

RNB GLOBAL UNIVERSITY

RNB Global City, Ganganagar Road,

Bikaner, Rajasthan 334601

OVERVIEW

RNB Global University follows Semester System along with Choice Based Credit System as per latest guidelines of University Grants Commission (UGC). Accordingly, each academic year is divided into two semesters, **Odd (July-December) and Even (January-June).** Also, the university follows a system of continuous evaluation along with regular updating in course curricula and teaching pedagogy.

The curriculum for B.Sc. Program for Even Semester (**January-June**), 2020 along with examination pattern is as follows.

Semester -IV

S.No.	Course Code	Course Name	L	T	P	Credits
1.	20014200	Crop Production Technology –II (Rabi Crops)	1	0	0	1
2.	20014300	Crop Production Technology –II (Rabi Crops) Lab	0	0	2	1
3.	20014400	Production Technology for Ornamental Crops, MAP and Landscaping	1	0	0	1
4.	20014500	Production Technology for Ornamental Crops, MAP and Landscaping Lab	0	0	2	1
5.	20014600	Renewable Energy and Green Technology	1	0	0	1
6.	20014700	Renewable Energy and Green Technology Lab	0	0	2	1
7.	20014800	Problematic Soils and their Management	2	0	0	2
8.	20014900	Production Technology for Fruit and Plantation Crops	2	0	0	1
9.	20015000	Production Technology for Fruit and Plantation Crops Lab	0	0	2	1
10.	20015100	Principles of Seed Technology	2	0	0	2
11.	20015200	Principles of Seed Technology lab	0	0	2	1
12.	20015300	Plant Biotechnology	2	0	0	2
13.	20015400	Plant Biotechnology Lab	0	0	2	1
14.	20015500	Agricultural Marketing Trade & Prices	2	0	0	2
15.	20015600	Agricultural Marketing Trade & Prices Lab	0	0	2	1

16.	20015700	Fundamentals of Agriculture Extension Education	2	0	0	2
17.	20015800	Fundamentals of Agriculture Extension Education Lab	0	0	2	1
18.	-	Elective Course	2	0	0	2
19.	-	Elective Course Lab	0	0	2	1
20.	20015900	Ability and Skill Enhancement IV	2	0	0	2
21.	99002800	Workshops & Seminars	-	-	-	1
22.	99002700	Human Values & Social Service/NCC/NSS	-	-	-	1
	Total		**19**	**0**	**18**	**29**

Electives

Elective	Course Code	Course Name
Elective I	20016000	Agribusiness Management
	20016100	Agribusiness Management Lab
	20016200	Agrochemicals
	20016300	Agrochemicals Lab
	20016400	Commercial Plant Breeding
	20016500	Commercial Plant Breeding Lab
	20016600	Landscaping
	20016700	Landscaping Lab

EVALUATION SCHEME -THEORY

The evaluation of the theory paper of B.Sc. program would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessments as follows:

Internal Assessment

Type	Details	Marks
Mid Term	One Mid-term Sessional	25
Marks obtained in various Tests, Assignments, Presentations, Quiz, Tutorials, etc.	Average of marks obtained	20

Attendance	75% + : 5 marks	5
TOTAL	**50**	

External Assessment

Type	Marks
Theory	50

EVALUATION SCHEME -PRACTICAL

The evaluation of the practical paper of B.Sc. program would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessment is as follows:

Internal Assessment

Type	Details	Marks
Marks obtained in various manuals, practical file, participation, any model prepared, output of practical	Average of marks obtained	45
Attendance	75%+ : 5 marks	5
TOTAL	**50**	

External Assessment

Type	Marks
Practical	50

EVALUATION SCHEME- WORKSHOPS & SEMINARS AND HUMAN VALUES & SOCIAL SERVICE/NCC/NSS

1. The evaluation of Workshops & Seminar and Human Values & Social Service/NCC/NSS will be completed from Semester I – Semester VI. It will be evaluated internally by the various Forums & Schools Concerned. The credit for this will be given at the end of each Semester.

2. The students have to join club/clubs/Forums with the active participation in different activities of club. The students would be continuously assessed from Semester-I to Semester-IV and credits and marks would be given after the end of each Semester.

CURRICULUM

Course Name: Crop Production Technology –II (Rabi Crops)

Course Code: 20014200

Course Outline

Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of *Rabi* crops; cereals –wheat and barley, pulses-chickpea, lentil, peas, oilseeds-rapeseed, mustard and sunflower; sugar crops-sugarcane; medicinal and aromatic crops-mentha, lemon grass and citronella, Forage crops-berseem, lucerne and oat.

Course Name: Crop Production Technology –II (Rabi Crops) Lab

Course Code: 20014300

Course Outline

1. Sowing methods of wheat and sugarcane, identification of weeds in *rabi* season crops.
2. Study of morphological characteristics of *rabi* crops,
3. Study of yield contributing characters of *rabi* season crops, yield and juice quality analysis of sugarcane,
4. Study of important agronomic experiments of *rabi* crops at experimental farms.
5. Study of *rabi* forage experiments, oil extraction of medicinal crops, visit to research stations of related crops.

Course Name: Production Technology for Ornamental Crops, MAP and Landscaping

Course Code: 20014400

Course Outline

Importance and scope of ornamental crops, medicinal and aromatic plants and landscaping.

Principles of landscaping. Landscape uses of trees, shrubs and climbers. Production technology of important cut flowers like rose, gerbera, carnation, lilium and orchids under protected conditions and gladiolus, tuberose, chrysanthemum under open conditions. Package of practices for loose flowers like marigold and jasmine under open conditions. Production technology of important medicinal plants like ashwagandha, asparagus, aloe, costus, Cinnamomum, periwinkle, isabgol and aromatic plants like mint, lemongrass, citronella, palmarosa, ocimum, rose, geranium, vetiver. Processing and value addition in ornamental crops and MAPs produce.

Course Name: Production Technology for Ornamental Crops, MAP and Landscaping Lab

Course Code: 20014500

Course Outline

1. Identification of Ornamental plants. Identification of Medicinal and Aromatic Plants. Nursery bed preparation and seed sowing.
2. Training and pruning of Ornamental plants. Planning and layout of garden.
3. Bed preparation and planting of MAP. Protected structures – care and maintenance.
4. Intercultural operations in flowers and MAP. Harvesting and post harvest handling of cut and loose flowers.
5. Processing of MAP. Visit to commercial flower/MAP unit.

Course Name: Renewable Energy and Green Technology

Course Code: 20014600

Course Outline

Unit I

Classification of energy sources, contribution of these of sources in agricultural sector, Familiarization with biomass utilization for biofuel production and their application, Familiarization with types of biogas plants and gasifiers, biogas, bioalcohol, biodiesel and biooil production and their utilization as bioenergy resource.

Unit II

introduction of solar energy, collection and their application, Familiarization with solar energy gadgets: solar cooker, solar water heater, application of solar energy: solar drying, solar pond, solar distillation, solar photovoltaic system and their application, introduction of wind energy and their application.

Course Name: Renewable Energy and Green Technology Lab

Course Code: 20014700

Course Outline

1. Familiarization with renewable energy gadgets.
2. To study biogas plants,
3. To study gasifier,
4. To study the production process of biodiesel,
5. To study briquetting machine,
6. To study the production process of bio-fuels.
7. Familiarization with different solar energy gadgets.
8. To study solar photovoltaic system: solar light, solar pumping, solar fencing.
9. To study solar cooker, To study solar drying system.
10. To study solar distillation and solar pond.

Course Name: Problematic Soils and their Management

Course Code: 20014800

Course Outline

Soil quality and health, Distribution of Waste land and problem soils in India. Their categorization based on properties. Reclamation and management of Saline and sodic soils, Acid soils, Acid Sulphate soils, Eroded and Compacted soils, Flooded soils, Polluted soils. Irrigation water – quality and standards, utilization of saline water in agriculture. Remote sensing and GIS in diagnosis and management of problem soils. Multipurpose tree species, bio remediation through MPTs of soils, land capability and
classification, land suitability classification. Problematic soils under different Agro-ecosystems.

Course Name: Production Technology for Fruit and Plantation Crops

Course Code: 20014900

Course Outline

Importance and scope of fruit and plantation crop industry in India; Importance of rootstocks; Production technologies for the cultivation of major fruits-mango, banana, citrus, grape, guava, litchi, papaya, sapota, apple, pear, peach, walnut, almond and; minor fruits- date, ber, pineapple, pomegranate, jackfruit, strawberry, plantation crops-coconut, arecanut, cashew, tea, coffee & rubber.

Course Name: Production Technology for Fruit and Plantation Crops Lab

Course Code: 20015000

Course Outline

1. Seed propagation. Scarification and stratification of seeds.
2. Propagation methods for fruit and plantation crops.
3. Description and identification of fruit.
4. Preparation of plant bio regulators and their uses,
5. Important pests, diseases and physiological disorders of above fruit and plantation crops, Visit to commercial orchards.

Course Name: Principles of Seed Technology

Course Code: 20015100

Course Outline

Unit I

Seed and seed technology: introduction, definition and importance. Deterioration causes of crop varieties and their control; Maintenance of genetic purity during seed production, seed quality; Definition, Characters of good quality seed, different classes of seed. Foundation and certified seed production of important cereals, pulses, oilseeds, fodder and vegetables.

Unit II

Seed certification, phases of certification, procedure for seed certification, field inspection. Seed Act and Seed Act enforcement. Duty and powers of seed inspector, offences and penalties. Seeds Control Order 1983, Varietal Identification through Grow Out Test and Electrophoresis, Molecular and Biochemical test. Detection of genetically modified crops, Transgene contamination in non-GM crops, GM crops and organic seed production.Seed drying, processing and their steps, seed testing for quality assessment, seed treatment, its importance, method of application and seed packing.

Unit III

Seed storage; general principles, stages and factors affecting seed longevity during storage. Measures for pest and disease control during storage. Seed marketing: structure and organization, sales generation activities, promotional media. Factors affecting seed marketing, Role of WTO and OECD in seed marketing. Private and public sectors and their production and marketing strategies.

Course Name: Principles of Seed Technology Lab

Course Code: 20015200

Course Outline

1. Seed production in major cereals: Wheat, Rice, Maize, Sorghum, Bajra and Ragi.
2. Seed production in major pulses: Urd, Mung, Pigeonpea, Lentil, Gram, Field bean, pea.

3. Seed production in major oilseeds: Soybean, Sunflower, Rapeseed, Groundnut and Mustard. Seed production in important vegetable crops
4. Seed sampling and testing: Physical purity, germination, viability,etc.
5. Seed and seedling vigour test. Genetic purity test:
6. Grow out test and electrophoresis.
7. Seed certification: Procedure, Field inspection, Preparation of field inspection report.
8. Visit to seed production farms, seed testing laboratories and seed processing plant.

Course Name: Plant Biotechnology

Course Code: 20015300

Course Outline

Unit I

Concepts of Plant Biotechnology- History of Plant Tissue Culture and Plant Genetic Engineering; Scope and importance in Crop Improvement- Totipotency and Morphogenesis,Nutritional requirements of *in-vitro* cultures; Techniques of In-vitro cultures, Micro propagation, Anther culture, Pollen culture, Ovule culture, Embryo culture, Test tube fertilization, Endosperm culture, applications. Somaclonal variation: Types, Reasons: Somatic embryogenesis and synthetic seed production technology; Protoplast isolation, culture, manipulation and fusion; products of somatic hybrids and cybrids.

Unit II

Applications in crop improvement. Genetic engineering; Restriction enzymes; Vectors for gene transfer- gene cloning-direct and indirect method of gene transfer transgenic plants and their applications. Blotting techniques- DNA finger printing – DNA based markers- RFLP, AFLP, RAPD, SSR and DNA Probes.

Suggested Readings

1. Singh, B D, 2004. *Biotechnology Expanding Horizons* 2nd Edn. Kalyani Publishers, New Delhi.
2. Gupta, P.K., 2015. *Elements of Biotechnology* 2nd Edn. Rastogi and Co., Meerut.
3. Razdan M K, 2014. *Introduction to plant Tissue Culture* 2nd Edn. Science Publishers, inc. USA.
4. Gautam V K, 2005. *Agricultural Biotechnology*. Sublime Publications
5. Thomar, R.S., Parakhia, M.V., Patel, S.V. and Golakia, B.A., 2010. *Molecular markers and Plant biotechnology*, New Publishers, New Delhi.
6. Gupta, P.K. 1994. *Elements of biotechnology*. Rastogi Pub. Meerut.
7. Chahal, G.S. and Gosal, S.S.2003. *Principles and procedures of plant approaches breeding Biotechnological and conventional*. Narosa Publishing House, New Delhi

Course Name: Plant Biotechnology Lab

Course Code: 20015400

Course Outline

1. Requirements of Plant tissue culture laboratory:
2. Techniques in Plant tissue culture- Media
3. Components and preparation; sterilization techniques and inoculation of various explants, callus
4. induction and plant regeneration;
5. Demonstration of Micropropagation, Anther culture, embryo culture,
6. Hardening/ Acclimatization of regenerated plants, somatic embryogenesis and synthetic seed production,
7. Demonstration of isolation and culture of protoplast,
8. demonstration of isolation of DNA, gene transfer technique and gel electrophoresis techniques

Suggested Readings:

1. Purohit, S.S., 2004. *A Laboratory Manual of Plant Biotechnology* 2nd Edn. Agribios, India.
2. Singh, B.D. 2012.*Plant biotechnology*. Kalyani publishers, Ludhiana
3. Gupta, P.K. 1994. *Elements of biotechnology*. Rastogi Pub. Meerut.
4. Chahal, G.S. and Gosal, S.S.2003. *Principles and procedures of plant approaches breeding Biotechnological and conventional*. Narosa Publishing House, New Delhi

Course Name: Agricultural Marketing Trade & Prices

Course Code: 20015500

Course Outline

Unit I

Agricultural Marketing: Concepts and definitions of market, marketing, agricultural marketing, market structure, marketing mix and market segmentation, classification and characteristics of agricultural markets; demand, supply and producer's surplus of agri-commodities: nature and determinants of demand and supply of farm products, producer's surplus – meaning and its types,marketable and marketed surplus, factors affecting marketable surplus of agri-commodities;

Unit II

product life cycle (PLC) and competitive strategies: Meaning and stages in PLC; characteristics of PLC; strategies in different stages of PLC; pricing and promotion strategies: pricing considerations and approaches – cost based and competition based pricing; market promotion

– advertising, personal selling, sales promotion and publicity – their meaning and merits & demerits; marketing process and functions: Marketing process-concentration, dispersion and equalization; exchange functions – buying and selling; physical functions – storage, transport and processing; facilitating functions – packaging, branding, grading, quality control and labeling (Agmark); Market functionaries and marketing channels: Types and importance of agencies involved in agricultural marketing; meaning and definition of marketing channel;number of channel levels;

Unit III

marketing channels for different farm products; Integration, efficiency, costs and price spread: Meaning, definition and types of market integration; marketing efficiency; marketing costs, margins and price spread; factors affecting cost of marketing; reasons for higher marketing costs of farm commodities; ways of reducing marketing costs; Role of Govt. in agricultural marketing: Public sector institutions- CWC, SWC, FCI, CACP & DMI – their objectives and functions; cooperative marketing in India; Risk in marketing: Types of risk in marketing; speculation & hedging; an overview of futures trading; Agricultural prices and policy: Meaning and functions of price; ad ministered prices; need for agricultural price policy; Trade: Concept of International Trade and its need, theories of absolute and comparative advantage. Present status and prospects of international trade in agri-commodities; GATT and WTO; Agreement on Agriculture (AoA) and its implications on Indian agriculture; IPR ,

Suggested Readings

1. Ghosal, SN., Agricultural Financing in India, Asia Publishing House, Bombay, 1966
2. Johi, S.S. and C.V.Moore., Essentials of Farm Financial Management, Today and Tommorow's Printers and Publishers, New Delhi, 1970
3. John, J.Hamptron., Financial Decision Making: Concepts, Problems and Cases, Prentice-Hall of India , New Delhi, 1983
4. Kenneth, Duft D., Principles of Management in Agribusiness, Reston Publishing Company, Reston, 1979
5. Mamoria, C.B. and R.D. Saksena., Co-operation in India, Kitab Mahal, Allahabad, 1973
6. Mamoria, C.B. and Saxena., Agricultural Problems in India, Kitab Mahal, Allahabad
7. Mukhi, H R. 1983. Cooperation in India and Abroad. New Heights Publishers, New Delhi.
8. Muniraj, R., Farm Finance for Development, Oxford & IBH Publishing Company Private Ltd., New Delhi, 1987
9. Subba Reddy, S. and P.Raghuram., Agricultural Finance and Management, Oxford & IBH Publishing Company Private Ltd., New Delhi, 2005
10. Subba Reddy, S., P.Raghu ram., P. Sastry, T.V.N. and Bhavani Devi I. 2010. Agricultural Economics., Oxford & IBH Publishing Company Private Ltd., New Delhi, 2010
11. William, G. Murray and Nelson Aarson, G., Agricultural Finance, The Iowa State University Press, Ames, Iowa, 1960

Course Name: Agricultural Marketing Trade & Prices lab

Course Code: 20015600

Course Outline

1. Plotting and study of demand and supply curves and calculation of elasticities;
2. Study of relationship between market arrivals and prices of some selected commodities; Computation of marketable and marketed surplus of important commodities; Study of price behaviour over time for some selected commodities;
3. Construction of index numbers; Visit to a local market to study various marketing functions performed by different agencies,
4. identification of marketing channels for selected commodity, collection of data regarding marketing costs, margins and price spread and presentation of report in the class;
5. Visit to market institutions – NAFED, SWC, CWC, cooperative marketing society, etc. to study their organization and functioning;
6. Application of principles of comparative advantage of International Trade

Course Name: Fundamentals of Agriculture Extension Education

Course Code: 20015700

Course Outline

Syllabus to be shared at a later stage.

Course Name: Fundamentals of Agriculture Extension Education lab

Course Code: 20015800

Course Outline

Syllabus to be shared at a later stage.

Course Name: Agribusiness Management

Course Code: 20016000

Course Outline

Transformation of agriculture into agribusiness, various stakeholders and components of agribusiness systems. Importance of agribusiness in the Indian economy and New Agricultural Policy. Distinctive features of Agribusiness Management: Importance and needs of agro-based industries, Classification of industries and types of agro based industries. Institutional

arrangement, procedures to set up agro based industries. Constraints in establishing agro-based industries.

Agri-value chain: Understanding primary and support activities and their linkages. Business environment: PEST & SWOT analysis. Management functions: Roles & activities, Organization culture. Planning, meaning, definition, types of plans. Purpose or mission, goals or objectives, Strategies, polices procedures, rules, programs and budget. Components of a business plan, Steps in planning and implementation. Organization staffing, directing and motivation. Ordering, leading, supervision, communications, control. Capital Management and Financial management of Agribusiness. Financial statements and their importance. Marketing Management: Segmentation, targeting & positioning. Marketing mix and marketing strategies. Consumer behaviour analysis, Product Life Cycle (PLC). Sales & Distribution Management. Pricing policy, various pricing methods. Project Management definition, project cycle, identification, formulation, appraisal, implementation, monitoring and evaluation. Project Appraisal and evaluation techniques.

Course Name: Agribusiness Management Lab

Course Code:20016100

Course Outline

1. Study of agri-input markets: Seed, fertilizers, pesticides.
2. Study of output markets: grains, fruits, vegetables, flowers.
3. Study of product markets, retails trade commodity trading, and value added products. Study of financing institutions- Cooperative, Commercial banks, RRBs, Agribusiness Finance Limited, NABARD. Preparations of projects and Feasibility reports for agribusiness entrepreneur.
4. Appraisal/evaluation techniques of identifying viable project- Non-discounting techniques. Case study of agro-based industries.
5. Trend and growth rate of prices of agricultural commodities.
6. Net present worth technique for selection of viable project. Internal rate of return.

Course Name: Agrochemicals

Course Code: 20016200

Course Outline

An introduction to agrochemicals, their type and role in agriculture, effect on environment, soil, human and animal health, merits and demerits of their uses in agriculture, management of agrochemicals for sustainable agriculture.

Herbicides-Major classes, properties and important herbicides. Fate of herbicides.

Fungicides - Classification – Inorganic fungicides - characteristics, preparation and use of sulfur and copper, Mode of action-Bordeaux mixture and copper oxychloride.

Organic fungicides- Mode of action- Dithiocarbamates-characteristics, preparation and use

of Zineb and maneb. Systemic fungicides- Benomyl, carboxin, oxycarboxin, Metalaxyl, Carbendazim, characteristics and use. Introduction and classification of insecticides: inorganic and organic insecticides Organochlorine, Organophosphates, Carbamates, Synthetic pyrethroids Neonicotinoids, Biorationals, Insecticide Act and rules, Insecticides banned, withdrawn and restricted use, Fate of insecticides in soil & plant. IGRs Biopesticides, Reduced risk insecticides, Botanicals, plant and animal systemic insecticides their characteristics and uses. Fertilizers and their importance. Nitrogenous fertilizers: Feedstocks and Manufacturing of ammonium sulphate, ammonium nitrate, ammonium chloride, urea. Slow release N-fertilizers.

Phosphatic fertilizers: feedstock and manufacturing of single superphosphate. Preparation of bone meal and basic slag. Potassic fertilizers: Natural sources of potash, manufacturing of potassium chloride, potassium sulphate and potassium nitrate.

Mixed and complex fertilizers: Sources and compatibility–preparation of major, secondary and micronutrient mixtures. Complex fertilizers: Manufacturing of ammonium phosphates, nitro phosphates and NPK complexes. Fertilizer control order. Fertilizer logistics and marketing.

Plant bio-pesticides for ecological agriculture, Bio-insect repellent.

Course Name: Agrochemicals Lab

Course Code: 20016200

Course Outline

1. Sampling of fertilizers and pesticides.
2. Pesticides application technology to study about various pesticides appliances. Quick tests for identification of common fertilizers.
3. Identification of anion and cation in fertilizer. Calculation of doses of insecticides to be used.
4. To study and identify various formulations of insecticide available kin market. Estimation of nitrogen in Urea.
5. Estimation of water soluble P2O5 and citrate soluble P2O5 in single super phosphate. Estimation of potassium in Muraite of Potash/ Sulphate of Potash by flame photometer. Determination of copper content in copper oxychloride.
6. Determination of sulphur content in sulphur fungicide. Determination of thiram. Determination of ziram content.

Course Name: Commercial Plant Breeding

Course Code: 20016300

Course Outline

Types of crops and modes of plant reproduction. Line development and maintenance breeding in self- and cross-pollinated crops (A/B/R and two line system) for development of hybrids and seed production. Genetic purity test of commercial hybrids. Advances in hybrid seed

production of maize, rice, sorghum, pearl millet, castor, sunflower, cotton pigeon pea, Brassica etc. Quality seed production of vegetable crops under open and protected environment. Alternative strategies for the development of the line and cultivars: haploid inducer, tissue culture techniques and biotechnological tools. IPR issues in commercial plant breeding: DUS testing and registration of varieties under PPV & FR Act. Variety testing, release and notification systems in India. Principles and techniques of seed production, types of seeds, quality testing in self- and cross-pollinated crops.

Course Name: Commercial Plant Breeding lab

Course Code: 20016400

Course Outline

1. Floral biology in self- and cross-pollinated species, selfing and crossing techniques. Techniques of seed production in self- and cross-pollinated crops using A/B/R and two line system.
2. Learning techniques in hybrid seed production using male-sterility in field crops. Understanding the difficulties in hybrid seed production,
3. Tools and techniques for optimizing hybrid seed production.
4. Concept of rouging in seed production plot.
5. Concept of line its multiplication and purification in hybrid seed production.
6. Role of pollinators in hybrid seed production.
7. Hybrid seed production techniques in sorghum, pearl millet, maize, rice, rapeseed-mustard, sunflower, castor, pigeon pea, cotton and vegetable crops.
8. Sampling and analytical procedures for purity testing and detection of spurious seed.
9. Seed drying and storage structure in quality seed management.
10. Screening techniques during seed process.

Course Name: Landscaping

Course Code: 20016500

Course Outline

Importance and scope of landscaping. Principles of landscaping, garden styles and types, terrace gardening, vertical gardening, garden components, adornments, lawn making, rockery, water garden, walk-paths, bridges, other constructed features etc. gardens for special purposes. Trees: selection, propagation, planting schemes, canopy management, shrubs and herbaceous perennials: selection, propagation, planting schemes, architecture. Climber and creepers: importance, selection, propagation, planting, Annuals: selection, propagation, planting scheme, Other garden plants: palms, ferns, grasses and cacti succulents. Pot plants: selection, arrangement, management. Bio-aesthetic planning: definition, need, planning; landscaping of urban and rural areas, Peri-urban landscaping, Landscaping of schools, public places like bus station, railway station, townships, river banks, hospitals, play grounds, airports, industries,

institutions. Bonsai: principles and management, lawn: establishment and maintenance. CAD application.

Course Name: Landscaping lab

Course Code: 20016600

Course Outline

1. Identification of trees, shrubs, annuals, pot plants;
2. Propagation of trees, shrubs and annuals, care and maintenance of plants, potting and repotting, identification of tools and implements used in landscape design, training and pruning of plants for special effects, lawn establishment and maintenance, layout of formal gardens, informal gardens, special type of gardens (sunken garden, terrace garden, rock garden) and designing of conservatory and lathe house.
3. Use of computer software, visit to important gardens/ parks/ institutes.

Course Name: Ability and Skill Enhancement Module IV

Course Code:20015900

Course Outline - Final Assessment – Mock Interviews & PI Kit Submission

Unit I : Tele – Etiquettes
Receiving Calls, Placing a call, Ending Calls, Transferring calls, Taking Message/ Voice Mails, Placing call on hold, Handling Complaints.

Unit II: Confidence Building & Brain Storming
How to build confidence by positive thinking, identifying negative thoughts, how to control negative thoughts entering our mind, identifying personal talents, and its ways to improve, how to develop good habits and having principles and follow them at all times.

Need to learn new things, ideas and skills, what is brain storming, why do we need it, what are the different ways of brain storming through logics and reasoning, Brain Storming Session.

Unit III: PI Kit
What is resume, Format of Resume, Formatting, Resume Preparation, Covering Letter, PI Kit.

Unit IV: Interview Skills
Mastering the art of giving interviews in - selection or placement interviews, web /video conferencing, Mock Interview, HR Expert Mock Interview, Telephonic Interviews.

Unit V: Internship Preparation: Company Specific Research and Presentation Identifying domain specific industries, researching the industry, Industry analysis, Presentation on specific industry/company.

Note: The review of Syllabus happens on periodic basis for the benefit of the students. In case there are changes in curriculum due to review, students would be intimated in writing.

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