DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD.

CIRCULAR NO.SU/SCIENCE & TECHNOLOGY STUDIES/SYLL./B.VOC./ 82 /2022.

It is hereby informed to all concerned that, on the recommendation of Ad-hoc Board in Vocational Studies and Dean, Faculty of Science & Technology the Hon'ble Vice-Chancellor has **accepted the curriculum of following B.Voc. Courses under Choice Based Credit and Grading System in** his emergency powers under Section-12 [7] of the Maharashtra Public Universities Act, 2016 on behalf of the Academic Council as appended herewith:

Sr.No.	Course Name	Semester
1	B.Voc in Agriculture Commodity Quality Assayer	I & II [One Year Diploma]

This is effective from the **Academic Year 2020-21 and 2021-22** and onwards. This curriculum is also available on the University website www.bamu.ac.in.

All concerned are requested to note the contents of the circular and bring notice to the students, teachers and staff for their information and necessary action.

University campus,
Aurangabad-431 004.
Ref. No.SU/B.voc./Curri./2021-22-9874-84

Date: 16.03.2022

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Deputy Registrar,
Academic [Syllabus]
Section.

Copy forwarded with compliments to :-

1] **The Principal All Affiliated Concerned Colleges, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.**
2] **The Director,** University Network & Information Centre, UNIC, with **a request to upload the curriculum along with this Circular on University Website.**

Copy to :-

1] The Director, Board of Examinations & Evaluation, Dr.BAMU, A'bad
2] The Concerned Section, Examination Branch,
3] The Section Officer, [Eligibility Unit],
4] The Programmer [Computer Unit-1] Examinations, section, Dr. BAMU, A'bad
5] The Programmer [Computer Unit-2] Examinations, section, Dr. BAMU, A'bad
6] The In-charge, [E-Suvidha Kendra],
7] The B.Voc Section, Dr. BAMU, A'bad
8] The Public Relation Officer,
9] The Record Keeper,

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY AURANGABAD

SYLLABUS OF
BACHELOR OF VOCATIONAL
IN

B.Voc in Agriculture Commodity Quality Assayer
SEMESTER- I & II

Choice Based Credit System

Effective form the Academic Year
2020-21 and 2021-22 & Onwards

जालना एज्युकेशन सोसायटीचे
आर. जी. बगडिया आर्टस,
एस. बी. लखोटिया कॉमर्स अॅण्ड
आर. बेझंजी सायन्स कॉलेज,
जालना – ४३१ २०३ (महाराष्ट्र)
प्र. प्राचार्य : डॉ. एस. बी. बजाज (प्राध्यापक)

JALNA EDUCATION SOCIETY'S
R. G. Bagdia Arts,
S. B. Lakhotia Commerce &
R. Bezonji Science College,
JALNA - 431 203 (M.S.)
I/c. Principal: Dr. S. B. Bajaj (Professor)

☎ : (O) 232880, 242301, 230566 (R) 239296, FAX: 02482 - 230566
* E-mail: jesjalna@hotmail.com * Website : www.jesjalna.org

जा. क्र. : जेईएस/बी.व्होक./एम.व्होक/२०२०-२१/2073 दिनांक : २८/०२/२०२२.

प्रति,
मा. प्रकुलगुरु,
डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ,
औरंगाबाद.

विषय : बी. व्होक. Agriculture Commodity Quality Assayer पदविका अभ्यासक्रमास मान्यता मिळणे बाबत.
संदर्भ : १. जा. क्र. शैक्ष/संलग्न/एआरडब्ल्यु/२०२०-२१/२७४५२९
२. जेईएस/बी.व्होक./एम.व्होक/२०२०-२१/७२७ दि : ०१/०३/२०२१

महोदय,

उपरोक्त संदर्भिय विषयास अनुसरुन आपणास कळविण्यात येते की, आमच्या महाविद्यालयात बी. व्होक. Agriculture Commodity Quality Assayer पदविका अभ्यासक्रमास एक वर्षाचा कोर्स सुरु करण्यास परवानगी मिळालेली आहे.

सदरील कोर्सच्या अभ्यासक्रमास Agriculture Skill Council of India, दिल्ली यांच्याद्वारे मान्यता मिळाली आहे. तरी सदरील कोर्सचा अभ्यासक्रम दुरुस्त करुन आपणास पाठवित आहोत.

कृपया मान्यता द्यावी, ही विनंती.

आपला विश्वासू ,

प्राचार्य.

संलग्न :-१) डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ यांचे पत्र
२) अभ्यासक्रम प्रत

प्रत :- बी. व्होक. अभ्यासक्रम विभाग, डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.

Approved
Rathore
28/2/22

Jr/Letter M/2021-22/199

2020-21

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (MS)

Curriculum Structure

Diploma of Vocation

(D.Voc, Agri Commodity Quality Assayer and Seed Analysis In-charge)

Choice Based Credit System

(Effective from July 2020-21)

The Bachelor in Vocation programme is divided into two semesters shaving 60 credits. Each semester has courses categorized under **General Education Components** and **Skill Development Components.**

Preamble:

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad proposes to offer a one year Diploma programme in Vocation (D. Voc.) program which are being run University Department and various affiliated colleges. The curriculum design of this program is undertaken in the following framework-

a) Although there has been remarkable progress in all sectors of education in last couple of decades, the less regulated area of the education sector-vocational training—seems to have lost its significance/importance. This has led to the widening gap between the supply and demand for skilled manpower across various industries and R&D organizations. This shortage of skills has translated directly into unemployment among an increasing number of graduates who pass-out every year and are forced to be re-trained in order to become marketable.

These programme are designed to produce skilled manpower so that wide variety of options in job sectors would be available and it will improve the opportunities for the unemployed youths in the country in both the private and public sectors.

b) According to a study conducted by the Associated Chambers of Commerce and Industry of India (ASSOCHAM), there will be a deficit of 40 million working professionals by the year 2020 and the employers would face the difficulty of filling positions because of the dearth of suitable talent and skilled person.

These programme aim to provide concrete solution for these problems and would facilitate to improve:

(i) **Quality of training**
(ii) **High drop-out rates**
(iii) **Linkages with Universities and Industry**
(iv) **Inadequacy of resources**

c) These programme are intended to offer practical training and skills needed to pursue an occupation straight away. It will provide options to the students to select the courses of their choice which are directly aligned to land a job in a chosen profession or a skilled trade. One of the end results of these programme is to enable an individual attain self-employment.

Program Educational Objectives:

The objectives of B.Voc (Agri Commodity Quality Assayer) program are to produce graduates who -

1. Are equipped with time relevant knowledge of Seed industries and polyhouses to address multi disciplinary demand of automated manufacturing, and process in modern industries in capacity of productive System Developers and System Integrators.
2. Have a broad-based background to practice Agri Commodity Quality Assayer in the areas of Seed industries, manufacturing, and process control in industry and Government settings meeting the growth expectations of stakeholders.
3. Have an ability to pursue higher studies and succeed in academic and professional careers.
4. Have the ability to address professional demands individually and as a team member communicating effectively in technical environment using modern tools.
5. Recognize the need for and possess the ability to engage in lifelong learning.
6. Will be sensitive to consequences of their work both ethically and professionally for productive professional career.

Program Outcomes (PO):

Vocational Education is education that prepares the students for specific trades, crafts and careers at various levels and scopes. Scope of modern fabric of vocational education builds Human resource from a trade/ craftsmanship, technician or professional position in R & D organizations.

The Program Outcomes are the skills and knowledge which the students have at each exit level/at the time of graduation. These Outcomes are generic and are common to all exit levels mentioned in the programme structure. Diploma of the B.Voc program are expected to -

PO1. Apply broad based fundamental knowledge of the specific skill based trade for the solution of target skill sector.

PO2. Identify industry domain related problems at varied complexity and analyze the same to formulate/ develop substantiated conclusion using first principles of domain sectors and

technical literature.

PO3. Design / develop solutions for broad based problems in the target skill based trade to address changing challenges put forward by market demand/ stakeholder

PO4. Design and conduct technology enabled experiments, analyze the resulting data and interpret the same to provide valid conclusions

PO5. Use the techniques, skills and modern tools necessary skill based trade to practice with clear understanding of limitations.

PO6. Apply broad understanding of ethical and professional skill based trade practice in the context of global, economic, environmental and societal realities while encompassing relevant contemporary issues.

PO7. Apply broad understanding of impact of skill based trade in a global, economic, environmental and societal context.

PO8. Apply ability to develop practical solutions for skill trade problems within positive professional and ethical boundaries.

PO9. Function effectively as a leader and as well as team member in diverse/ multidisciplinary environments.

PO10. Communicate effectively in oral and written format addressing specific professional/ social demands.

PO11. Demonstrate knowledge and understanding of the first principles of skill trade and apply these to one's own work as a member and leader in a team, to complete project in any environment.

PO12. Recognize the need for and have the ability to acquire advance knowledge for addressing the changing technological demands of the target skill trade.

Program Specific Outcomes (PSO):

Graduates of the D.Voc Agri Commodity Quality Assayer and Seed Analysis In-charge) program are expected to

1. Apply broad based fundamental knowledge of electronics, electrical, mechatronics fundamentals and Industrial automation specialization for the solution of automated manufacturing and process related problems.
2. Identify complex industrial automation related problems at varied complexity and analyze the same to formulate/ develop substantiated conclusion using first principles of electronics, electrical and mechatronics and technical literature.

3. Design and conduct technology enabled experiments, analyze the resulting data and interpret the same to provide valid conclusions.
4. Use the techniques, skills and modern tools necessary for industrial automation practice clear understanding of limitations.

Exit Options:

The programme allows exit of a student in an intermediate stage, on successful employment. Scopes will be there for further continuation of study. The other wise exit options will be as follows-

Exit Point	*Duration*	*Diploma / Degree to be Offered*
First exit	After 6 months	Certificate in Vocation
Final exit	After 1 yr.	Agri Commodity Quality Assayer and Seed Analysis In-charge (D. Voc.)

Eligibility:

As per necessity of respective B. VOC Program

Admission / Promotion Process:

In response to the advertisement for registration, interested students will have to register themselves for a Common Entrance Test (CET)/ Merit based admission process. Admission will be done on the basis of performance of students at Common Entrance Test (CET)/ Marks scored in qualifying examination.

A candidate who has sought admission to Semester – I shall be admitted to Semester – II automatically. A candidate who has passed 75% of the papers at First Year

Choice Based Credit System (CBCS):

The choice based credit system is going to be adopted. This provides flexibility to make the system more responsive to the changing needs of our students, the professionals and society. It gives greater freedom to students to determine their own pace of study. The credit based system also facilitates the transfer of credits.

- Students will have to earn 30 credits for the award of Six Month Certificate in Vocation
- Students will have to earn 64 credits for the award of one year Diploma in Vocation (D. Voc.)

Credit-to-contact hour Mapping:

(a) One Credit would mean equivalent of 15 contact hours for theory lecture.

(b) For lab course/ workshops/internship/field work/project, the credit weightage for equivalent hours shall be 50% that for lectures /workshop.

(c) For self- learning, based on e-content or otherwise, the credit weightage for equivalent hours of study should be 50% or less of that for lectures/workshops.

Attendance:

Students must have 75 % of attendance in each course for appearing examination otherwise he / she will not be strictly allowed for appearing the examination of each course.

Evaluation Methods:

The assessment will be based on 20: 80 ratio of continuous internal assessment (CIA) and semester end examination (SEE). Performance will be decided after combining performance in CIA and SEE. In case of failure in SEE in particular course(s), exam will be conducted in immediate subsequent semester. However, if a student fails in CIA (considering independent CIA score), he/she may appear for the same CIA, at his/her own responsibility in the next academic year, when the same course is offered during regular academic session.

Continuous Internal Assessment (CIA):

(A) For 4 credit courses-

There will be 20 marks for Continuous Internal Assessment. Two internal tests (of 20 marks each) will be conducted, after completion of 40% and 80% of the curriculum respectively.

Average performance of the two tests will be considered for final marks-memo preparation. The setting of question papers and the assessment will be done by concerned teacher.

(B) For 2 credit courses-

There will be 10 marks for Continuous Internal Assessment. Two internal tests (of 10 marks each) will be conducted, after completion of 40% and 80% of the curriculum respectively. Average performance of the two tests will be considered for final marks-memo preparation. The setting of question papers and the assessment will be done by concerned teacher.

Semester End Examination (SEE):

The semester end theory examination for each theory course of 4 credits will be of 80 marks, whereas, for 2 credit theory course, the same will be of 40 marks. Therefore, the total marks shall be 100 for 4 credit theory course (80 marks semester end exam + 20 marks CIA) and 50 for 2 credit theory course (40 marks semester end exam + 10 marks CIA).

Pattern of semester end question paper will be as below:

(A) For 4 credit courses-

- The semester end examination of theory course will have two parts (20+60 = 80 Marks)
- Part A will be consisting of 10 questions having 2 marks each (multiple choice questions / fill in the blanks/ answer in one sentence) as compulsory questions and it should cover entire course syllabus (20 Marks)
- Part B will contain 05 questions of 12 marks each with equal weightage on every module. Each of these questions will have two options, from which students will have to attempt any one.
- 20 to 30% weightage can be given to problems/ numerical (wherever applicable) wherein use of non-programmable scientific calculator may be allowed.
- Number of sub questions (with allotment of marks) in a question may be decided by the examiner.

(B). **For 2 credit courses-**

- The semester end examination of theory course will have two parts (10+30 = 40 Marks)
- Part A will be consisting of 05 questions having 2 marks each (multiple choice questions / fill in the blanks/ answer in one sentence) as compulsory questions and it should cover entire course syllabus (10 Marks)
- Part B will contain 05 questions of 06 marks each with equal weightage on every module. Each of these questions will have two options, from which students will have to attempt any one.
- 20 to 30% weightage can be given to problems/ numerical (wherever applicable) wherein use of non-programmable scientific calculator may be allowed.
- Number of sub questions (with allotment of marks) in a question may be decided by the examiner.

Regarding practical examinations, the assessment will be based on 50: 50 ratio of continuous internal assessment (CIA) and semester end examination (SEE). During each semester, student must perform at least six experiments from every laboratory course. Internal and external (Semester end) practical examination will be conducted at the end of each semester.

Earning Credits:

At the end of every semester, a letter grade will be awarded in each course for which a student had registered. A student's performance will be measured by the number of credits that he/she earned by the weighted Grade Point Average (GPA). The SGPA (Semester Grade Point Average) will be awarded after completion of respective semester and the CGPA (Cumulative Grade Point Average) will be awarded at the respective exit point.

Grading System:

The grading reflects a student-own proficiency in the course. A ten point rating scale shall be used for the evaluation of the performance of the students to provide letter grade for each course and overall grade for the Master Programme. Grade points are based on the total number of marks obtained by him / her in all heads of the examination of the course. The grade points and their equivalent range of marks are shown in Table-I

Table – I : Ten point grade and grade description

Marks Obtained (%)	Grade Point	Letter Grade	Description
90-100	9.00- 10	O	Outstanding
80-89	8.00-8.90	A++	Exceptional
70-79	7.00-7.90	A	Excellent
60-69	6.00-6.90	A	Very Good
55-59	5.50-5.90	B	Good
50-54	5.00-5.40	B	Fair
45-49	4.50-4.90	C++	Average (Above)
41-44	4.1-4.49	C	Average
40	4.0	P	Pass
< 40	0.0	F	Fail (Unsatisfactory
	0.0	AB	Absent

- Non-appearance in any examination / assessment shall be treated as the students have secured zero marks in that subject examination / assessment.
- Minimum P grade (4.00 grade points) shall be the limit to clear / pass the course / subject. A student with F grade will be considered as —failed in the concerned course and he / she has to clear the course by appearing in the next successive semester examinations. There will be no revaluation or recounting under this system.
- Every student shall be awarded grade points out of maximum 10 points in each subject (based on 10 point scale). Based on the grade points obtained in each subject, Semester
- Grade Point Average (SGPA) and then Cumulative Grade Point Average (CGPA) shall be computed. Results will be announced at the end of each semester and CGPA will be given at respective exit point.

Computation of SGPA (Semester Grade Point Average) and CGPA (Cumulative Grade Point Average)

Grade in each subject / course will be calculated based on the summation of marks obtained in all five modules.

The computation of SGPA and CGPA will be as below

- Semester Grade Point Average (SGPA) is the weighted average points obtained by the students in a semester and will be computed as follows:

$$SGPA = \frac{\text{Sum (Course Credits) X Number of Grade Points in concerned Course Gained by the Student}}{\text{Sum (Course Credits)}}$$

- The SGPA will be mentioned on the grade card at the end of every semester.
- The Cumulative Grade Point Average (CGPA) will be used to describe the overall performance of a student in all semester of the course and will be computed as under.

$$CGPA = \frac{\text{Sum (All six Semester SGPA)}}{\text{Total Number of Semester}}$$

- The SGPA and CGPA shall be rounded off to the second place of decimal.

Grade Card

Results will be declared by the Centre and the grade card (containing the grades obtained by the student along with SGPA) will be issued by the university after completion of every semester. The grade card will be consisting of following details.

- Title of the courses along with code opted by the student. Credits associated with the course.
- Grades and grade points secured by the student.
- Total credits earned by the student in a particular semester. Total credits earned by the students till that semester.
- SGPA of the student.
- CGPA of the student (at respective exit point).

Cumulative Grade Card

The grade card showing details grades secured by the student in each subject in all semesters along with overall CGPA will be issued by the University at respective exit point.

Uniform Curriculum Structure of Diploma of Vocation (D. Voc.)

The courses under Semester I conform to National Occupational standards

Sr. No.	Course Code	Name of the Course	Contact Hours Per Week		valuation Scheme		Credit
			L	P	CIA	SEE	
Semester – I		General Academic Components					
1	VOC101	Functional English	4	0	20	80	4
2	VOC 102	Computer Skills	1	2	10	40	1+1
3	VOC 103	Generic Skill – I (for Specific skill Cluster) Inspect commodities transported to the warehouse	4	0	20	80	4
4	VOC 104	Skill specific organization practices (Identify and implement quality standards to be followed)	2	0	10	40	2
Semester – I		Skill Development Components					
5	VOC 111	Skill specific Course – I (Complete documentation and record keeping related to commodity management)	4	0	20	80	4
6	VOC 112	Skill specific Course – II (Demonstrate adherence to health and safety guidelines at the workplace)	4	0	20	80	4
7	VOC 113	Skill specific Course – III (Collaborate with team members and work effectively)	4	0	20	80	4
8	VOC 121	Lab Course -1: Skill specific course - I	0	4	0	50	2
9	VOC 122	Lab Course -2: Skill specific course - II	0	4	25	25	2
10	VOC 123	Lab Course -3: Skill specific course - III	0	4	25	25	2
		Total	23	14	195	555	30

L. = Lecture P = Practical

The courses under Semester II conform to National Occupational standards

Sr. No.	Course Code	Name of the Course	Contact Hours Per Week		Evaluation Scheme		Credit
			L	P	CIA	SEE	
Semester – II		General Academic Components					
1	VOC 201	Linguistic Proficiency- English	4	0	20	80	4
2	VOC 202	Generic Skill- II (For specific Skill Cluster) Prepare for quality analysis and manage housekeeping for seed lab activities	2	0	10	40	2
3	VOC 203	Generic skill III (For specific Skill Cluster) (Prepare and maintain work area and equipments for seed testing)	2	0	10	40	2
4	VOC 204	Energy and Environment	4	0	20	80	4
Semester – II		Skill Development Components					
5	VOC 211	Skill Specific Course - IV (Carry out sampling and seed testing activates)	4	0	20	80	4
6	VOC 212	Skill Specific Course – V (Complete documentation and record keeping related to performing seed lab activities)	4	0	20	80	4
7	VOC 213	Skill Specific Course – VI (Ensure safety, hygiene and sanitation for processing seeds)	4	0	20	80	4
8	VOC 221	Lab Course -4: Skill specific course - IV	0	4	25	25	2
9	VOC 222	Lab Course -5: Skill specific course - V	0	4	25	25	2
10	VOC 223	Lab Course -6: Skill specific course - VI	0	4	25	25	2
11	VOC 231	In Plant Training – I (Summer Training) Manage and Lead a team	0	0	0	0	0
Total			24	12	195	555	30

#Students have to undertake 30 contact hours internship in respective industry during summer vacation at the end of each academic year. This is off campus activity

#Students should submit report of the in-plant training within seven (07) days after completion of training

Glossary and Notes:

CIA: Continuous Internal Assessment

SEE: Semester End Examination

L: Theory Lecture

P: Practical/ Hands-on

VOC: Vocational

Interpretation of Course Code:

All courses will have nomenclature as '**VOC XYZ**'

X represents Semester Number

Y = '0': General Academic Component

'1': Skill Component (Theory)

'2': Skill Component (Lab Course)

'3': Skill Component (In plant training)

'4': Major Project

Z represents incremental number

NAAC Reaccredited Grade A
CGPA – 3.22, 2019

Dr. Babasaheb Ambedkar Marathwada University,
Aurangabad (MS)

Deen Dayal Upadhyay KAUSHAL Kendra

Syllabus

Agri Commodity Quality Assayer and Seed Analysis In-charge

Semester I

Pattern 2019

Director, DDU KAUSHAL Kendra
director.ddukk@bamu.ac.in

General Academic Components

Agri Commodity Quality Assayer and Seed Analysis In-charge

Semester - I

Semester – I

VOC-101: Functional English

(4 Credits: 100 Marks)

Learning Objectives

To provide students with fundamental backgrounds of communicative English.

Course Outcomes

On completion of the course, students should be able to –

1 Apply Grammatical tools to formulate correct sentences in English.
2 Apply concept of tenses to formulate correct sentences in English.
3 Formulate different types of dialogues, expression of ideas/information in English
4 Compose applications, reports, requests, responses, summary and comprehensions in English

Course Contents

Unit 1: Functional Grammar Elements **(12 Hrs)**

Recapitulation of Grammar – Noun, Verb (Classifications), Infinitive and Gerunds, Auxiliaries and Modals, Passivity, Conditionals, Concord, Articles, Conjunction, Prepositions, Pronouns, Adverbs; Active and Passive Voice; Question Tag

Unit 2: Tenses **(12 Hrs)**

Present Tense, Past Tense, Future Tense (all four types to be included in each)

Unit 3: Sentence Formation **(12 Hrs)**

Types of Sentences – Simple, Complex, Compound; Phrases; Clauses; Synthesis of Sentences; Transformation of Sentences; Direct and Indirect Speech

Unit 4: Basic Verbal Communications **(12 Hrs)**

Introducing yourself (The communicator); Introducing people to others; Giving personal information; Getting people's attention and interrupting; Giving instructions and seeking clarifications; Making requests and responding to requests

Unit 5: Basic Writing Skill **(12 Hrs)**

Writing Notices; Drafting Agendas; Writing minutes; Note taking; Writing applications for various jobs, referring to the ads.; Writing summary; Writing advertisements

References:

Text:

1. High School Grammar and Composition; Wren and Martin; Fifteenth Edition; Blackie Elt Books; India; ISBN- 978-81-219-0009-6
2. Synergy: Communication in English and Study Skills; Board of Ed.; 2008; Orient Blackswan; India; ISBN- 978-81-250-3577-0
3. Business Communicator – V.K. Jain, O. P. Biyani, S. Chand, New Delhi.

Suggested Reading:

1. Macmillan Foundation English – R. K. Dwivedi, A. Kumar: Macmillan India Ltd. 2001
2. The Art of Powerful Communication – Dinesh K. Vohra, Are Maria Publications, Pune

VOC-102: Computer Skills

(1 Credit Theory + 1 Credit Practical: 50 Marks)

Learning Objectives

1. To facilitate the students to study basic computer skills using application software tools.
2. To facilitate the students to make functional use of computer skills in teaching – learning and day to day occupational necessities.

Course Outcomes

On completion of the course, students should be able to –

1. Extend the knowledge of basic and advanced tools of Word Processing, Spreadsheet, Presentation Graphics, DBMS, and Internet in MS-Office for specific tasks
2. Apply Word Processing tools to create Notice, Application
3. Use Spreadsheet tools to create and manage attendance sheets
4. Demonstrate Presentation Graphic tools to create, modify and refine presentation
5. Implement DBMS tools to create/modify tables/forms, reports
6. Apply search engines and write e-mails

Course Contents

Unit 1: Word Processing **(3 Hr. Th + 6 Hr. Practical)**

- Overview of Word Processing
- Creating and Editing a Document (Exercise 1 - Creating Notice)
- Revising and Refining a Document (Exercise 2 – Revising notice)
- Using Additional Word Features (Exercise 3 – Creating notice for different classes)
- Changing the Display of the Document (Exercise 4 - Changing the display of your notice)
- Using Standard Templates (Exercise 5–Create notice using standard templates)
- Using Mail Merge (Exercise 6 – Apply mail merge to send a notice)

Unit 2: Spreadsheet Applications **(3 Hr. Th + 6 Hr. Practical)**

- Overview of Excel
- Creating and Editing (Exercise 1 – Creating attendance sheet)
- Using Charts (Exercise 2 – Creating a chart)
- Managing a Workbook (Exercise 3 – Managing Attendance Sheet)
- Using of Basic mathematical Formulae (Exercise 4 – Application of basic mathematical formulae)
- Sorting and Filtering of data in a workbook

Unit 3: Presentation Graphics **(3 Hr. Th + 6 Hr. Practical)**

- Overview of Presentation Graphics
- Creating a Presentation (Exercise 1 – Creating a Annual Day Presentation)
- Modifying and Refining a Presentation (Exercise 2 – Modifying and Refining Presentation)
- Using Advanced Presentation Features (Exercise 3 – Advanced Features for Presentation)

Unit 4: Database Management Systems **(3 Hr. Th + 6 Hr. Practical)**

- Overview
- Creating a Database (Exercise 1 – Creating a Student Database)
- Modifying a Table (Exercise 2 – Modifying a Student Database)
- Creating Forms (Exercise 3 – Creating Form for Student Database)
- Queries and Reports (Exercise 4 – Creating Report)
- Protecting the Database (Exercise 5 – Protecting a Student Database)

Unit 5: Internet **(3 Hr. Th + 6 Hr. Practical)**

- Internet Basics
- Navigating the Web (Exercise 1 – Navigating the web site)
- Finding Information on the Web (Exercise 2 – Searching result on the web)
- Communication Using E-Mail (Exercise 3 – Communicate result to your friends)
- Sending SMS through Web (Exercise 4 – Communicate through SMS through Web service)
- Creating a Blog (Exercise 5 – Creating a blog using Wordpress.com)

References:

Text:

1. Microsoft Office Word 2007 a Beginners Guide: A Training Book of Microsoft Word 2007, By W.R. Mills, United States of America, Bloomington, Indiana.
2. Microsoft Office Excel 2007: Comprehensive Concepts and Techniques, By Greg B. Shelly, Thomas J. Cashman, Jeffrey J. Quasney.
3. Microsoft Office Power Point 2007: Illustrated Introductory: Introductory, By David Beskeen
4. Microsoft Office Access 2007: Comprehensive Concepts and Techniques, By Thomas J. Cashman, Philip J. Pratt
5. Basic Internet, By O.H.U. Heathcote

Suggested Reading:

1. Microsoft Office Word 2007: Illustrated Co: Illustrated Complete, By Jennifer A. Duffy, Carol M. Cram
2. Sams Teach Yourself Microsoft Office 2007 All in One, By Greg Perry
3. Microsoft Office Power Point 2007: Top 100 Simplified Tips & Tricks, By Paul McFedries.
4. Microsoft Office 2007 Power Point: A Training Book for Microsoft Power Point 2007, By W. R. Mills
5. New Perspectives on Microsoft Office Access 2007, Comprehensive, Joseph J. Adamski, Kathleen T. Finnegan

Skill Development Components

Agri Commodity Quality Assayer and Seed Analysis In-charge

Semester - I

Semester – I

General Academic Components

VOC 103: Inspect commodities transported to the warehouse

(4 Credits: 100 Marks)

Learning Objectives

To provide students fundamental knowledge of Inspect commodities transported to the warehouse to commodity management

Course Outcomes

- Organise a record of steps and procedures used in the commodity analysis.
- Carry out documentation and record maintenance.
- Identify trends and record the findings.
- Identify the factors affecting commodity management.
- Organise the records of software/tools used for data collection and report generation.

Course Content

Unit – I (12 Hours)

- Collect samples of commodities to conduct quality checks
- Oversee quality check operations, physically or by other means at the supplier end and on arrival at the warehouse.

Unit – II (12 Hours)

- Monitor if transportation temperatures standards have been followed
- Conduct quality check after unloading and storage at the warehouse.

Unit _ III (12 Hours)

- Ensure that the sub-standard commodities are removed from the stock
- Ascertain what is to be done with the commodities that do not meet the quality standards

Unit – IV (12 Hours)

- Review the supplier inspection reports Prepare quality information reports.
- Share the reports in the prescribed format with the stakeholders.

Unit – V (12 Hours)

- Discuss and take action on steps to improve quality

Text Books

1. Principles of Agronomy and Agricultural Meteorology, Dr .A. Pratap Kumar Reddy, Dr.V. Radha Krishna Murthy
2. Diversity of Cryptogams, Dr. U. P. Mogle, RUT Printer and Publisher, Jalna
3. Problem in Genetics, M. P. Kulthe, N. P. Kashid, and U. P. Mogle, RUT Printer and Publisher, Jalna
4. Agricultural Finance & Cooperation

5. Agricultural Marketing Trade and Prices
6. Agricultural Microbiology
7. Breeding of Field & Horticultural Crops
8. Comprehension & Developing Comm. Skills in Eng

Reference Book

1. Fundamentals Of Agricultural Extension Education by U Barman
2. A Text Book of Agricultural Statistics R. Rangaswamy
3. Agronomy – Yellamanda Reddy
4. Entomology – Vasantha Raj & David
5. Genetics- B.D.Singh
6. Handbook Of Agriculture -ICAR
7. Introduction To Horticulture – Kumar
8. Physiology – Pandey & Singha
9. Plant Breeding -B.D. Singh
10. Soil Science – D.K Das Or Brady
11. Plant Pathogens & Principles of Plant Pathology
12. Post Harvest Mgmt. & Value Addition of Fruits & veg
13. Farmer's Handbook on Basic Agriculture, https://www.manage.gov.in/publications/farmerbook.pdf

Semester – I

(4 Credits: 100 Marks)

General Academic Components

VOC 104: Identify and implement quality standards to be followed

Learning Objectives

To provide students fundamental knowledge of Identify and implement quality standards to commodity management

Course Outcomes

- Outline standard quality parameters at the warehouse (percentage of moisture in the seeds, foreign matter, uniformity of the seed, total oil content in the seed, appearance, colour, etc.,)
- Identify the commodities, collect random samples (from loose heap, bins, packed items, etc.,) and conduct the quality checks.
- Standardise different quality parameters when importing and exporting at the warehouse. Compose quality report of the commodities and take action to improve quality of substandard (low quality) products.

Course Content

Unit – I **(12 Hours)**

- Conduct benchmark studies to identify the quality standards for commodities.
- Liaise with government authorities to identify the statutory standards for agricultural commodities
- Develop a quality manual to be followed in the organisation.

Unit – II **(12 Hours)**

- Co-ordinate with experts and authorities to get the manual validated.
- Plan different methods to communicate the importance of quality in the organisation.

Unit – III **(12 Hours)**

- Ensure awareness of statutory standards and adherence to the same.
- Coordinate with the authorities and schedule the audits in the warehouses.

Unit – IV **(12 Hours)**

- Ensure that all quality standards are met prior to the audit by the authorities.
- Oversee the audit checks and ensure that all checks are conducted appropriately.

Unit – V **(12 Hours)**

- Ensure that all the statutory approvals are taken from the authorities
- Ensure that all necessary paper work is completed and submitted to the relevant stakeholders.

Text Books

1. Bhojwani, S.S. and Bhatnagar. S.P. 1999. The Embryology of Angiosperm. Vikas Publ.

2. Black, M., Bewley, D. and Halmer, P. 2006. The Encyclopedia of Seeds: Science, Technology and Uses. CABI.
3. Chhabra, A.K., 2006. Practical Manual of Floral Biology of Crop Plants. Deptt. of Plant Breeding, CCS HAU, Hisar.
4. Copeland, L.O. and McDonald, M.B. 2001. Principles of Seed Science and Technology. 4th Ed. Chapman & Hall.
5. Frankel, R. and Galun, E. 1977. Pollination Mechanisms, Reproduction and Plant Breeding. Springer Verlag
6. Bench, A.L.R. and Sanchez, R.A. 2004. Handbook of Seed Physiology. Food Product Press.
7. Black, M. and Bewley JD. (Eds.). 2000. Seed Technology and its Biological Basis. Sheffield Academic Press.
8. Nicolas, G., Bradford, K.J., Come, D. and Pritchard, H.W. 2003. The Biology of Seeds, Recent Research Advances. CABI.

Reference Book

1. Agarwal, R.L. 1997. Seed Technology. 2nd Ed. Oxford & IBH.
2. Chhabra, A.K. 2006. Practical Manual of Floral Biology of Crop Plants. Dept. of Plant Breeding CCS HAU, Hisar.
3. Desai, B.B. 2004. Seeds Handbook. Marcel Dekker.
4. Kelly, A.F. 1988. Seed Production of Agricultural Crops. Longman.
5. Me Donald, M.B. Jr and Copeland, L.O. 1997. Seed Production: Principles and Practices. Chapman & Hall.
6. Musil, A.F. 1967. Identification of Crop and Weed Seeds. Handbook No. 219, USDA, Washington, DC, USA.
7. Poehlman, J.M. and Sleper, D.A. 2006. Breeding Field Crops. Blackwell.
8. Singh, B.D. 2005. Plant Breeding: Principles and Methods. Kalyani Publishers.
9. Singhal, N.C. 2003. Hybrid Seed Production in Field Crops. Kalyani Publishers.
10. Thompson, J.R. 1979. An Introduction to Seed Technology. Leonard Hill.
11. Tunwar, N.S. and Singh, S.V. 1985. Handbook of Cultivars. CSCB, GOI.

Semester – I (4 Credits: 100 Marks)

Skill Development Component

VOC 111: Complete documentation and record keeping related to commodity management

Learning Objectives

To provide students fundamental knowledge of Complete documentation and record keeping related to commodity management

Course Outcomes

- Follow benchmark studies to identify quality standards.
- Communicate with crop experts and government authorities to identify statutory standards of the commodities.
- Create a manual about quality standards and get it validated from authorities.
- Plan different communication methods on quality standards and create awareness in the team.
- Organise internal audits to ensure commodity standards.
- Assess the audits on quality standards and make sure for appropriate acceptance from the authorities.

Course Content

Unit – I (12 Hours)

- Document and maintain a record of procedures used in analysis.
- Document and maintain record on observations (if any) related to the methods of analysis.

Unit – II (12 Hours)

- Document and maintain record of management strategies followed.
- Document and maintain record of details of the trends, patterns and other findings.

Unit – III (12 Hours)

- Document and maintain record on observations (if any) related to the factors that affect commodity management.
- Document and maintain record of details of the software and other instruments used.

Unit – IV (12 Hours)

- Document and maintain record on observations (if any) related to the reports generated.

Unit – V (12 Hours)

- Document and maintain the records of the sources of primary & secondary data collection

Books

1. Agarwal, R.L. 1997. Seed Technology. Oxford & IBH.
2. Anonymous. 1992. Legislation on Seeds. NSC Ltd., Department of Agriculture and Cooperation, Ministry of Agriculture, New Delhi.
3. Nema, N.P. 1986. Principles of Seed Certification and Testing. Allied Publishers.
4. Tunwar, N.S. and Singh, S.N. 1988. Indian Minimum Seed Certification Standards. CSCB, Ministry of Agriculture, New Delhi.

5. Handbook of Agriculture- Indian Council of Agricultural Research, New Delhi
6. Umaranie/. ***al.*** 2006. Experimental Seed Science and Technology, Agrobios,Jodhpur
7. Singh, 2009. Plant Breeding: Principles and Methods. Kalyani Publishers, NewDelhi
8. Agrawal, 2005. Seed Technology. Oxford and IBH Publishing Co. Pvt. Ltd., NewDelhi
9. Reddy, 2008. Principles of crop production. Kalyani Publishers, New Delhi
10. Pandey, 2010. A text book of Botany. S. Chand and Company Ltd., New Delhi
11. Santra and Chatterjee, 2007. College Botany, New Central Book Agency (P) Ltd.,Kolkata
12. Dutta, 1983. A Class book of Botany, Oxford University Press, Calcutta

Semester – I (4 Credits: 100 Marks)

Skill Development Component

VOC 112: Demonstrate adherence to health and safety guidelines at the workplace

Learning Objectives

To provide students fundamental knowledge of Complete documentation and record keeping related to commodity management

Course Outcomes

- Comply with the organisation's health and hygiene policies.
- Demonstrate adherence to trash disposal and safety guidelines.
- Identify any inappropriate organisational practices and report them to the manager.
- Organise knowledge sharing session related to health and emergency issues with the team.
- Use the workplace-specific safety and emergency equipment as per the manufacturer's specifications.
- Demonstrate adherence to emergency procedures at the workplace.
- Demonstrate adherence to general safety guidelines.

Course Content

Unit – I (12 Hours)

- Comply with organisation's health and hygiene policies and procedures.
- Demonstrate Adherence to garbage and trash disposal guidelines.

Unit – II (12 Hours)

- Identify and report poor organisational practices with respect to hygiene and cleanliness.
- Ensure personal hygiene as well as grooming and adhere to the dress code of the organisation.
- Ensure cleanliness of respective workstation at the beginning and the end of the day.

Unit – III (12 Hours)

- Inform reporting manager on personal health issues related to injuries and infectious diseases.
- Share the knowledge of guidelines related to health and hygiene related guidelines with team members.
- Check various areas of the workplace and report leakages, water logging, pests, fire, etc.

Unit – IV (12 Hours)

- Ensure prevention of accidents and damages at the workplace.
- Attend fire drills and other safety related workshops organised at the workplace.
- Use safety materials or equipment as applicable to the workplace.

Unit – V (12 Hours)

- Follow procedures to deal with accidents, fires and emergencies, along with communicating location and directions for emergency evacuation.
- Follow emergency procedures to company standards/workplace requirements.

- Use emergency equipment in accordance with manufacturers' specifications and workplace requirements.
- Administer first aid as and when required.
- Report details of first aid administered in accordance with workplace procedures.

Books

1. McDonald, M.B. and Copeland, L.O. 1997. Seed Production: Principles and Practices. Chapman & Hall.
2. Basra, A.S. 2000. Heterosis and Hybrid Seed Production in Agricultural Crops. Food Product Press.
3. Singhal, N.C. 2003. Hybrid Seed Production. Kalyani Publishers
4. Handbook of Agriculture- Indian Council of Agricultural Research, New Delhi
5. Umaranie 2006. Experimental Seed Science and Technology, Agrobios, Jodhpur
6. Singh, 2009. Plant Breeding: Principles and Methods. Kalyani Publishers, New Delhi
7. Agrawal, 2005. Seed Technology. Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi
8. Reddy, 2008. Principles of crop production. Kalyani Publishers, New Delhi
9. Pandey, 2010. A text book of Botany. S. Chand and Company Ltd., New Delhi
10. Santra and Chatterjee, 2007. College Botany, New Central Book Agency (P) Ltd., Kolkata 1 l)Dutta, 1983. A Class book of Botany, Oxford University Press, Calcutta

Semester – I (4 Credits: 100 Marks)

Skill Development Component

VOC 113: Collaborate with team members and work effectively

Learning Objectives

- To provide students fundamental knowledge of Collaborate with team members and work effectively related to commodity management

Course Outcomes

- Plan and conduct work as per the manager's instructions and get feedback.
- Discuss with the supervisor about any issues and concerns at the workplace.
- Organise knowledge sharing related to processes and techniques with the team.
- Demonstrate responsible and disciplined behaviour.
- Explain the colleagues well in advance if unable to work and reasons for the same.
- Build strategies to resolve any work related issues within the team

Course Content

Unit – I **(12 Hours)**

- Receive instructions from reporting manager on the work to be carried out.
- Communicate work done/activities performed to the reporting manager as required.
- Elicit feedback on work done.

Unit – II **(12 Hours)**

- Rectify actions/procedures based on feedback given.
- Escalate any issues and concerns to the reporting manager.
- Participate in discussions with reporting manager when required.
- Ensure clear and concise communication with the team and colleagues.

Unit – III **(12 Hours)**

- Plan and work for the tasks with team members on a regular basis.
- Share knowledge of processes & techniques.
- Treat team members with respect and dignity.

Unit – IV **(12 Hours)**

- Demonstrate responsible and disciplined behaviour.
- Demonstrate adherence to the timeliness of work commitments made to fellow colleagues.
- Inform colleagues in advance if unable to carry out work commitments, citing reasons for the same.
- Address work related issues among the team.

Unit – V **(12 Hours)**

- Participate in team interaction sessions/activities as and when required.
- Demonstrate adherence to organisation's policies and procedures for working with colleagues.
- Discuss/report any concerns to senior management.

Books

1. Principles of Agronomy and Agricultural Meteorology, Dr .A. Pratap Kumar Reddy, Dr.V. Radha Krishna Murthy
2. Diversity of Cryptogams, Dr. U. P. Mogle, RUT Printer and Publisher, Jalna
3. Problem in Genetics, M. P. Kulthe, N. P. Kashid, and U. P. Mogle, RUT Printer and Publisher, Jalna
4. Agricultural Finance & Cooperation
5. Umesh P. Mogle (July 2013). Weed Biomass and Bioenergy, RUT Printer and Publisher, Jalna ISBN: 978-81-924376-1-3.
6. Umesh P. Mogle (Jan. 2013). Cryptogamic Botany Volume - I. RUT Printer and Publisher, Jalna. ISBN: 978-81-924376-3-7.
7. M. P. Kulthe, N. G., Kashid and U. P. Mogle (Feb. 2015). Problems in Genetics, RUT Printer and Publisher, Jalna. ISBN: 978-93-84663-02-5.
8. Umesh P. Mogle (Sept. 2016). Cryptogamic Botany Volume - II. RUT Printer and Publisher, Jalna. ISBN: 978-9384663-11-7.
9. Umesh P. Mogle (Aug. 2017). Taxonomy of Angiosperms. RUT Printer and Publisher, Jalna. ISBN: 978-9384663-15-5.
10. Agricultural Marketing Trade and Prices
11. Agricultural Microbiology
12. Breeding of Field & Horticultural Crops
13. Comprehension & Developing Comm. Skills in Eng

Reference Book

14. Fundamentals Of Agricultural Extension Education by U Barman
15. A Text Book of Agricultural Statistics R. Rangaswamy
16. Agronomy – Yellamanda Reddy
17. Entomology – Vasantha Raj & David
18. Genetics- B.D.Singh
19. Handbook Of Agriculture -ICAR
20. Introduction To Horticulture – Kumar
21. Physiology – Pandey & Singha
22. Plant Breeding -B.D. Singh
23. Soil Science – D.K Das Or Brady
24. Plant Pathogens & Principles of Plant Pathology
25. Post Harvest Mgmt. & Value Addition of Fruits & veg
26. Farmer's Handbook on Basic Agriculture, https://www.manage.gov.in/publications/farmerbook.pdf

Semester – I (2 Credits: 50 Marks)

Skill Development Component

VOC 121: Lab Course – I Skill specific Course – I

Complete documentation and record keeping related to commodity management

Learning Objectives

To provide students fundamental knowledge of Complete documentation and record keeping related to commodity management

Course Outcomes

- Follow benchmark studies to identify quality standards.
- Communicate with crop experts and government authorities to identify statutory standards of the commodities.
- Create a manual about quality standards and get it validated from authorities.
- Plan different communication methods on quality standards and create awareness in the team.
- Organise internal audits to ensure commodity standards.
- Assess the audits on quality standards and make sure for appropriate acceptance from the authorities.

Course Content

- Document and maintain a record of procedures used in analysis.
- Document and maintain record on observations (if any) related to the methods of analysis.
- Document and maintain record of management strategies followed.
- Document and maintain record of details of the trends, patterns and other findings.
- Document and maintain record on observations (if any) related to the factors that affect commodity management.
- Document and maintain record of details of the software and other instruments used.
- Document and maintain record on observations (if any) related to the reports generated.
- Document and maintain the records of the sources of primary & secondary data collection

Books

1. Umesh P. Mogle (Nov. 2017). A Text book of Practical Botany Vol - I. RUT Printer and Publisher, Jalna. ISBN: 978-93-84663-22-3.
2. Umesh P. Mogle (April 2018). Key of Angiosperm families. RUT Printer and Publisher, Jalna. ISBN: 978-9384663-27-8.
3. Umesh P. Mogle (Sept. 2018). A Text book of Plant Pathology. RUT Printer and Publisher, Jalna. ISBN: 978-93-84663-29-2.
4. Umesh P. Mogle (March 2018). A Text book of Practical Botany Vol - III. RUT Printer and Publisher, Jalna. ISBN: 978-93-84663-24-7.
5. Handbook Of Agriculture -ICAR
6. Introduction To Horticulture – Kumar
7. Physiology – Pandey & Singha
8. Plant Breeding -B.D. Singh
9. Soil Science – D.K Das Or Brady
10. Plant Pathogens & Principles of Plant Pathology

Semester – I (2 Credits: 50 Marks)

Skill Development Component

Lab Course – 2 Skill specific Course – II

VOC 122: Demonstrate adherence to health and safety guidelines at the workplace

Learning Objectives

To provide students practical knowledge of Demonstrate adherence to health and safety guidelines at the workplace related to commodity management

Course Outcomes

- Comply with the organisation's health and hygiene policies.
- Demonstrate adherence to trash disposal and safety guidelines.
- Identify any inappropriate organisational practices and report them to the manager.
- Organise knowledge sharing session related to health and emergency issues with the team.
- Demonstrate adherence to emergency procedures at the workplace.
- Demonstrate adherence to general safety guidelines.

Course Content

Practicals

- Comply with organisation's health and hygiene policies and procedures.
- Demonstrate Adherence to garbage and trash disposal guidelines.
- Identify and report poor organisational practices with respect to hygiene and cleanliness.
- Ensure personal hygiene as well as grooming and adhere to the dress code of the organisation.
- Ensure cleanliness of respective workstation at the beginning and the end of the day.
- Inform reporting manager on personal health issues related to injuries and infectious diseases.
- Share the knowledge of guidelines related to health and hygiene related guidelines with team members.
- Check various areas of the workplace and report leakages, water logging, pests, fire, etc.
- Ensure prevention of accidents and damages at the workplace.
- Attend fire drills and other safety related workshops organised at the workplace.
- Use safety materials or equipment as applicable to the workplace.
- Follow procedures to deal with accidents, fires and emergencies, along with communicating location and directions for emergency evacuation.
- Follow emergency procedures to company standards/workplace requirements.
- Use emergency equipment in accordance with manufacturers' specifications and workplace requirements.
- Administer first aid as and when required.
- Report details of first aid administered in accordance with workplace procedures.

Books

Refer to the VOC 121

Semester – I (2 Credits: 50 Marks)

Skill Development Component

VOC 123: Lab Course – 3 Skill specific Course – III

Learning Objectives

- To provide students fundamental knowledge of Collaborate with team members and work effectively related to commodity management

Course Outcomes

- Plan and conduct work as per the manager's instructions and get feedback.
- Discuss with the supervisor about any issues and concerns at the workplace.
- Organise knowledge sharing related to processes and techniques with the team.
- Demonstrate responsible and disciplined behaviour.
- Explain the colleagues well in advance if unable to work and reasons for the same.
- Build strategies to resolve any work related issues within the team

Practical Content

- Receive instructions from reporting manager on the work to be carried out.
- Communicate work done/activities performed to the reporting manager as required.
- Elicit feedback on work done.
- Rectify actions/procedures based on feedback given.
- Escalate any issues and concerns to the reporting manager.
- Participate in discussions with reporting manager when required.
- Ensure clear and concise communication with the team and colleagues.
- Plan and work for the tasks with team members on a regular basis.
- Share knowledge of processes & techniques.
- Treat team members with respect and dignity.
- Demonstrate responsible and disciplined behaviour.
- Demonstrate adherence to the timeliness of work commitments made to fellow colleagues.
- Inform colleagues in advance if unable to carry out work commitments, citing reasons for the same.
- Address work related issues among the team.
- Participate in team interaction sessions/activities as and when required.
- Demonstrate adherence to organisation's policies and procedures for working with colleagues.
- Discuss/report any concerns to senior management.

Books:

1. Umesh P. Mogle (Nov. 2017). A Text book of Practical Botany Vol - I. RUT Printer and Publisher, Jalna. ISBN: 978-93-84663-22-3.
2. Umesh P. Mogle (April 2018). Key of Angiosperm families. RUT Printer and Publisher, Jalna. ISBN: 978-9384663-27-8.
3. Umesh P. Mogle (Sept. 2018). A Text book of Plant Pathology. RUT Printer and Publisher, Jalna. ISBN: 978-93-84663-29-2.
4. Umesh P. Mogle (March 2018). A Text book of Practical Botany Vol - III. RUT Printer and Publisher, Jalna. ISBN: 978-93-84663-24-7.

Semester – II

Name of the Course : **Diploma of Agri Commodity Quality Assayer (One Year Course)**

Semester : **II**

Paper Number and Title : **VOC 201 L (Theory) - Linguistic Proficiency-English.**

Credit : **4**

Total Marks : **100 (CIA: 20 and SEE: 80)**

Work Load per Week : **04 Lectures/ Period** **Duration: 45 Minutes per Lecture.**

Objectives
To provide students, fundamental backgrounds of communicative English.

Unit I: Correct Usage of Grammar Elements
Nouns and Pronouns, Adjectives, Verbs, Adverbs; Formation of Words (Latin and Greek Roots to be excluded); Punctuation; Idioms.

Unit II: Situational Writing Skills
Forms of written communications; Developing ideas and logic; Language and Grammar required for writing in different forms- Single paragraphs, Proposals, Surveys, Appraisals, Project Reports, and Newspaper/Media Report

Unit III: Business Correspondence
Introduction, Forms of letters, Classification of Letters, Social Letters, Notes of Invitations, Business Letters, Letters of Application, Official Letters, Letters to Newspapers.

Unit IV: Listening Skills
Listening skills- Approaches, Barriers, Tips; comprehension of main ideas and important details; understanding of speaker's purpose and attitude; understanding spoken data in order to make inferences, form generalization, and draw conclusion *(Students will watch and listen to actual TV news/ videos at natural speed in order to get accustomed to phonological changes, rhythms, and the pitch and intonation of natural spoken English. Students will also learn phrases and expressions typically found in broadcast English. The TV news/videos segments to be shown are carefully chosen for science and engineering majors.)*

Unit V: Discourse Strategies
Discourse strategies- expressing ideas and opinions clearly; selecting, organizing and presenting information spontaneously; English sound articulation, stress, rhythm, grouping (pausing, linking, focus) and intonation, vocabulary-building strategies, speaking skills: summarizing main ideas from various sources, using proper forms of language to perform social functions in various contexts.

References:

Text:
1. High School Grammar and Composition; Wren and Martin; 2017; Blackie Elt Books; India
2. Business Correspondence and Report Writing; R. C. Sharma; K. Menon; 2017; McGraw Hill Education; India
3. Mastering communication; Nicky Stanlon; 2009; Palgrave Macmillan; India
4. Listen to Succed; L. B. Shore; 2012; CreateSpace Independent Publishing Platform; US

Suggested Reading:
1. Macmillan Foundation English; R. K. Dwivedi, A. Kumar; 2001; Macmillan India Ltd; India
2. Business Writing: What Works, What Won't; W. Davidson, J, Iming; 2015; St. Martin's Griffin, New York
3. Scientist Must Write; Robert Barrass; 2002; Routledge Study Guides; London

Semester – II

General Academic Components

Generic Skill – II (for specific skill cluster) (4 Credits: 100 Marks)

VOC 202: Prepare for quality analysis and manage housekeeping for seed lab activities

Learning Objectives

To provide students fundamental knowledge of Prepare for quality analysis and manage housekeeping for seed lab activities to Seed analysis incharge

Course Outcomes

- Understand General Discipline in the class room (Do's & Don'ts)
- Understand the importance of seed analysis in the production of good quality seed.
- Learn about various seed characteristics /parameter such as physical purity etc in deciding seed quality
- Understand various procedures involved in seed analysis.
- Know about the equipments used in the seed testing/ analysis Understand the Role of a Seed Analysis In-charge and the progression pathway

Course Content

Unit – I **(12 Hours)**

- Read and understand the standard operating procedures (SOP) for calibration of each equipments
- calibrate equipments such as weighing scale, microscope, germination chamber etc.
- record the reading in the calibration register

Unit – II **(12 Hours)**

- handle and maintain tools (deadweights, calibrated measuring jars) and reagent (standard solutions) used for calibration of equipments following laboratory procedures and standards
- maintain list of all equipments along with its calibration frequency
- update the manager in advance on external calibration dates, follow up with external labs and ensure external calibration of equipments on time

Unit – III **(12 Hours)**

- maintain record/file on external calibration reports
- check the working and performance of all equipments on regular basis
- report any malfunction/repairs to the manager

Unit – IV **(12 Hours)**

- inform the supplier/manufacturer on the malfunction/repairs and get it repaired immediately
- maintain list of all equipment's along with the details of annual maintenance contract

Unit V **(12 Hours)**

- follow up with the annual maintenance contractor and ensure maintenance of all equipments
- record all details on lab equipment such as performance, faults, repairs, annual maintenance etc. in the equipment register and in ERP

Books:

1. Krishnasamyef *al.,* 2004. Compendium on Seed Science and Technology, T. N.,Agricultural University, Coimbatore
2. Srivastava K. P., 2009., A Text Book of Applied Entomology, Kalyani Publishers, Ludhiana
3. Dahiya B. S. and Rai K. N. 1997. Seed Technology, Kalyani Publishers, Ludhiana
4. Aneja K. R. 2009. Experiments in microbiology, plant pathology and biotechnology, New
5. Age International (P) Limited Publishers.
6. Anonmyous. 1997. Seed Technology in Tropics. ISTA Zurich.
7. Agrawal, R.L. 1996. Seed Technology, IBH publishing Co., New Delhi.
8. Thompson, J.R. 1977. Advances in Research and Technology of Seeds. Part - 1, 3 & 4.
9. Centre for Agrl. Publishing and Documentation, Washington.
10. 1 l)Desai. B.B., P.M Kotecha and D.K. Salunkha. 1997. Seeds Hand Book - Biology
11. Production, Processing and Storage. Marcel Dekker. New York.
12. Kozlowski, T.T. 1972. Seed Biology, Vol. 1 Academic Press, London.
13. Justice, O.L. and L.N. Basu. 1978. Principles and Practices of Seed Storage. Castle House, Publications Ltd, Great Britain.
14. Copeland, L .0 and McDonald. 1995 . Principles of Seed Science and Technology, Chapman and Hall, New York, USA.
15. ISTA .1999 . Seed Science and Technology , Vol. 27 , Supplement, Rules , International
16. Seed Testing Association , Zurich , Switzerland .
17. Khare , D and M. S. Bhale 2000 . Seed Technology Scientific Publishers (INDIA) , Jodhpur.
18. McDonald , M.B. and L.O. Copland . 1999. Seed Science and Technology Laboratory Manual. Scientific Publishers, Jodhpur,
19. K.Vanangamudi, N. Natarajan , A, Bhatathi, R. Umarani and T. Saravanan . Advances in Seed Science and Technology ,Vol I.
20. Sam Kugbei. Seed economics. International Center For Agricultural in the dry areas, Scientific publishers (INDIA) Jodhpur.

Semester – II

General Academic Components

Generic Skill – III (for specific skill cluster) **(4 Credits: 100 Marks)**

VOC 203: Prepare and maintain work area and equipment's for seed testing

Learning Objectives

To provide students fundamental knowledge of Prepare for quality analysis and manage housekeeping for seed lab activities to Seed analysis incharge

Course Outcomes

- Learn about various seed characteristics /parameter such as physical purity etc in deciding seed quality
- Understand various procedures involved in seed analysis.
- Know about the equipments used in the seed testing/ analysis Understand the Role of a Seed Analysis In-charge and the progression pathway

Course Content

Unit – I **(12 Hours)**

Clean and maintain the cleanliness of the work area using approved sanitizers and keep it free from dust, waste, and spillage
Ensure that the work area is safe and hygienic for seed analysis

Unit – II **(24 Hours)**

Dispose waste materials as per defined SOPs and industry requirements
check the working and performance of all machineries and tools used for process such as weighing scale, microscope, germination chamber , oven, magnifier, seed blower, seed trier, sand sterilizer, moisture meter, etc.

Unit – III **(12 Hours)**

Clean the equipments and glass wares used with recommended sanitizers following specifications and organisation standards
Attend minor repairs/faults of equipments, if required
Organize glass wares and equipments for analysis

Unit – IV **(12 Hours)**

Note the raw materials used for production and the finished products produced
Note the readings of the process parameters and provide necessary information to fill the process chart

Semester – II

General Academic Component **(4 Credits: 100 Marks)**

VOC 204: Energy and Environment

Course Objectives:

1. To facilitate the students to understand the environmental related issues / problems and their strategies to minimize problems.

2. To facilitate the students to understand the impact of industries on environment and strategies to address these issues.

Module I: Environment: Environment Science, Scope and importance. Components of environment - i) Atmosphere, composition of atmosphere, ii) lithosphere – structure of lithosphere, soil formation, soil composition and properties of soil. iii)Hydrosphere – distribution of water on earth, global water balance and hydrological cycle.

Unit – I **(12 Hours)**

Environment problems: i.Air pollution – concept, source of air pollution, major atmospheric pollutants, air quality standards monitoring of major air pollutants. ii.Water pollution – sources of water pollution, river pollution, underground water pollution, oil pollution, thermal pollution, water pollution due to sewage, effects of water pollution , waste water treatment

Unit – II **(12 Hours)**

iii.Noise pollution – sources of noise, effects of noise pollution, noise pollution, noise pollution control equipment silencers and noise absorbing devices, noise standards and industrial noise control. iv.Soil pollution – causes of soil pollution major soil pollutants, industrial waste and their role in soil pollution. v.Radiation pollution – sources of radioactive pollution, effects of radioactive pollution on health.

Unit – III **(12 Hours)**

Impact of industries on Environment - Water pollution episodes due to industrial pollutants, effects of industrial pollutants on aquatic organisms, industrial e. . .. . .and underground water quality. - Air pollution episodes due to industries – Bhopal gas tragedy, Photochemical smog, Acid rivers etc. Industrial noise pollution and workers health problems.

Unit – IV **(12 Hours)**

Water Conservation – water use pattern – water use in industry, water conservation – methods of water conservation, rain water harvesting, Reuse and recycle of water. Conservation Natural resources and sustainable Development : - Renewable natural resources, non-renwable natural resources, use of non-renewalble resource and degradation of environment, use of minerals in industries and environmental problems of mining, conservation of natural resources, recycling of metals etc.

Unit – V **(12 Hours)**

Energy conservation :- Energy resources – i) Conventional energy resources of wood, fossil fuel etc. ii) non conventional energy etc. Environmental problems due to convential energy sources, conservations of energy resources Pollution Control: Air pollution control equipments, air pollution

control in industry ; water pollution control – sewage treatment plant, effluent treatment plant; noise pollution control in industry soil reclamation methods.

Reference Books:

1) Principles of Environmental Biology by PKG Nair Himalaya publishing house, New Delhi
2) Environmental Science by Enger, smith, WMC Brown company publishing.
3) Practical methods in ecology, by R. K. Trivedy, P.K. Goel and Trigal, Enviro publication, karad
4) Chemical methods for Environmental Analysis water and sediment By R. Ramesh and M. AnbuMackmillan India Limited, New Delhi.
5) Fundamental of Ecology – By M. C. Dash, Tata McGraw Hill pub., Co.ltd. New Delhi.
6) Environment, Energy, Health planning for conservation by V. Vidyanath, Gyam Publishing House, New Delhi.
7) Environmental Chemistry by G. S. Sodhi
8) Environmental Chemistry A. K. De.
9) Environmental pollution analysis by S. M. Khopkar
10) A Test nppl pf Environmental Chemistry and pollution control by S. S. Dara.
11) Environmental Science Earth as a living planet by Botkin D and keller E, John, Wiley and sons, New York.
12) A Manual of air quality monitoring by NEERI, Nagpur.
13) Fundamentals of Air Pollution by A. C. Stein, Academic press vol. I to X 1
4) Air pollution by M. N. Rao, McGraw Hill, 1993.
15) Air pollution by V. P. Kudesia, Pragati Prakashan, meerut.
16) Environment pollution and management by L. Mohan. 17) Pollution control in Process Industry by S. P. Mahajan

Semester – II

Skill Development Component

Skill specific course IV **(4 Credits: 100 Marks)**

VOC 211: Carry out sampling and seed testing activities

Learning Objectives

To provide students fundamental knowledge of Carry out sampling and seed testing activities

Course Outcomes

- Know about the equipments used in the seed testing/ analysis Familiarize with the preparation of equipments and reagents for seed analysis.
- Clean and maintain the equipments required for seed analysis.
- Check the working condition of all the equipments before commencing the analysis daily.
- Understand the methods of cleaning of glass wares with proper reagents to keep them aseptic for handling the seed
- Clean the laboratory floor with sanitizer to avoid infestation/infection from the accumulated dust.
- Organize placement of various sections such as physical purity, germination testing etc in a sequential manner Plan as to whether any seed lot needs immediate attention/testing as per the urgency in the production centre and plan priority testing for such lots.
- Check the availability of chemicals and other inputs required for testing at regular internal and place order to the supervisor to replenish the stock at the appropriate time.
- Verify as to whether any seed sample requires special test and if so organize the testing as per the procedure.

Course Content

Unit – I **(12 Hours)**

1. Read and understand the sampling instructions
2. receive the seed lot in the laboratory for analysis and testing and seal the seed lot received in containers/bags and mark for identification with one designation for a single lot
3. determine appropriate weight or amount of seed needed for analysis and draw seed sample from the container.
4. use equipments such as hand lens, magnification light to divide seed samples into different types of seeds

Unit – II **(12 Hours)**

1. ensure homogeneity of seed sample for analysis. If there is any evidence of heterogeneity in the sample drawn, discontinue the sampling
2. read and understand the standard operating procedures (SOP) for analysis of each sample
3. carry out analysis in calibrated equipments following standard operating procedure (sampling maybe done by hand or with triers/probes, as per the organization standards).
4. store the samples properly and in good condition.

Unit – III **(12 Hours)**

1. after the sampling is complete, send the seeds for testing for purity and germination.
2. conduct purity analysis of seed sample to determine different components of purity such as pure seeds, other crop seeds, weed seeds and inert matter.

3. perform basic tests on physical parameters such as colour, appearance, texture, weight, count, etc. on the seed samples.

Unit – IV **(12 Hours)**

1. visually examine the seed sample/or with the aid of a hand lens and table lamp to check for inert matter, other crop seed, seed and other distinguishable varieties.
2. sort out pure seed from other materials.
3. weigh pure seed and inert matter separately and calculate the percentage of both separately.

Unit – V **(12 Hours)**

1. perform basic chemical analysis such as moisture content of seed sample (to estimate the moisture content of a given seed sample, use hot air oven method, by weighing the seeds and crushing the seeds)
2. set the oven to the desired temperature depending on the type of seed, and heat the seed sample in the oven for a defined number of hours, depending on the type of seed.
3. remove the seed sample from the oven and cool in dessicators till the seed sample reaches the lab temperature

Semester – II

Skill Development Component

Skill specific course V (4 Credits: 100 Marks)

VOC 212: Complete documentation and record keeping related to performing seed lab activities

Learning Objectives

To provide students fundamental knowledge of Carry out sampling and seed testing activities

Course Outcomes

- Understand the procedures for checking any equipment and calibrate them to obtain more realistic results. Maintain record for calibration and organize calibration at the due date as per record.
- Maintain the equipment as per the instruction of the manufacturer and organize repair timely if any problem arise.
- Know about various reagents required for seed analysis and prepare such reagents using appropriate chemicals as per recommended dose.
- Maintain such reagents in a safe place to avoid physical and chemical damage.
- Place advance indent for the purchase of chemicals.
- Analyse the requirement of any new chemicals / reagents required for any new kind of seed or test required by the organization and indent for the same with authorities.
- Maintain sufficient quantity of distilled water for washing / cleaning, soaking the germination paper.
- Maintain proper record / entry for all the above activities.
- Familiarize with the procedure required for various types of seed analysis, recording the analysis report and maintain the left over seed sample in a guard store.

Course Content

Unit – I **(12 Hours)**

- Document and maintain records of all seeds sampled such as place of sampling, sampling procedure, details of sample such as supplier information, batch number, receiving date, supplier quality document, supplier documents (P.O., invoice, certificate of analysis, etc.), condition of the transport vehicle, condition of seeds, as per company standards
- Document and maintain records of seed analysis such as parameters analyzed, method of analysis, storage of sample, equipments used for analysis, analysis results, certificate of analysis, etc. as per company standards

Unit – II **(12 Hours)**

- Maintain record of observations (if any) related to seeds
- Load the analysis details in ERP for future reference
- Verify the documents and track from unsampled seed stage to analysed seed stage, in case of quality concerns and for quality management system audits

Unit – III **(12 Hours)**

- Document and maintain records on equipments used for analysis, condition of the equipment, control used for analysis, equipment parameter, equipment performance, time taken for analysis, etc. as per company standards

Unit – IV **(12 Hours)**

- Document and maintain records of equipment calibration such as date of calibration, procedure and method used for calibration, errors/variations observed, calibration readings, internal and external calibration reports, reagents/standards/tools used for calibration condition of the equipment, etc. as per company standards.
- Maintain record of observations or deviations (if any).

Unit – V **(12 Hours)**

- Load the details in ERP for future reference.
- Verify the documents and track from analysis report to equipment used, in case of quality concerns and for quality management system audits

Semester – II

Skill Development Component

Skill specific course VI **(4 Credits: 100 Marks)**

VOC 213: Ensure safety, hygiene and sanitation for processing seeds

Learning Objectives

To provide students fundamental knowledge of Ensure safety, hygiene and sanitation for processing seeds

Course Outcomes

- Guide the team of technical personal involved in seed testing.
- Organise the daily schedule of seed analysis based on the requirement of the seed production.
- Discuss with the co workers about the priority to be given for testing (eg. In case of equal samples of mustard and wheat, preference should be given to mustard testing as it is sown earlier than wheat)
- Find out the need for upgrading the knowledge of the staff and organise. Conduct periodic meetings with all staff to assess the progress (may be daily in case of peak season) and take appropriate steps provide auditioned support to improve the progress
- Share practical experience with co workers or any specific problem and advise them the measure to be taken to solve such problem if arise.

Course Content

Unit – I **(12 Hours)**

- Comply with safety and sanitation procedures and standards
- Ensure personal hygiene by use of gloves, hairnets, masks, ear plugs, goggles, shoes, etc.
- Ensure testing of seeds is carried out in a hygienic manner.

Unit – II **(12 Hours)**

- Use safety equipment such as fire extinguisher, first aid kit and eye-wash station when required.
- Follow housekeeping practices by having designated area for materials/tools.

Unit – III **(12 Hours)**

- Attend training on hazard management to understand types of hazards such as physical, chemical and biological hazards and measures to control and prevent them.
- Identify, document and report problems such as rodents and pests to management.

Unit – IV **(12 Hours)**

- Conduct workplace checklist audits before and after work to ensure safety and hygiene.
- Document and maintain records of raw material, packaging material, process and finished products
- Determine the quality of seeds during storage using criteria such as appearance, size, weight, germination capacity, etc.

Unit – V **(12 Hours)**

- Store raw seeds, processed seeds, separately to prevent cross-contamination.
- Label raw seeds and processed seeds and store them in designated storage areas according to standard operating procedure

Semester – II

Skill Development Component

Lab Course 4: Skill specific Course – IV **(2 Credits: 50 Marks)**

VOC 221: Carry out sampling and seed testing activities

Learning Objectives

To provide students fundamental knowledge of Carry out sampling and seed testing activities

Course Outcomes

- Know about the equipments used in the seed testing/ analysis Familiarize with the preparation of equipments and reagents for seed analysis.
- Clean and maintain the equipments required for seed analysis.
- Check the working condition of all the equipments before commencing the analysis daily.
- Understand the methods of cleaning of glass wares with proper reagents to keep them aseptic for handling the seed

Course Contents

Unit -I **(12 Hours)**

1. Practical on homogeneity of seed sample for analysis. If there is any evidence of heterogeneity in the sample drawn, discontinue the sampling
2. carry out analysis in calibrated equipments following standard operating procedure (sampling maybe done by hand or with triers/probes, as per the organization standards).
3. Methods of store the samples.

Unit -II **(12 Hours)**

1. after the sampling is complete, send the seeds for testing for purity and germination.
2. conduct purity analysis of seed sample to determine different components of purity such as pure seeds, other crop seeds, weed seeds and inert matter.
3. perform basic tests on physical parameters such as colour, appearance, texture, weight, count, etc. on the seed samples.

Unit – III **(12 Hours)**

1. visually examine the seed sample/or with the aid of a hand lens and table lamp to check for inert matter, other crop seed, seed and other distinguishable varieties.
2. sort out pure seed from other materials.
3. weigh pure seed and inert matter separately and calculate the percentage of both separately.

Unit – IV **(24 Hours)**

1. perform basic chemical analysis such as moisture content of seed sample (to estimate the moisture content of a given seed sample, use hot air oven method, by weighing the seeds and crushing the seeds)
2. set the oven to the desired temperature depending on the type of seed, and heat the seed sample in the oven for a defined number of hours, depending on the type of seed.
3. remove the seed sample from the oven and cool in dessicators till the seed sample reaches the lab temperature

Semester – II

Skill Development Component

Lab Course 5: Skill specific Course – V **(2 Credits: 50 Marks)**

VOC 222: Complete documentation and record keeping related to performing seed lab activities

Learning Objectives

To provide students fundamental knowledge of Carry out sampling and seed testing activities

Course Outcomes

- Maintain the equipment as per the instruction of the manufacturer and organize repair timely if any problem arise.
- Know about various reagents required for seed analysis and prepare such reagents using appropriate chemicals as per recommended dose.
- Maintain such reagents in a safe place to avoid physical and chemical damage.
- Analyse the requirement of any new chemicals / reagents required for any new kind of seed or test required by the organization and indent for the same with authorities.

Course Content

Unit – I **(12 Hours)**

- Maintain records of all seeds sampled such as place of sampling, sampling procedure, details of sample such as supplier information, batch number, receiving date, supplier quality document, supplier documents (P.O., invoice, certificate of analysis, etc.), condition of the transport vehicle, condition of seeds, as per company standards
- Document and maintain records of seed analysis such as parameters analyzed, method of analysis, storage of sample, equipments used for analysis, analysis results, certificate of analysis, etc. as per company standards

Unit – II **(12 Hours)**

- Maintain record of observations (if any) related to seeds
- Analysis details in ERP for future reference
- Verify the documents and track from unsampled seed stage to analysed seed stage, in case of quality concerns and for quality management system audits

Unit – III **(12 Hours)**

- Document and maintain records on equipments used for analysis, condition of the equipment, control used for analysis, equipment parameter, equipment performance, time taken for analysis, etc. as per company standards

Unit – IV **(12 Hours)**

- equipment calibration such as date of calibration, procedure and method used for calibration, errors/variations observed, calibration readings, internal and external calibration reports, reagents/standards/tools used for calibration condition of the equipment, etc. as per company standards.

Unit – V **(12 Hours)**

- Load the details in ERP for future reference.

Semester – II

Skill Development Component

Lab Course 6: Skill specific Course – VI **(2 Credits: 50 Marks)**

VOC 223: Ensure safety, hygiene and sanitation for processing seeds

Learning Objectives

To provide students fundamental knowledge of Ensure safety, hygiene and sanitation for processing seeds

Course Outcomes

- Find out the need for upgrading the knowledge of the staff and organise. Conduct periodic meetings with all staff to assess the progress (may be daily in case of peak season) and take appropriate steps provide auditioned support to improve the progress
- Share practical experience with co workers or any specific problem and advise them the measure to be taken to solve such problem if arise.

Course Content

Unit – I **(12 Hours)**

- Comply with safety and sanitation procedures and standards
- personal hygiene by use of gloves, hairnets, masks, ear plugs, goggles, shoes, etc.
- Ensure testing of seeds is carried out in a hygienic manner.

Unit – II **(12 Hours)**

- Use safety equipment such as fire extinguisher, first aid kit and eye-wash station when required.
- Follow housekeeping practices by having designated area for materials/tools.

Unit – III **(12 Hours)**

- Attend training on hazard management to understand types of hazards such as physical, chemical and biological hazards and measures to control and prevent them.
- Identify, document and report problems such as rodents and pests to management.

Unit – IV **(12 Hours)**

- Conduct workplace checklist audits before and after work to ensure safety and hygiene.
- Document and maintain records of raw material, packaging material, process and finished products
- Determine the quality of seeds during storage using criteria such as appearance, size, weight, germination capacity, etc.

Unit – V **(12 Hours)**

- Store raw seeds, processed seeds, separately to prevent cross-contamination.

Semester – II

Skill Development Component

In Plant Training – 1st

(Summer Training)

VOC 231: Manage and Lead a team

Course Outcomes

- Find out the need for upgrading the knowledge of the staff and organise. Conduct periodic meetings with all staff to assess the progress (may be daily in case of peak season) and take appropriate steps provide auditioned support to improve the progress
- Share practical experience with co workers or any specific problem and advise them the measure to be taken to solve such problem if arise.

Course Content

Unit – I **(12 Hours)**

- Ensure that the team is aware of the schedule and job expectations on a daily basis
- involve the team in regular meetings to communicate information intended for them

Unit – II **(12 Hours)**

- involve the team in regular meetings to communicate information intended for them
- ensure participation of the team in various engagement initiatives organized by the organization

Unit – III **(12 Hours)**

- counsel and address issues among the team for any work related issue
- support the manager in deployment of the team as per production schedule and the organizational norms and guidelines

Unit – IV **(24 Hours)**

- ensure periodic training of the team and support the team by delivering trainings especially in the field of latest technology, machinery and equipment
- share knowledge of processes, techniques and products with the team to enhance their skill levels
- provide feedback to the manager pertaining to performance of the team

Text Books

1. Bhojwani, S.S. and Bhatnagar, S.P. 1999. The Embryology of Angiosperm. Vikas Publ.
2. Black, M., Bewley, D. and Halmer, P. 2006. The Encyclopedia of Seeds: Science, Technology and Uses. CABI.
3. Chhabra, A.K., 2006. Practical Manual of Floral Biology of Crop Plants. Deptt. of Plant Breeding, CCS HAU, Hisar.
4. Copeland, L.O. and McDonald, M.B. 2001. Principles of Seed Science and Technology. 4th Ed. Chapman & Hall.
5. Frankel, R. and Galun, E. 1977. Pollination Mechanisms, Reproduction and Plant Breeding. Springer Verlag
6. Bench, A.L.R. and Sanchez, R.A. 2004. Handbook of Seed Physiology. Food Product Press.

7. Black, M. and Bewley JD. (Eds.). 2000. Seed Technology and its Biological Basis. Sheffield Academic Press.
8. Nicolas, G., Bradford, K.J., Come, D. and Pritchard, H.W. 2003. The Biology of Seeds, Recent Research Advances. CABI.

Reference Book

1. Agarwal, R.L. 1997. Seed Technology. 2nd Ed. Oxford & IBH.
2. Chhabra, A.K. 2006. Practical Manual of Floral Biology of Crop Plants. Dept. of Plant Breeding CCS HAU. Hisar.
3. Desai, B.B. 2004. Seeds Handbook. Marcel Dekker.
4. Kelly, A.F. 1988. Seed Production of Agricultural Crops. Longman.
5. Me Donald, M.B. Jr and Copeland, L.O. 1997. Seed Production: Principles and Practices. Chapman & Hall.
6. Musil, A.F. 1967. Identification of Crop and Weed Seeds. Handbook No. 219. USDA, Washington, DC. USA.
7. Poehlman, J.M. and Sleper, D.A. 2006. Breeding Field Crops. Blackwell.
8. Singh, B.D. 2005. Plant Breeding: Principles and Methods. Kalyani Publishers.
9. Singhal, N.C. 2003. Hybrid Seed Production in Field Crops. Kalyani Publishers.
10. Thompson, J.R. 1979. An Introduction to Seed Technology. Leonard Hill.
11. Tunwar, N.S. and Singh, S.V. 1985. Handbook of Cultivars. CSCB, GOI.

Suggested Reading Material

1. Principles of Agronomy and Agricultural Meteorology, Dr .A. Pratap Kumar Reddy, Dr.V. Radha Krishna Murthy
2. Diversity of Cryptogams, Dr. U. P. Mogle, RUT Printer and Publisher, Jalna
3. Problem in Genetics, M. P. Kulthe, N. P. Kashid, and U. P. Mogle, RUT Printer and Publisher, Jalna
4. Agricultural Finance & Cooperation
5. Umesh P. Mogle (July 2013). Weed Biomass and Bioenergy, RUT Printer and Publisher, Jalna ISBN: 978-81-924376-1-3.
6. Umesh P. Mogle (Jan. 2013). Cryptogamic Botany Volume - I. RUT Printer and Publisher, Jalna. ISBN: 978-81-924376-3-7.
7. M. P. Kulthe, N. G., Kashid and U. P. Mogle (Feb. 2015). Problems in Genetics, RUT Printer and Publisher, Jalna. ISBN: 978-93-84663-02-5.
8. Umesh P. Mogle (Sept. 2016). Cryptogamic Botany Volume - II. RUT Printer and Publisher, Jalna. ISBN: 978-9384663-11-7.
9. Umesh P. Mogle (Aug. 2017). Taxonomy of Angiosperms. RUT Printer and Publisher, Jalna. ISBN: 978-9384663-15-5.
10. Agricultural Marketing Trade and Prices
11. Agricultural Microbiology
12. Breeding of Field & Horticultural Crops
13. Comprehension & Developing Comm. Skills in Eng

Complied by: Prof. U. P. Mogle