

University Grants Commission

Bachelor of Vocation (B.Voc)

ShikshanPrasarakSanstha's

S. N. Arts, D. J. M. Commerce and B. N. S. Science College, Sangamner

Dist. Ahmednagar - 422605

2020-21

Agriculture and Soil Science (ASS)

1. Discipline : Science, Commerce, Arts.

2. Name of the Course :Agriculture and Soil Science

3	IV	Theory	ASS-401	Manures and Fertilizers	50	50	100	4	
			ASS-402	Crop production technology II(Rabi crops)	50	50	100	4	
			ASS-403	Diseases of Field and Horticultural Crops and their Management	50	50	100	4	
		Practical	ASS-404	Practical I - Practical based on ASS- 401	75	75	150	6	
			ASS-405	Practical II – Practical based on ASS-402	75	75	150	6	
			ASS-406	Practical III – Practical based on ASS- 403	75	75	150	6	
	3	V	Theory	ASS-501	Soil Health Management	50	50	100	4
				ASS-502	Fundamentals of Horticulture	50	50	100	4
				ASS-503	Livestock production and management	50	50	100	4
Practical			ASS-504	Practical I - Practical based on ASS- 501	75	75	150	6	
			ASS-505	Practical II – Practical based on ASS-502	75	75	150	6	
			ASS-506	Practical III – Practical based on ASS- 503	75	75	150	6	
VI		Theory	ASS-601	Agrochemicals	50	50	100	4	
			ASS-602	Agricultural Marketing Trade and Prices	50	50	100	4	
			ASS-603	Principles of Agronomy	50	50	100	4	
	Practical	ASS-604	Practical I - Practical based on ASS- 601	75	75	150	6		
		ASS-605	Practical II – Practical based on ASS-602	75	75	150	6		
		ASS-606	Practical III – Practical based on ASS- 603	75	75	150	6		

B.Vocational (Agriculture and Soil Science)

Syllabus

Course	First Year (Diploma)	Credits
	Semester I Theory	
ASS-101	English Communication & Soft Skills- I	04
ASS-102	Soil genesis and classification	04
ASS-103	Introduction to soil Science	04
	Practical	
ASS-104	Practical –I English Communication & Soft Skills I	06
	Practical Work	
	Field Work/Visit	
	Self-Learning	
ASS-105	Practical –II Practical based on ASS-102	06
	Practical Work	
	Field Work/Visit	
	Self-Learning	
ASS-106	Practical –III Practical based on ASS-103	06
	Lab Work	
	Field Work/Visit	
	Self-Learning	
Industrial Training at agriculture industry/firm/university		
	Semester-II Theory	
ASS-201	English Communication & Soft Skills II	04
ASS -202	Irrigation water management	04
ASS-203	Problematic soil and their management	04
	Practical	
ASS-204	Practical I - Communications & Soft Skills II	06
	Practical Work	
	Field Work / Visit	
	Self Learning	
ASS-205	Practical II – Practical based on ASS-202	06
	Practical Work	
	Field Work / Visit	
	Self Learning	
ASS-206	Practical III– Practical based on ASS- 203	06
	Practical Work	
	Field Work / Visit	
	Self Learning	
Industrial Training at agriculture industry/firm/university		

Course	Second Year(Advanced Diploma)	Credits
	Semester III Theory	
ASS -301	Soil fertility	04
ASS -302	Crop production technology I(Kharif crops)	04
ASS -303	Principles of organic farming	04
	Practical	
ASS -304	Practical I - Practical Based on ASS-301	06
	Practical Work	
	Field Work / Visit	
	Self Learning	
ASS -305	Practical II - Practical Based on ASS-302	06
	Practical Work	
	Field Work / Visit	
	Self Learning	
ASS -306	Practical III - Practical Based on ASS-303	06
	Practical Work	
	Field Work / Visit	
	Self Learning	
	Industrial Training at agriculture industry/firm/university	
	Semester-IV Theory	
ASS -401	Manures and Fertilizers	04
ASS -402	Crop production technology II(Rabi crops)	04
ASS -403	Diseases of Field and Horticultural Crops and their Management	04
	Practical	
ASS -404	Practical I - Practical based on ASS- 401	06
	Practical work	
	Field Work/Visit	
	Self-Learning	
ASS -405	Practical II - Practical based on ASS- 402	06
	Practical Work	
	Field Work/Visit	
	Self-Learning	
ASS -406	Practical III - Practical based on ASS- 403	06
	Practical Work	
	Field Work/Visit	
	Self-Learning	
	Industrial Training at agriculture industry/firm/university	

Course	Third Year(B. Voc. Degree)	Credits
	Semester V Theory	
ASS-501	Soil Health Management	04
ASS-502	Fundamentals of Horticulture	04
ASS -503	Livestock production and management	04
	Practical	
ASS -504	Practical II Practical based on ASS- 501	06
	Practical Work	
	Field Work/Visit	
	Self-Learning	
ASS -505	Practical –II Practical based on ASS- 502	06
	Practical Work	
	Field Work/Visit	
	Self-Learning	
ASS -506	Practical –III Practical based on ASS- 503	06
	Practical Work	
	Field Work/Visit	
	Self-Learning	
	Industrial Training at agriculture industry/firm/university	
	Semester-VI	
ASS-601	Agrochemicals	4
ASS-602	Agricultural Marketing Trade and Prices	4
ASS 603	Principles of Agronomy	
	Practical	
ASS -604	Practical II Practical based on ASS- 601	6
	Practical Work	
	Field Work/Visit	
	Self-Learning	
ASS -605	Practical II Practical based on ASS- 602	6
	Practical Work	
	Field Work/Visit	
	Self-Learning	
ASS -606	Practical II Practical based on ASS- 603	6
	Practical Work	
	Field Work/Visit	
	Self-Learning	
	Industrial Training at agriculture industry/firm/university	

**FIRST YEAR
(DIPLOMA)**

SEMESTER

I

SYLLABUS FOR B.VOCATIONAL (Agriculture and Soil Science)

FIRST YEAR (Semester -I)

ASS: 101 Communication & Soft Skills (I)

Total Credit: 04

Total Periods: 60

Communication and Soft Skills - I

Course Objectives

1. To develop the communicative skills of the students and thereby develop their proficiency in English language
2. To develop students' communicative competence
3. To develop oral and written communication skills so as to enable the students to present their ideas logically and effectively.
4. To encourage and enable the students to become proficient users of English language.
5. To introduce the different modes of Communication
6. To enhance their employability

Course Outcomes

- 1) The students are expected to increase Vocabulary and understand Grammar
- 2) Students develop their Listening skills, Speaking skills, Reading Skills and Writing skills
- 3) Improvement in students verbal communication
- 4) Improvement in students non verbal communication
- 5) Good English communication is expected

Syllabus

Communication and Soft Skills –I			
Unit No	Topic	Learning Point	Periods
1	Communication	1.1 Meaning and Definition 1.2 Nature and scope of communication 1.3 Importance of communication 1.4 Process of communication 1.5 Barriers to effective communication 1.6 Overcoming the barriers 1.7 Non verbal communication 1.8 Body language 1.9 Focus on English Skills- Vocabulary, Grammar 1.10 Phonetics with Special reference to Grammar	05
2	Communication Skills	2.1 Listening skills: Types of listening, difference between listening and hearing, barriers to listening, principles of effective listening 2.2 Speaking skills: Types of speaking, barriers to speaking, principles of effective speaking 2.3 Reading Skills: Types of reading- skimming, scanning, extensive reading, intensive reading, Process of reading, barriers to reading, principles of effective reading 2.4 Writing skills: Essentials of writing, barriers to writing, principles of effective writing	10
3	Verbal Communication	3.1 What is verbal communication? 3.2 Types of verbal communication 3.3 Oral communication 3.4 Characteristics of oral communication 3.5 Written communication 3.6 Characteristics of written communication 3.7 Difference between oral and written communication	06
4	Non-verbal Communication	4.1 What is non-verbal communication? 4.2 Characteristics of non-verbal communication 4.3 Types of non-verbal communication: Body language/kinesics, paralanguage/vocalic, space language/proxemics, sign language/symbols and signs, time language/chronemics, touch language/haptics, physical appearance 4.4 Elements of Body language/kinesics 4.5 Professional dressing and body language	04
5	Feedback	5.1 Types of feedback 5.2 Principles of feedback 5.3 Functions of feedback 5.4 Significance of feedback in communication	05

References:-

1. MatilaTreece: Successful Communication: Allyun and Bacon Pubharkat.
2. Jon Lisa Integrated skills in Tourist Travel Industry Logman Groups Ltd.
3. Robert T. Reilly- Effective Communication in Tourist Travel industry Dilnas Publication.
4. Boves. Thills Business Communication Today Mcycans Hills Publication.
5. Dark Studying International Communication Sage Publication.
6. Murphy Hidder and Thomas: effective Business Communication McGraw Hill.
7. Thorat,A. and Lokhandwala, M.(2009),Enriching Oral and Written Communication [OBS]
8. Mohanraj J. and Mohanraj S. (2001), English Online [OBS]
9. Seely (2006), Oxford Guide to English speaking and writing [OUP]
10. Dutt, P. Kiranmal, GeethaRajeevan, CLN Prakash (2008), A Course in communication Skills [Foundation Books]
11. Anderson, Keith, John Maclean, Tony Lynch (2007), Study Speaking [CUP]
12. Goodale, Malcolm (2008), Professional Presentations [CUP]
13. Morley, David (2007), The Cambridge Introduction to Creative Writing [CUP]
14. Dutt, P. Kiranmal and GeethaRajeevan (2007), A Course in Listening and Speaking (Vol. I & II) [Foundation Books]
15. Sasikumar, V., P. KiranmalDutt and GeethaRajeevan (2007), Basic Communication Skills [Foundation Books]
16. O'Connor, J. D. – Better English Pronunciation (Latest Edition with CD)
17. Narayanswamy – Strengthen Your Writing (OBS)

SYLLABUS FOR B.VOCATIONAL (Agriculture and Soil Science)

FIRST YEAR (Semester - I)

ASS: 102Soil Genesis and Classification

Total Credit: 04

Total Periods: 60

Course Objectives:

- 1) Study of Soil classification systems
- 2) Study of Soil forming Rocks
- 3) Study of Weathering of rocks and minerals
- 4) Study of Soil survey
- 5) Study of Soils of India and Maharashtra
- 6) Study of Soil classification systems

Course Outcome:

1. History and development of soil science
2. Study of Soil forming Rocks
3. Weathering of rocks and minerals
4. Study of Soil survey
5. Soils of India and Maharashtra
6. Study of Soil classification systems

Syllabus

Unit no	Topic	Periods
1	History and development of soil science, its scope and importance. Soil as natural body, pedological and edaphological concept of soil.	2
2	Soil genesis: Soil forming minerals, classification of minerals, general properties of minerals	4
3	Soil forming Rocks, formation and classification of rocks	4
4	Weathering of rocks and minerals: Physical, Chemical and biological weathering.	4
5	Soil forming factors: Active and Passive soil forming factors	3
6	Soil forming processes	3
7	Components of soil	1
8	Soil survey: purpose of soil survey, methods of soil survey, soil mapping units, types of soil survey and importance of soil survey	5
9	Land capability classification	3
10	Soil classification: Early system of soil classification, purpose of soil classification, soil taxonomy and structures of soil taxonomy	8
11	Diagnostic surface and subsurface horizon	4
12	Soil moisture and soil temperature regimes	2
13	Soil orders	4
14	Soils of India	5
15	Soils of Maharashtra	5
16	Ion exchange	3
Total periods		60

References

- 1) ISSS. 2009. Fundamentals of Soil Science. 2nd Ed. Indian Society of Soil Science, New Delhi- 110 012. pp. 728.
- 2) Das D. K. 2011. Introductory Soil Science, 3rd revised and Enlarged Ed, Kalyani Publisher, Ludhiana. pp. 645.
- 3) Brady, N. C. 2016. The Nature and Properties of Soils. 15th edition Publisher: Pearson Education, ISBN: 978-0133254488
- 4) Daji J A; Daji J A; Kadam J R; Patil N D. 1996. Textbook of Soil Science Bombay Media Promoters and publishers Pvt. Ltd.
- 5) Biswas, T.D.; Mukherjee, S.K.. 1995. Text Book of Soil Science 2nd sEd. Tata Mc Graw Hill Publisher, Delhi pp 433.
- 6) Patil, V. D. and Mali C. V. 2007. Fundamentals of Soil Science, Aman Publication, Meerut.
- 7) Nirankari Lal Singh. 2000. Text Book of Soil Science. Aman Publication, Meerut.
- 8) Dahama , A. K. Organic farming for sustainable agriculture. 19, Agrobotanica Binaker. Pp 53-98 and 210-255.
- 9) J Sehgal 1996. A Textbook of Pedology(Concepts and Applications)

ASS: 103 Introduction to Soil Science

Total Credit: 04

Total Periods: 60

Course Objectives:

- 1) Study of soil profile
- 2) Study of soil textural classes
- 3) Study of Soil organisms: macro and micro organism
- 4) Study of Erosion of soil by wind and water

Course Outcome

- 1) Study of soil textural classes
- 2) Soil conservation
- 3) Study of Soil physical properties
- 4) Soil conservation

Syllabus

Unit No	Topic	Periods
1	Definition of soil and Composition of earth crust	3
2	Study of soil profile	3
3	Soil physical properties: Soil texture, classification of soil separates, physical properties of soil separates, soil textural classes, importance of soil texture	5
4	Soil structure: definition of soil structure, types of soil structure, Factors affecting soil structure, Effects of soil structure on other physical properties of soil and importance of soil structure	5
5	Surface area, density of soil (Bulk and particle density Density) and factors affecting Bulk density, Porosity of soil	3
6	Soil colour and soil consistency	3
7	Soil water : Importance of soil water, Soil water classification, soil water retention , soil water potential, soil moisture constants, infiltration, permeability, percolation	10
8	Soil air : composition, Factors affecting composition of soil air, exchange of gases between soil and atmosphere and importance of soil aeration	4
9	Soil temperature: source of Soil heat, absorption and loss of solar energy and effect of soil temperature on soil and plant growth.	4
10	Soil organisms: macro and micro organism, their beneficial and harmful effects on soil and plant.	10
11	Erosion of soil: Erosion of soil by water and Erosion of soil by air	4
12	Soil conservation	6
Total periods		60

References

- 1) ISSS. 2009. Fundamentals of Soil Science. 2nd Ed. Indian Society of Soil Science, New Delhi- 110 012. pp. 728.
- 2) Das D. K. 2011. Introductory Soil Science, 3rd revised and Enlarged Ed, Kalyani Publisher, Ludhiana. pp. 645.
- 3) Brady, N. C. 2016. The Nature and Properties of Soils. 15th edition Publisher: Pearson Education, ISBN: 978-0133254488
- 4) Daji J A; Daji J A; Kadam J R; Patil N D. 1996. Textbook of Soil Science Bombay Media Promoters and publishers Pvt. Ltd.
- 5) Biswas, T.D.; Mukherjee, S.K.. 1995. Text Book of Soil Science 2nd sEd. Tata McGraw Hill Publisher, Delhi pp 433.
- 06) Patil, V. D. and Mali C. V. 2007. Fundamentals of Soil Science, Aman Publication, Meerut.
- 07) Nirankari Lal Singh. 2000. Text Book of Soil Science. Aman Publication, Meerut.
- 08) Dahama , A. K. Organic farming for sustainable agriculture. 19, Agrobotanica Binaker. Pp 53-98 and 210-255.
- 09) J. Sehgal 1996. A Textbook of Pedology (Concepts and Applications)

ASS: 104 Agriculture and Soil Science
Practical Based On ASS-101
Communication & Soft Skills (I)

Credit- 06Period- 90

Course Objectives:

- 1) Development of Oral Skill in students
- 2) Improve vocabulary of students
- 3) Improvement in grammar
- 4) Develop the English writing skill in students

Course Outcomes

1. Improvement in Vocabulary
2. Improvement in Grammar
3. Improvement in Writing Skill
4. Improvement in Oral Skill

Communication and Soft Skills –I			
Unit	Topic	Learning Points	Period
1	Vocabulary	1.1Synonyms 1.2antonyms 1.3Literal and figurative meaning of words 1.4 Word confused most obtained	20
2	Grammer	2.1 nouns and its types 2.2 verbs 2.3adjective 2.4adverbs 2.5 auxiliaries, articles, prepositions, cnojunctions, tense	20
3	Writing Skill	3.1notice 3.2Formal letter 3.3Email 3.4Biodata 3.5Report(survey and investigative report) 3.6Descriptive and narratative paragraph 3.7Public notice, prepararing information brochure 3.8Preparaing a newspaper advertisemet	20
4	Oral Skill	4.1facing an interview 4.2 giving presentation using audio visual aids 4.3 speech 4.4 group discussion 4.5 telephone conversion 4.6 conversion skill (Greeting and responses, introducing onself and others, requesting , thanking, apologing, talking leave etc.	30

References Book:

1. High school English Grammar, Wrin and Martin
2. Enriching Oral and Return communication, Thorat A and Munira
3. In English (Orient Blackaswan) ,lokhandwala (2009)
4. English Online, Mohanraj J. and Mohanraj.
5. 4. Oxford Guide to English speaking ,Seely (2006).
6. Study speaking (CUP) , Anderson, Keith, Tony
7. Lynch (2007).
8. Professional Presentation (CUP), Goodale, Malcolm (2008).
9. The Cambridge Introduction to Creative , Morley, David (2007).
10. Writing (CUP).
11. A course In Listening and speaking (Vol.I& II), Dutta, P. Kiranmal
12. Geetha, Rajeevan.
13. Better English Pronunciation , O.Conner

ASS: 105-Practical Based On ASS- 102**Total Credit: 6****Total Periods: 90****Course Objectives:**

- 1) Study of Layout, design and requirement of soil, water and plant analysis laboratory
- 2) Study of soil forming minerals and rocks
- 3) Determination of pH ,EC , Organic carbon , Calcium carbonate, Nitrogen, phosphorus ,potassium, sulphur and micronutrients from soil.
- 4) Field visit

Course Outcomes

- 1) Developed skill in students about layout and design of soil testing lab
- 2) Development of skill of minerals identification
- 3) Development of skill of rocks identification
- 4) Determine soil is acidic or basic
- 5) Developed skill in students about layout and design of soil testing lab
- 6) Through field visit students can understand actual problems of soil for plant growth

Syllabus:

Unit No	Learning Points	Periods
1	Layout, design and requirement of soil, water and plant analysis laboratory.	06
2	Study of soil forming minerals and their identification	06
3	Study of soil forming rocks and their identification in the field	06
4	Interpretation of Analysis Report and Recommendation	06
4	Determination of pH of soil	06
5	Determination of EC of soil	06
6	Determination of calcium carbonate of soil	06
7	Determination of organic carbon of soil	06
8	Estimation of available nitrogen in soil (Alkaline permanganate method)	06
9	Estimation of available phosphorus in soil (Olsen's Method)	06
10	Determination of available potassium in soil using flame photometer.	06
12	Estimation of available Sulphur in soil (Turbidity method).	06
13	Estimation of available Boron in soil	06
14	Estimation of DTPA extractable micronutrients from soil using AAS.	06
15	Field Work/ Industrial training/self learning	06
Total		90

References

- 1) Somawanshi, *et al.* 2012. Laboratory Methods for Analysis of Soil, Irrigation Water and Plants..., Department of Soil Science and Agricultural Chemistry, MPKV., Rahuri. revised Ed. pp. 307.
- 2) Jackson, M.L. 1973. Soil Chemical Analysis. Printice Hall, India, Pvt. Ltd. New Delhi. pp 498.
- 3) Page *et al.* 1982. Methods of Soil Analysis, Part 1 and 2. Chemical and Microbiological Properties .2 nd Ed. Soil Science Soc. of America Am. Soc. Agron., Madison, Wisconsin, USA.
- 4) Klute, A. 1986. Methods of Chemical Analysis, 2nd Ed. American Soc. Agron., Inc. and Soil Science Society of America. Madison, Wisconsin, USA.

- 5) Piper, C. S. 1966. Soil and Plant Analysis. Inters Science . Hans Publisher, Mumbai.
- 06) Black, C. A. 1965. Soil Chemical Analysis, Part I and part II. American Soc. Agron.,Inc. and Soil Science Society of America. Madison, Wisconsin, USA.
- 07) Hesse, P. R. 1971. a Text Book of Soil Chemical Analysis. John Murray, London.
- 08) Richards, L. A. 1968. Diagnosis and Improvement sof Saline Alkali Soils. Oxford andIBH Publication Co. Calcutta.
- 09) Chopra, S. L. and Kanwar, J. S. 1991. Analytical Agricultural Chemistry, Kalyani Publisher New Delhi.
- 10) Chapman, H.D., and P.F. Pratt. 1961. Methods of analysis for soils, plants and waters. Division of Agricultural Sciences, University of California,
- 11) Mehara , R. K. 2004. Text Book of Soil Science., ICAR, New Delhi.
- 12) Tandon H.L.S. 1994. Recycling of Waste in Agriculture.Fertilizer Development t and consultation organization.

ASS: 106: Practical Based On ASS-103

Credit- 6 Period- 90

Course Objectives:

- 1) Study of soil sample collection
- 2) Determination of moisture content , Bulk density , particle density, colour, temperature and texture of soil

Course Outcome

- 1) Study of preparation of standard solution
- 2) Students aware about How to collect soil for analysis
- 3) Bulk density can be determined
- 4) Different particle can be evaluated
- 5) Water infiltration rates can be find

Syllabus

Practical no.	Name of practical	Periods
01	Study of soil sampling tools, collection of representative soil sample, its processing and storage.	06
02	Preparation of standard solutions	06
03	Study of soil profile in fields	06
04	Determination of moisture content in soil.	06
05	Determination of soil colour by Munsell soil colour chart in field.	06
06	Determination of bulk density of soil (Clod coating method)	06
07	Determination of particle density of soil by pycnometer and porosity of soil.	06
08	Determination of soil texture by feel method.	06
09	Determination of soil temperature by using soil thermometer (0-15 and 15- 30cm).	06
10	Determination of hydraulic conductivity of soil by constant head method	06
11	Determination of particle size of soil	06
12	Field Work/ Industrial training/self learning	24
Total		90

References

- 1) Somawanshi, *et al.* 2012. Laboratory Methods for Analysis of Soil, Irrigation Water and Plants., Department of Soil Science and Agricultural Chemistry, MPKV., Raunpur, revised Ed. pp. 307.
- 2) Jackson, M.L. 1973. Soil Chemical Analysis. Prentice Hall, India, Pvt. Ltd. New Delhi. pp 498.
- 3) Page *et al.* 1982. Methods of Soil Analysis, Part 1 and 2. Chemical and Microbiological Properties. 2nd Ed. Soil Science Soc. of America Am. Soc. Agron., Madison, Wisconsin, USA.
- 4) Klute, A. 1986. Methods of Chemical Analysis, 2nd Ed. American Soc. Agron., Inc. and Soil Science Society of America. Madison, Wisconsin, USA.
- 5) Piper, C. S. 1966. Soil and Plant Analysis. Interscience. Hans Publisher, Mumbai.
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- 7) Hesse, P. R. 1971. A Text Book of Soil Chemical Analysis. John Murray, London.
- 8) Richards, L. A. 1968. Diagnosis and Improvement of Saline Alkali Soils. Oxford and IBH Publication Co. Calcutta.
- 9) Chora, S. L. and Kanwar, J. S. 1991. Analytical Agricultural Chemistry, Kalyani Publisher New Delhi.
- 10) Chapman, H.D., and P.F. Pratt. 1961. Methods of analysis for soils, plants and waters. Division of Agricultural Sciences, University of California,
- 11) Mehara, R. K. 2004. Text Book of Soil Science., ICAR, New Delhi.
- 12) Tandon H.L.S. 1994. Recycling of Waste in Agriculture. Fertilizer Development and consultation organization.

SYLLABUS FOR B.VOCATIONAL (Agriculture and Soil Science)
FIRST YEAR (Semester – II)
ASS:201 Communication & Soft Skills II
Total Credit: 04 Total Periods: 60
Communication & Soft Skills II

Course Objective:

- To develop the communicative skills of the students and thereby develop their proficiency in English language
- To develop students' communicative competence
- To encourage and enable the students to become proficient users of English language.
- To introduce the different modes of Communication
- To enhance their employability
- To develop oral and written communication skills so as to enable the participants to present their ideas logically and effectively.

Course Outcomes

- 1) Students can write correctly Resume, Elements of an Effective Resume, Writing application letters and Other employment Messages Job
- 2) Students prepared for facing Interview and all the necessary things required for interview
- 3) Increases the presentation skill in students
- 4) Increases the presentation skill in students

Syllabus:

Communication and Soft Skills –II			
Unit No	Topic	Learning Point	Periods
1	Employment Communication	1.1 Resume 1.2 Resume Style 1.3 Resume Writing 1.4 Elements of an Effective Resume 1.5 Writing application letters 1.6 Other employment Messages Job	4
2	Interview Skills	2.1 Interview 2.2 Purpose 2.3 Types 2.4 Interview Skills- Before, During and After Interview 2.5 Interview Dressing 2.6 Mock Interviews-Following up an Application 2.7 Accepting an Interview Invitation 2.8 Following up an Interview 2.9 Accepting Employment 2.10 Resigning from a Job	5
3	Introduction to	3.1 Elements of Good Personality	

	Personality Development	3.2 Importance of soft skills 3.3 Introduction to Corporate Culture 3.4 Professionalism in Service Industry 3.5 Group Discussion –Structure and Types 3.6 Mocks GD using Video Samples	5
4	Presentation Skills and Techniques	4.1 Personal Grooming and Business Etiquettes 4.2 Corporate Etiquette, Social Etiquette and Telephone Etiquette 4.3 Role Play and body language 4.4 Impression Management	6
5	Business Reports	5.1 Types and Characteristics 5.2 Components of a Formal Report 5.3 Business Proposals-Types, Contacts, Elements.	4
6	Information Technology for Communication	5.1 Word processor 5.2 Telex 5.3 Facsimile 5.4 Electronic mail 5.5 Voice mail 5.6 Internet 5.7 Multimedia 5.8 Teleconferencing 5.9 Mobile phone conversation 5.10 Video conferencing 5.11 Short messaging services \SMS	6

References Book:

1. MatilaTreece: Successful communication: Allyun and Bacon Pubharkat.
2. Jon Lisa Interatid skills in Tourist Travel Industry Longman Group Ltd.
3. Robert T. Reilly – Effective communication in tourist travel Industry Dilnas Publication.
4. Boves. Thill Business Communication Today Mcycans Hills Publication.
5. Dark Studying International Communication Sage Publication.
6. Murphy Hilderand Thomas Effective Business Communication McGraw Hill
7. Thorat, A.andLokhandwala,M.(2009),Enriching Oral and Written Communication [OBS]
8. Mohanraj J. and Mohanraj S. (2001), English Online [OBS]
9. Seely (2006), Oxford Guide to English speaking and writing [OUP]
10. Dutt, P. Kiranmal, GeethaRajeevan, CLN Prakash (2008), A Course in CommunicationSkills [Foundation Books]
11. Anderson, Keith, John Maclean, Tony Lynch (2007), Study Speaking [CUP]
12. Goodale, Malcolm (2008), Professional Presentations [CUP]
13. Morley, David (2007), The Cambridge Introduction to Creative Writing [CUP]

14. Dutt, P. Kiranmal and GeethaRajeevan (2007), A Course in Listening and Speaking(Vol. I & II)
[Foundation Books]
15. Sasikumar, V., P. KiranmalDutt and GeethaRajeevan (2007), Basic CommunicationSkills
[Foundation Books]
16. O'Connor, J. D. – Better English Pronunciation (Latest Edition with CD)
17. Narayanswamy – Strengthen Your Writing (OBS)
18. Cross-Cultural and Intercultural Communication, William B. Gudykunst
19. Beyond Language: Cross Cultural Communication, Deena R. Levine M.A., Mara B. Adelman
20. The 7 Habits of Highly Effective People, Stephen Covey

**SYLLABUS FOR B.VOCATIONAL (Agriculture and Soil Science)
FIRST YEAR (Semester – II)**

ASS: 202Irrigation Water Management

Credits: 04Total Periods: 60

Course Objectives:

- 1) Study of methods of irrigation
- 2) Study of irrigation scheduling for different crops
- 3) Study of systems of irrigations
- 4) Study of water resources in India

Course Outcomes

- 1) Study of surface ,groundwater irrigation sources
- 2) Different irrigation water resources present in India
- 3) Study of crop wise water requirement of different crops
- 4) How much quantity of irrigation required to different horticultural crops
- 5) Study of drainage and its importance in plant growth
- 6) Standard of drinking water

Syllabus:

Unit No	Topic	Periods
1	Definition of Irrigation and Water Management, its Objectives and Role of water in plants.	4
2	System of irrigation: Surface irrigation system, groundwater irrigation system ,irrigation systems terminology	6
3	Development of water resources in India	4
6	Water requirements of crop, factors influencing crop water requirement, Determination of crop water requirement,	6
7	Scheduling of irrigation: Soil moisture regime approaches , climatologically approaches, plant indices, net irrigation requirements, gross irrigation requirement and irrigation interval	6
8	Methods of irrigation: Surface irrigation, Sprinkler irrigation and Drip irrigation	8
9	Water use efficiency, Factors influencing Water use efficiency and management factors for improving Water use efficiency	8
10	Irrigation practices for major crops:Rice, Wheat ,maize, Sorghum, Groundnut, Sunflower, soyabean, cotton, sugarcane, Horticultural crops	6
11	Quality of irrigation water: Problems with poor quality water, suitability of water for irrigation, Hazards associated with irrigation water quality,management practices for salinity hazards, management practices of sodicity hazards and	6
12	Drainage: causes for waterlogging, Effects of poor drainage , surface drainage ,subsurface drainage and biodrainage	6
Total		60

References:

- 1) S. R. Reddy (1999). Principles of Agronomy
- 2) Y. B. Morachand. Crop production and Management
- 3) Sankaran S and V. T. SubbiahMudliyar.Principles of Agronomy
- 4) T. Yellamanda Reddy and G. H. Sankara Reddy. Principles of Agronomy
- 5) Dilip Kumar Muzumdar. Irrigation Water Managemnt
- 6) A. M. Michel. Principles and Practices of Water Management
- 7) Lenka D. Irrigation and Drainage
- 8) S.C. Panda Agrobios. Soil Management and organic farming

ASS: 203 Problematic Soils and their Management

Credit -4

Period- 60

Course Objectives:

- 1) Study of soil quality indicators
- 2) To study loss of soil by soil degradation
- 3) To get information about problematic soils and their reclamation & management
- 4) To know about submerged soils and polluted soils

Course Outcomes

- 1) Students can understand which parameter is responsible for soil quality and soil health
- 2) Study of capture and storage of carbon to reduces green house gases
- 3) Study of factors responsible for soil health deterioration
- 4) Study of reasons of soil pollution and its control measure
- 5) Study of maintenance in submerged soil and properties

Syllabus:

Unit No	Topics	No of periods
1	Definition Soil quality and soil health , Characteristic of healthy soil, Soil health indicator	5
2	Soil quality indicators, carbon sequestration	6
3	Soil degradation and causes of soil degradation	6
4	Saline soils, alkali Soils, saline-alkali soils, degraded alkali soils,: definition, formation, characteristics, effect on plant growth, reclamation and management.	12
5	Acid soils: definition, formation, characteristics, effect on plant growth, reclamation and management.	10
6	Calcareous Soil: definition, formation, characteristics, effect on plant growth, reclamation and management.	5
7	Submerged soils, kinds of submerged soil, properties, Puddling and its influences on soil properties	8
8	Polluted soils: definition, sources and their remediation.	8
Total		60

References

- 1) Richards L. A.. 1954. Diagnosis and Improvement of Saline and Alkali Soils. United State Department of Agriculture. 210
- 2) Maliwal, G. La. and Somani L.L. 2010. Nature Properties and Management of Sine and Alkali Soils. Agrotech Publishing Academy, Udaipur 313 002. pp. 335.
- 3) Mahendran ., Soil Resource Inventory and Management of Problamatic [i.e. Problematic] Soils. Published by Agrotechet alPublishing Academy (2012) ISBN 10: 818321097X / ISBN 13: 9788183210973
- 4) Abrol, I. P., Yadav, J. S. P and Massoud, F. I. 1988. Salt-Affected Soils and their Management. FAO SOILS BULLETIN 39. FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, Rome, 1988.
- 5) Tyagi, N.K. and P.S. Minhas. 1998. Agricultural Salinity Management in India Published by CSRI., Kernal. (Price Rs. 500/-).
- 6) Yaduvanshi, N. P. S. 2008. Chemical Changes and Nutrient Transformation in Sodic/ Poor Quality water Irrigated Soils . Published by CSRI., Kernal.
- 7) Dey, P. , Gupta, S. K. 2012. Diagnostics, Remediation and Management of Poor Quality Waters: Lectures for Summer School by R. L. Meena, S. K. Gupta, R. K. Yadav and D. K. Sharma, 2011. Salinity Management for Sustainable Agriculture in Canal Commands. Published by CSRI., Kernal.
- 8) Twenty five years of research on management of salt affected soils & use of saline water in agriculture, 1998 (Price Rs. 75/-). Published by CSRI., Kernal.
- 9) Patil, V. D. and Mali C. V. 2007. Fundamentals of Soil Science, Aman Publication, Meerut.
- 10) Das, D. K. Introductory Soil Science
- 11) Brady, N. C. 2016. The Nature and Properties of Soils. 15th edition Publisher: Pearson Education, ISBN: 978-0133254488.
- 12) J. Sehgal. Text Book of Pedology Concepts and Applications

ASS: 204 Communication & Soft Skills II
Practical Based on ASS-201
Credit- 4 Period- 60

Course Objectives:

- 1) Increase the communication in english among the students
- 2) Improvement in Interview Skills
- 3) Improvement in students Personality

Course Outcome

- 1) Development of communication skill
- 2) Development of interview skills
- 3) Personality Development of students
- 4) Improvement in communication skill in student

Syllabus:

Communication & Soft Skills II			
Unit	Topic	Learning Points	Periods
1	Employment Communication	1.1 Communication Skill 1.2 Punctuality to task 1.3 Honesty to job profile	14
2	Interview Skills	1.1 Self Introduction 1.2 Confidence 1.3 eye contact 1.4 Personality 1.5 discipline 1.6 Subject Knowledge Food pickup areas	14
3	Introduction to Personality Development	3.1 Uniform 3.2 Properties of good personality 3.3 Introduction to Corporate Culture 3.4 Professionalism in Service Industry 3.5 Group Discussion –Structure and Types Mocks GD using Video Samples	10
4	Self learning	4.1 Group discussion 4.2 Round table meeting	22

References:

1. Lillicrap & Cousins, ELBS *Food and Beverage service*
2. John Fuller, Hutchinson *Modern Restaurant service*
3. Brian Varghese *Food and beverage service management*
4. Heppner & Deegan *Introduction Food and Beverage service – Brown*
5. Brian Varghese *professional food and Beverage service management*
6. Sudhir Andrews, Tata McGraw Hill *Food and Beverage service training manual.*
7. Peter Jones and Cassel *Food service Operations.*
8. Jaksakivela *Menu Planning – Hospitality press.*
9. Lipinski *The Restaurant (From Concept to Operation)*

SYLLABUS FOR B.VOCATIONAL (Agriculture and Soil Science)
FIRST YEAR (Semester - II)

ASS: 205 Practical Course based on ASS- 202

Credits: 06 Total Periods: 90

Course Objectives:

- 1) To know how to collect irrigation water sample
- 2) Determination pH and EC, Ca and Mg, chloride, potassium, sodium, CO₃, HCO₃, SO₄, Nitrate, Phosphate, Boron from irrigation water
- 3) Interpretation of irrigation water data i.e SAR, KR,RSC, SSP and PI

Course Outcomes

- 1) Study of how to collect irrigation water for analysis
- 2) Evaluation of pH and salts content in irrigation water
- 3) Evaluation of hardness of water
- 4) Evaluate the Ca and Mg status of irrigation water
- 5) Evaluation of potassium level in irrigation water
- 6) Evaluation of carbonate and bicarbonate level present in irrigation water

Syllabus

Sr no	Topic	Periods
1	Collection of irrigation water sample	6
2	Determination pH and EC from irrigation water.	6
3	Determination of Total hardness of water	6
4	Determination of (Ca and Mg) from irrigation water.	6
5	Determination of chloride from irrigation water.	6
6	Determination of potassium from irrigation water.	6
7	Determination of sodium from irrigation water	6
8	Determination of anions CO ₃ , HCO ₃ from irrigation water	6
9	Determination of anions SO ₄ from irrigation water	6
10	Determination of Nitrate from irrigation water	6
11	Determination of Phosphate from irrigation water	6
12	Determination of Boron from irrigation water	6
13	Interpretation of irrigation water data i.e SAR, KR,RSC, SSP and PI	6
14	Visit to drip and Sprinkler irrigation systems	6
15	Field work/Self learning /Industrial training	6
Total		90

References

- 1) Somawanshi, *et al.* 2012. Laboratory Methods for Analysis of Soil, Irrigation Water and Plants., Department of Soil Science and Agricultural Chemistry, MPKV., Raunpur, revised Ed. pp. 307.
- 2) Jackson, M.L. 1973. Soil Chemical Analysis. Printice Hall, India, Pvt. Ltd. New Delhi. pp 498.
- 3) Chapman, H.D., and P.F. Pratt. 1961. Methods of analysis for soils, plants and waters. Division of Agricultural Sciences, University of California,
- 4) Tandon H.L.S. 1994. Recycling of Waste in Agriculture. Fertilizer Development and consultation organization.
- 5) Principles of Agronomy by S. R. Reddy

ASS: 206 Practical Course based on ASS- 203

Credits: 06

Total Periods: 90

Course Objectives:

- 1) Study of lime requirement & gypsum requirement of acidic & sodic soils respectively
- 2) Determination of Ca, Mg, Na, K from saturation paste extract
- 3) Study of Pot Culture experiment

Course Outcomes

- 1) How much lime required for management of acidic soil is calculated to raised soil pH
- 2) How much gypsum required for management of sodic soil is calculated to reduced soil pH
- 3) Preparation Soil water extract for evolution of exchangeable cations
- 4) Evaluation of pH and soluble salts
- 5) Through field visit actual knowledge of different problems present in soil is identified

Syllabus

Unit No	Learning Points	Periods
01	Determination of lime requirement of acidic soil.	06
02	Determination of gypsum requirement of sodic soil	06
03	Preparation of saturation paste extract.	06
04	Determination of pHe and ECe	06
05	Determination of Ca from saturation paste extract	06
06	Determination of Mg from saturation paste extract	06
07	Determination of Na from saturation paste extract	06
08	Determination of K from saturation paste extract and computation of SAR	06
09	Study of Pot Culture experiment (record germination count, Determine chlorophyll content, Record growth and yield parameter and initial and at harvest soil analysis)	30
10	Field Work/ Industrial training/self learning	12
Total		90

References

- 1) Somawanshi, *et al.* 2012. Laboratory Methods for Analysis of Soil, Irrigation Water and Plants..., Department of Soil Science and Agricultural Chemistry, MPKV., Raunpur, revised Ed. pp. 307.
- 2) Tandon H.L.S. 1994. Recycling of Waste in Agriculture. Fertilizer Development and consultation organization.

SECOND YEAR

(ADVANCED DIPLOMA)

SECOND YEAR (Semester – III)

ASS: 301 Soil fertility

Credits: 04 Total Periods: 60

Course Objectives

1. To know about history of soil fertility
- 2) To study essential and beneficial nutrients and their role.
- 3) Nutrient deficiency and toxicity symptoms
- 4) Role of organic matter in soil fertility
- 5) Integrated nutrient management

Course Outcomes

- 1) Students can understand Essential and beneficial nutrients and their role.
- 2) Students can understand STCRC (Soil Test Crop Response correlation) approach and site specific nutrient Management

Unit No	Learning Points	Periods
1	History of soil fertility and plant nutrition	2
2	Essential elements, Classification of essential elements. Criteria of essentiality, forms of nutrients in soil.	4
3	Essential and beneficial nutrients and their role.	10
4	Nutrient deficiency and toxicity symptoms	4
5	Loss of plant nutrients from soil	2
6	Soil fertility status and Assessment	8
7	Organic matter, Nature and composition of organic matter	4
8	Decomposition of various organic compounds	4
9	Role of organic matter in soil fertility	4
10	Harmful effects of organic matter	2
11	Techniques to build organic matter in soil	3
12	Humus, humic acid, fulvic acid, humines, humate, Humic substances and their influences on plant growth and development	10
13	Integrated nutrient management	1
14	Site specific nutrient management	1
15	STCRC (Soil Test Crop Response correlation) approach	1
Total		60

References

- 1) Havlin , John L, Samuel L. Tisdale (Author), Werner L. Nelson (Author), James D. Beaton (2004).Soil Fertility and Fertilizers (8th Edition) 8th Edition. Published July 23rd 2004 by Prentice Hall. pp. 528.
- 2) Havlin , John L. 2004. Soil Fertility and Fertilizers: An Introduction to Nutrient Management Published July 23rd 2004 by Prentice Hall. pp. 528.
- 3) James F. Power, Rajendra Prasad. 1997 .Soil Fertility Management for Sustainable Agriculture. CRC Press Tayloer and Francis Group. .Textbook -pp. 384 .ISBN 9781566702546
- 4) ISSS. 2009. Fundamentals of Soil Science. 2nd Ed. Indian Society of Soil Science, New Delhi- 110 012. pp. 728.
- 5) Das D. K. 2011. Introductory Soil Science, 3rd revised and Enlarged Ed, Kalyani Publisher, Ludhiana. pp. 645.
- 6) Brady, N. C. 2016. The Nature and Properties of Soils. 15th edition Publisher: Pearson Education, ISBN: 978-0133254488.
- 7) Tisdale, S. L. and Nelson, W. L. and Beaqton, J. D. 2010. Soil Fertility and fertilizers. 7 th Ed. Macmillan Publishing Company, 445 Hutchinson Avenue, Columbus.

ASS: 302 Crop Production Technology I (Kharif crops)
Credit- 04 Period- 60

Course Objectives

Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices Intercropping, pest and disease management and yield of Kharif crops

Cereals –1

- 1)rice, maize, sorghum, pearl millet and finger millet
- 2)Pulses - Pigeon pea, mungbean, urdbean, cowpea, kidney bean
- 3)Oilseeds - Groundnut, sesame, soybean
- 4)Fiber crops - cotton and jute
- 5)Forage crops - Sorghum, cowpea, pearl millet and maize.

Course Outcomes

- 1) Students can understand different cultural practices Intercropping, pest and disease management and yield of Kharif crops

Syllabus:

Unit	Learning Points	Periods
1	Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices Intercropping, pest and disease management and yield of Kharif crops. Cereals – rice, maize, sorghum, pearl millet and finger millet	15
2	Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices Intercropping, pest and disease management and yield of Kharif crops Pulses – Pigeon pea, mungbean, urdbean, cowpea, kidney bean and horse gram	15
3	Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices Intercropping, pest and disease management and yield of Kharif crops, Oilseeds – Groundnut, sesame, soybean	10
4	Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices Intercropping, pest and disease management and yield of Kharif crops. Fiber crops – cotton and jute	10
5	Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices Intercropping, pest and disease management and yield of Kharif crops, Forage crops – Sorghum, cowpea, pearl millet and maize.	10
Total		60

References

- 1) Chiddasingh .Modern technique of raising field crops
- 2) S.R. Reddy. Agronomy of field crop
- 3) ICAR New Delhi Hand book of Agriculture

SECOND YEAR (Semester - III)
ASS: 303 Principles of organic Farming
Total Credit: 04 Total Periods: 60

Course Objectives

- 1) Study of Organic Farming and their concepts
- 2) Weed management in organic farming
- 3) Operational structure of NPOP
- 4) Certification process and Standards of Organic Farming

Course Outcomes

- 1) Students can know about Initiative taken by Govt, NGO and Organizations for promotion of Organic Agriculture

Syllabus

Unit No	Topic	Periods
1	Organic Farming, Definition, Principles and its Scope in India and world	6
2	Initiative taken by Govt, NGO and Organizations for promotion of Organic Agriculture	6
3	Organic ecosystem and their concepts	6
4	Organic nutrient, resources and its fortification	6
5	Restriction to Nutrient use in Organic Farming	6
6	Choice of Crops and Varieties in Organic Farming	6
7	Fundamentals of insect pest and disease management under organic mode of production	6
8	Weed Management in Organic mode of Production	6
9	Operational structure of NPOP	6
10	Certification process and Standards of Organic Farming	3
11	Processing, Labeling and Economic consideration and its viability in Organic production	3
Total		60

References

- 1) Dahama A. K. Agrobios Publication. Organic Farming for Sustainable Agriculture.
- 2) Palanippan, S.P. and Anaadurai, K. Organic Farming: Theory and Practices
- 3) Thapa, U. and Tripathi, P. Organic Farming in India, Problems and Prospects.
- 4) AgrobiosPublication.Trends in Organic Farming in India.
- 5) Handbook of Organic Farming.
- 6) Gulati and Barik. Recent Developments in Organic farming

ASS: 304-Practical Course based on ASS- 302

Credit- 6 Period-90

Course Objectives

- 1) Principle and application of spectro-photometry / Colorimetry
- 2) Sampling and sample preparation for plant part analysis
- 3) Determination of N,P,K, S , Ca ,Mg and Micronutrients from plant sample

Course Outcomes

- 1) Students can analyze all parameters of plant nutrients

Syllabus

Sr no	Topic	Periods
1	Principle and application of spectro-photometry / Colorimetry .	6
2	Principle and application of flame photometry and atomic absorption spectrophotometer (AAS).	6
3	Sampling and sample preparation for plant part analysis	6
4	Determination of total nitrogen from plant sample	6
5	Determination of total phosphorus from plant sample	6
6	Determination of potassium from plant sample	6
7	Determination of potassium from plant sample	6
8	Determination of sulphur from plant sample	6
9	Determination of Boron from plant sample	6
10	Determination of calcium and magnesium from plant sample	6
11	Determination of Fe,Mn,Zn and Cu from plant sample	6
12	Preparation of nutrient deficiency symptoms in plant album	6
13	Field Work/ Industrial training/self learning	18
	Total	90

References

- 1) Somawanshi, *et al.* 2012. Laboratory Methods for Analysis of Soil, Irrigation Water and Plants., Department of Soil Science and Agricultural Chemistry, MPKV., Raunpur. revised Ed. pp. 307.
- 2) Jackson, M.L. 1973. Soil Chemical Analysis. Printice Hall, India, Pvt. Ltd. New Delhi. pp 498.
- 3) Chapman, H.D., and P.F. Pratt. 1961. Methods of analysis for soils, plants and waters. Division of Agricultural Sciences, University of California,
- 4) Tandon H.L.S. 1994. Recycling of Waste in Agriculture. Fertilizer Development and consultation organization.

SECOND YEAR (Semester – III)
ASS: 305 Practical Course on ASS- 302
Credits: 06 Total Periods: 90

Course Objectives

- 1) Calculations of plant population, seed rate and fertilizers doses.
- 2) Estimate the chlorophyll content of cereals/pulses/oilseed crop leaves
- 3) Identification of weeds in kharif season crops.

Course Outcome

- 1) Students can understand all cultural practices about Rabi Crops

Syllabus:

Sr No	Topics	Periods
1	Preparation of field for sowing of cereals/pulses/oilseed crop (Any one crop)	12
1	Calculations of plant population, seed rate and fertilizers doses.	6
2	Calculate the germination percentage of seeds	6
3	Sowing of cereals/pulses/oilseed crop (any one)	12
4	To study the effect of seed size on germination and seedling vigor of kharif season crops,	6
5	Effect of sowing depth on germination of kharif crops	6
6	Estimate the chlorophyll content of cereals/pulses/oilseed crop leaves	6
7	Identification of weeds in kharif season crops.	6
8	Study of yield contributing characters and yield calculation of kharif season crop	6
9	Harvesting and threshing of cereals/ pulses/ oil seeds crops.	12
10	Visit to research centers of related crop	12
Total		90

References

- 1) Chiddasingh. Modern technique of raising field crops
- 2) S.R. Reddy. Agronomy of field crop
- 3) ICAR New Delhi Hand book of Agriculture

SECOND YEAR (Semester – III)

ASS: 306-

Credit- 04 period- 90

Course Objectives

- 1) Study the method of preparation and Production cost of Panchagavya, Beejamrut and Jeevamrut in Organic farming
- 2) Study of Preparation methods for Enriched compost.
- 3) Visit and study of green manuring plot

Course outcomes

- 1) Students can understand preparation and Production cost of Dashparni, Neem Seed extract, in Organic farming
- 2) Students can understand Preparation methods for Enriched compost.

Syllabus

Sr No	Topic	Periods
1	Visit to Organic Farm to study the various components and their utilization	12
2	Study the method of preparation and Production cost of Panchagavya, Beejamrut and Jeevamrut in Organic farming	12
3	Study the method of preparation and Production cost of Dashparni, Neem Seed extract, in Organic farming	12
4	Study of Preparation methods for Enriched compost.	12
5	Study of Quality aspects : Grading, Packing, Handling.	12
6	Visit to Biocontrol Laboratory and Biofertilizer and Vermicompost Unit	12
7	Visit and study of green manuring plot	6
8	Visit to sugar factory for studying of pressmud, molasses etc	6
9	Field work/self learning/training	6
	Total	90

References

- 1) Dahama A. K. Agrobios Publication. Organic Farming for Sustainable Agriculture.
- 2) Palanippan, S.P. and Anaadurai, K. Organic Farming: Theory and Practices
- 3) Thapa, U. and Tripathi, P. Organic Farming in India, Problems and Prospects.
- 4) AgrobiosPublication.Trends in Organic Farming in India.
- 5) Handbook of Organic Farming.
- 6) Gulati and Barik. Recent Developments in Organic farming

SECOND YEAR (Semester – IV)
ASS: 401 Manures and fertilizers
Credits: 04 Total Periods: 60

Course Objectives

- 1) Study of bulky and concentrated organic manures
- 2) Study of Vermicomposting and green manuring
- 3) Sewage and sludge, Biogas plant slurry
- 4) Study of Biofertilisers

Course Outcomes

- 1) Students can understand Vermicomposting, green manuring; types, advantages and disadvantages and nutrient availability
- 2) Students can understand Potassic fertilizers: classification, properties, their fate and reaction in soils. Complex fertilizers their fate and reaction in the soil. Nano fertilizers
- 3) Students can understand Sewage and sludge, Biogas plant slurry; their composition and effect on soil and plant growth.

Syllabus:

Unit no	Topic	Periods
1	Definition, properties and classification of bulky and concentrated organic manures, their composition and nutrient availability. Preparation of FYM, composts, different methods of composting, decomposition process and nutrient losses during handling and storage.	12
2	Vermicomposting, green manuring; types, advantages and disadvantages and nutrient availability.	3
3	Sewage and sludge, Biogas plant slurry; their composition and effect on soil and plant growth.	3
4	Fertilizer; Definition and their classification; N fertilizers: classification, properties. their fate and reaction in soils	6
5	Phosphatic fertilizers, properties, classification, their fate and reaction in soils	6
6	Potassic fertilizers: classification, properties, their fate and reaction in soils. Complex fertilizers their fate and reaction in the soil. Nano fertilizers	6
7	Secondary & micronutrient fertilizers: Types, composition, reaction in soil and effect on crop growth. Soil amendments	6
8	Time and method of fertilizer application	6
9	Diagnostic techniques for soils and crops	6
10	Biofertilisers	6
Total		60

References

- 1) Yawalkar, K. S., Agarwal, J. P. and Bokde, S. 1967. Manures and Fertilizers. AgriHorticultural Publication.
- 2) Mariakulandi and Manickam: 1975 : Chemistry of fertilizers and manures.
- 3) Mariakulandi and Manickam (1975) : Chemistry of manures and fertilizers
- 4) Tandon H. L. S. (1994) : Recycling of crop, animal, human and industrial Wastes in Agriculture. FDCO, Delhi
- 5) Krishna and Murthy (1978) : Manual on compost and other organic manures . 214
- 6) Rakshit A. 2015. Manures Fertilizers and Pesticides Paperback – Import. CBS Publishing; 1ST edition, pp. 266.
- 7) Zhongqi He and Hailin Zhan 2016 . Applied Manure and Nutrient Chemistry for Sustainable Agriculture and Environment Paperback – Import. Springer. pp. 379.
- 8) ICAR Handbook of manures and fertilizers (1971) publication
- 9) Hand book of fertilizers use (1980) : FAI publication

ASS 402 Crop Production Technology-II (Rabi crops)

Credits: 04 Total Periods: 60

Course Objectives

- 1) Cultural management practices of wheat and barley, Rabi Sorghum and maize
- 2) Cultural management practices of Chickpea, pea, French bean
- 3) Cultural management practices of Oilseeds - Sunflower, safflower, mustard and linseed
- 4) Cultural management practices Sugar crop - Sugarcane and sugar beet

Course Outcomes

- 1) Students can understand Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of Rabi crops

Unit No	Topic	Periods
1	Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of Rabi crops; cereals – wheat and barley, Rabi Sorghum and maize	8
2	Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of Rabi crops; Pulses – Chickpea, pea, French bean	10
3	Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of Rabi crops; Oilseeds – Sunflower, safflower, mustard and linseed	10
4	Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of Rabi crops; Sugar crop – Sugarcane and sugar beet	6
5	Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of Rabi crops: Potato and sweet potato	6
6	Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of Rabi crops Medicinal and aromatic crops- mentha, lemon grass and citronella	10
7	Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of Rabi crops: Forage crops – Lucerne, berseem, maize, and sorghum	10
Total		60

References

- 1) Chiddasingh. technique of raising field crops
- 2) S.R. Reddy. Agronomy of field crop
- 3) Hand book of Agriculture, ICAR New Delhi

ASS 403 Diseases of Field and Horticultural Crops and their Management

Credits 4

Total periods-60

Course Objectives

- 1) Study the symptoms and management of major diseases of field crops: Maize, wheat, Sugarcane
- 2) Study the symptoms and management of major diseases groundnut, gram, guava, okra, onion, coconut, cotton, marigold and rose

Course outcome

- 1) Students can understand Study the symptoms and management of major diseases of **field crops, Oilseed crops, pulses, Horticultural crops** etc

Syllabus

Unit no	Topic	Periods
1	Study the symptoms and management of major diseases of field crops: Maize, wheat, Sugarcane	8
2	Study the symptoms and management of major diseases of oilseed: Groundnut	4
3	Study the symptoms and management of major diseases of pulses: Gram	10
4	Study the symptoms and management of major diseases of Horticultural crops: Guava, Pomegranate, citrus, Mango	15
5	Study the symptoms and management of major diseases of Cruciferous vegetables: Brinjal, Tomato, Okra, onion, Garlic, Chilli	15
6	Study the symptoms and management of major diseases of Plantation crop: Coconut	3
7	Study the symptoms and management of major diseases of Cash crop: Cotton	3
8	Study the symptoms and management of major diseases of Ornamental Crops: Marigold and Rose	2
Total		60

References

- 1) Agrios, GN. 2010. Plant Pathology. Acad. Press
- 2) Verma L.R and Sharma R.C (1999) ,Indus Publishing company, New Delhi. Diseases of Horticultural Crops fruits
- 3) V.N.Pathak ,Oxford& IBH publication, New Delhi (1986) Diseases of fruit crops.
- 4) R.S.Singh ,Oxford& IBH publication, New Delhi(1986) Diseases of fruit crops.
- 5) S.A.M.H. Naqvi, Springer Science & Business Media(2007) Diseases of Fruits and vegetables
- 6) P.Chowdappa, Pratibha Sharma IPS(2014) Diseases of Plantation Crops 263pp
- 7) Diseases of Horticulture Crops and their management ,ICAR e-book for B.Sc.(Agri) &B.Tech (Agri) By TNAU pp172
- 8) P.Santha (2004) Advances in the diseases of Plantation crops &spices,Kumari,International Book Distributing Company , 247 pp
- 9) Mehrotra RS &Aggarwal A. 2007. Plant Pathology. 7 th Ed. Tata McGraw Hill Publ. Co. Ltd
- 10) Steven T.Koike ,Peter Gladders and Albert Paulus (2006) Vegetable Diseases : A Colour full Hand book ,Academic Press, pp448
- 11) R.S.Singh (1987). Diseases of Vegetables crops Oxford & IBH publication, New Delhi
- 12) Singh RS (2008)Plant Diseases. 20088th Ed. Oxford & IBH. Pub. Co.
- 13) Diseases of Crops Plants in India (2009) By PHI learning Pvt. Ltd, pp 548

SECOND YEAR (Semester – IV)

ASS: 405 Practical based on ASS 401

Credit- 04 Period- 60.

Course Objectives

- 1)Fertilizer Sample collection and preparation for analysis
- 2)Fertilizer adulteration test / identification of adulteration in fertilizer / Detection of adulteration in fertilizers (Rapid test).
- 3)Determination of moisture, Nitrogen,Phosphorus, Potassium,Sulphur , Calcium, Magnesium and Micronutrients from fertilizers

Course Outcome

1) Students can understand the fertilizer analysis

Syllabus:

Sr no	Topic	Periods
1	Fertilizer Sample collection and preparation for analysis	6
2	Sampling of liquid fertilizer and Do's and Dont's in chemical fertilizer	6
3	Determination of moisture from fertilizer	6
4	Fertilizer adulteration test / identification of adulteration in fertilizer / Detection of adulteration in fertilizers (Rapid test).	12
5	Determination of total nitrogen from fertilizer	6
6	Determination of ammonical and nitrate nitrogen from fertilizer	12
7	Estimation of phosphate from fertilizer	6
8	Estimation of potassium from fertilizer	6
9	Estimation of sulphur from fertilizer	6
10	Estimation of calcium and magnesium from fertilizer	6
11	Estimation of micronutrients from fertilizer by AAS	6
12	Field visit to integrated nutrient management plot	6
13	Visit to any fertilizer industries	6
Totals		90

References

- 1) Somawanshi, *et al.* 2012. Laboratory Methods for Analysis of Soil, Irrigation Water and Plants..., Department of Soil Science and Agricultural Chemistry, MPKV., Rahuri. revised Ed. pp. 307.
- 2) Jackson, M.L. 1973. Soil Chemical Analysis. Printice Hall, India, Pvt. Ltd. New Delhi. pp 498.
- 3) Chapman, H.D., and P.F. Pratt. 1961. Methods of analysis for soils, plants and waters. Division of Agricultural Sciences, University of California,
- 4) Tandon H.L.S. 1994. Recycling of Waste in Agriculture. Fertilizer Development and consultation organization.

ASS 405 Practical based on ASS 402

Credits :6

Total periods:90

Course Objectives:

- 1) Calculations of plant population, seed rate and fertilizers doses.
- 2) Calculate the germination percentage of seeds
- 3) Study of yield contributing characters and yield calculation of Rabi season crop
- 4) Visit to research centers of related crop

Course Outcome

- 1) **Students can understand different Rabi crops cultivation practices**

Syllabus

Unit No	Topic	Periods
1	Preparation of field for sowing of rabi season crop(Any one crop)	12
1	Calculations of plant population, seed rate and fertilizers doses.	6
2	Calculate the germination percentage of seeds	6
3	Sowing of Rabi season crop (any one)	12
4	To study the effect of fertilizer doses/ irrigation methods/spacing/varieties on vigor of Rabi season crops,	6
6	Estimate the chlorophyll content of Rabi season crop(cereals/pulses) leaves	6
7	Identification of weeds in Rabi season crops.	6
8	Study of yield contributing characters and yield calculation of Rabi season crop	6
9	Harvesting and threshing of Rabi season crops.	12
10	Visit to research centers of related crop	12
11	Study of juice quality of sugarcane	6
Total		90

References

- 1) Chiddasingh. technique of raising field crops
- 2) S.R. Reddy. Agronomy of field crop
- 3) Hand book of Agriculture, ICAR New Delhi

ASS 406 practical based on ASS 403

Credits:6 Total periods:90

Course Objectives

- 1) Identification and histopathological studies of selected diseases of field and horticultural crops Wheat, Sugarcane, Groundnut, Gram Guava, Mango,
- 2) Identification and histopathological studies of selected diseases of field and horticultural crops Citrus, Tomato, Okra, Garlic, Chilli, Marigold, Cotton, Coconut and rose

Course Outcome

- 1) Students can understand different Identification and histopathological studies of selected diseases of field and horticultural crops

Syllabus

Unit no	Topic	Periods
	Identification and histopathological studies of selected diseases of field and horticultural crops covered in theory. Collection and preservation of disease specimen (Note: Students should submit 50 pressed and well-mounted specimens)	
1	Wheat: Rusts, loose smut, Karnal bunt, powdery mildew, Alternaria blight, and ear cockle	6
2	Sugarcane: Red rot, Smut, Wilt, Grassy shoot, Ratoon stunting and Pokka Boeng	6
3	Maize: stalk rots, downy mildew, leaf spots, Sorghum: smuts, grain mold and anthracnose, Bajra: downy mildew and ergot;	6
4	Groundnut: early and late leaf spots ,wilt.	6
5	Gram: wilt, grey mould and Ascochyta blight, Pea: Downy mildew, Powdery mildew and Rust, wilt	6
6 7 and	Guava: wilt and anthracnose; Papaya: foot rot, leaf curl and mosaic, Pomegranate: bacterial blight ,wilt	6
8	Mango: Die back, Anthracnose, Mango-malformation, bacterial blight and powdery mildew, Spongy tissue, Red rust, Pink diseases, Loranthus, Stone graft Mortality, Lime induced chlorosis	6
9	Citrus : Citrus canker, Gummosis, Fruit rot, Citrus greening, Anthracnose, Tristeza, Citrus Exocortis, Scab of citrus, Mottle leaf of citrus	6
10 and 11	Onion: Purple blotch, and Stemphylium blight, Downy mildew, Smut, Smudge, Erwinia rot Garlic : Neck and bulb rot, and Stemphylium blight, Blemish, Black mould	6
12	Chilli : Anthracnose and fruit rot, Wilt and leaf curl. Coriander : Stem gall, Powdery mildew, Wilt. Turmeric: leaf spot	6
13	Tomato: damping off, wilt, early and late blight, buck eye rot and leaf curl and mosaic	6
14 and 15	Okra: Yellow Vein Mosaic, Beans: anthracnose and bacterial blight Brinjal: Phomopsis blight and fruit rot and Sclerotinia blight	6
16	Coconut: wilt and bud rot; Tea: blister blight; Coffee: rust	6
17	Cotton: Root rot, Wilt, Anthracnose, and black arm, Dahiya diseases, leaf curl of cotton, 2-4-D injury	6
18	Marigold : Botrytis blight, Alternaria blight, Rose: Dieback, Powdery mildew and Black leaf spot	6
	Total	90

References

- 1) Agrios, GN. 2010. Plant Pathology. Acad. Press
- 2) Verma L.R and Sharma R.C (1999) ,Indus Publishing company, New Delhi. Diseases of Horticultural Crops fruits
- 3) V.N.Pathak ,Oxford& IBH publication, New Delhi (1986) Diseases of fruit crops.
- 4) R.S.Singh ,Oxford& IBH publication, New Delhi(1986) Diseases of fruit crops.
- 5) S.A.M.H. Naqvi, Springer Science & Business Media(2007) Diseases of Fruits and vegetables
- 6) P.Chowdappa, Pratibha Sharma IPS(2014) Diseases of Plantation Crops 263pp
- 7) Diseases of Horticulture Crops and their management ,ICAR e-book for B.Sc.(Agri) &B.Tech (Agri) By TNAU pp172
- 8) P.Santha (2004) Advances in the diseases of Plantation crops &spices,Kumari,International Book Distributing Company , 247 pp
- 9) Mehrotra RS &Aggarwal A. 2007. Plant Pathology. 7 th Ed. Tata McGraw Hill Publ. Co. Ltd
- 10) Steven T.Koike ,Peter Gladers and Albert Paulus (2006) Vegetable Diseases : A Colour full Hand book ,Academic Press, pp448
- 11) R.S.Singh (1987). Diseases of Vegetables crops Oxford & IBH publication, New Delhi
- 12) Singh RS (2008)Plant Diseases. 20088th Ed. Oxford & IBH. Pub. Co.
- 13) Diseases of Crops Plants in India (2009) By PHI learning Pvt. Ltd, pp 548

THIRD YEAR
(B.Voc. DEGREE)

THIRD YEAR (Semester – V)
ASS 501- Soil Health Management
Credits 4 Periods 60

Course Objectives

- 1) Concept of soil quality, soil quality indicator, soil health indices
- 2) Study of Soil health vis-à-vis human and animal health
- 3) Study of Soil health mission: government initiatives

Course Outcomes

- 1) Students understand the concept of soil health and the characteristics should consider while determine the soil health
- 2) Students are understand the soil quality, and soil quality indicator
- 3) Useful in understanding green revolution and its impact on soil health and food security
- 4) Useful in understanding green revolution and its impact on soil health and food security
- 5) Study of government initiatives for Soil health management

Syllabus

Unit No	Topic	Periods
1	Soil and soil health: definition and concept	3
2	Concept of soil quality, soil quality indicator, soil health indices	3
3	Green revolution-impact on soil health and food security	6
4	Causes of soil health deterioration	6
5	Strategies of soil health management as per NRCS-USDA	6
6	Soil health <i>vis-à-vis</i> human and animal health	8
7	Major policy issues related to soil health management	8
8	Measuring soil health	10
9	Soil health mission: government initiatives	10
Total		60

References

- 1) JC Katyal, SK Chaudhari, BSDwivedi, DR Biswas, RKRattan, KMajumdar (2016) Soil Health, Concept, Status and Monitoring, Indian Society of Soil Science, New Delhi

ASS 502 Fundamentals of Horticulture

Credits 4

periods 60

Course Objectives

- 1 Study of Horticulture-Its definition and branches, importance and scope
- 2 Principles of orchard establishment
- 3 Fertilization and parthenocarpy

Unit no	Topic	Periods
1	Horticulture-Its definition and branches, importance and scope	3
2	Horticultural and botanical classification	3
3	Climate and soil for horticultural crops	6
4	Plant propagation-methods and propagating structures	6
5	Principles of orchard establishment	6
6	Principles and methods of training and pruning, juvenility and flower bud differentiation	6
7	Unfruitfulness	6
8	Pollination, pollinizers and pollinators	6
9	Fertilization and parthenocarpy	3
10	Kitchen gardening	3
11	Garden types and parts	3
12	Lawn making	3
13	Medicinal and aromatic plants	3
14	Spices and condiments	3
	Total	60

References

- 1) Sham Singh .Fruit Culture in India
- 2) Handbook of Horticulture ICAR Publication
- 3) Kunte and Yawalkar. Principles of Horticulture and fruit growing
- 4) Shanmugvelu, K.G. Production Technology of Fruit Crops

ASS 503 Livestock production and management

Total credits:4

Periods:60

Course Objectives

- 1 Importance of Livestock in the national economy and different livestock development programme
- 2 Terminology used in livestock management
- 3 Integrated livestock farming
- 4 Cost of milk production, economical unit of cattle and buffalo

Course Outcomes

- 1) the students are expected to understand Importance of Livestock in the national economy and different livestock development programme
- 2) students are expected to understand Livestock census and trends of livestock production
- 3) the students are expected to understand Terminology used in livestock management

Syllabus

Unit No	Topic	Periods
1	Importance of Livestock in the national economy and different livestock development programme	6
2	Livestock census and trends of livestock production	6
3	Terminology used in livestock management	6
4	Important Indian and exotic breeds of cattle and buffalo	6
5	Principles of maximization of livestock production	3
6	Feeding and management of calf, heifer and milking animal	3
7	Feeding and management of dry, pregnant, draft animals and breeding bull	6
8	Diseases and it's preventive, curative measures in cattle and buffalo	3
9	Organic livestock production- definition, importance, principles, standards, certifications, SWOT analysis, A 1 and A 2 milk	3
10	Effect of climate change on livestock production	6
11	Integrated livestock farming	6
12	Cost of milk production, economical unit of cattle and buffalo	6
Total		60

References

- 1) Harban Singh and Moore, E. N. (1968). Livestock and poultry Production
- 2) JagdishPrasa (1996) Goat, Sheep and Pig Production and Management ,Kalyani Publishers 1/1, Rajinder Nagar, Ludhiana
- 3) G. C. Banerjee (1999)Text Book of Animal Husbandry –9th ed Oxford and IBH Publishers, New Delhi.
- 4) Thomas, C. K. and Sastri, N. S. R Dairy Bovine Production –, Kalyani Publishers,1/1, Rajinder Nagar, Ludhiana.

ASS 504-Practical based on ASS 501

Credits -6

Periods -90

Course Objectives

- 1 Organic manureSample collection and preparation for analysis
- 2 Determination of Moisture, pH ,Ec ,Organic Carbon, N,P,K,S, B,Na and Micronutrients from organic manures
- 3 Field visit

Course Outcomes

- 1) Students are able to evaluate good quality compost
- 2) Students are able evaluation of moisture from compost
- 3) Students are able to determine total nitrogen of organic manure
- 4) Students are able to determine total sodium of organic manure
- 5) Through field visit actual knowledge of judge good quality of compost can be developed among students

Syllabus

Unit No	Topic	Periods
1	Evaluation of maturity of compost/Organic manure	6
2	Organic manure Sample collection and preparation for analysis	6
3	Determination of moisture from organic manure	6
4	Determination of pH of organic manure	6
5	Determination of EC of organic manure	6
6	Determination of organic carbon (loss on ignition method) of organic manures	6
7	Determination of total nitrogen of organic manure	6
8	Determination of phosphorus of organic manure	6
9	Determination of potassium of organic manure	6
10	Determination of Sodium of organic manure	6
11	Determination of Sulphur of organic manure	6
12	Determination of boron of organic manure	6
13	Determination of micronutrient from organic manure	6
14	Field visit/training	6
Total		90

Reference

- 1) Somawanshi, *et al.* 2012. Laboratory Methods for Analysis of Soil, Irrigation Water and Plants., Department of Soil Science and Agricultural Chemistry, MPKV., Rahuri. revised Ed. pp. 307.
- 2) Jackson, M.L. 1973. Soil Chemical Analysis. Printice Hall, India, Pvt. Ltd. New Delhi. pp 498.
- 3) Chapman, H.D., and P.F. Pratt. 1961. Methods of analysis for soils, plants and waters. Division of Agricultural Sciences, University of California,
- 4) Tandon H.L.S. 1994. Recycling of Waste in Agriculture. Fertilizer Development and consultation organization.

ASS 505 practical based on ASS 502
Credits: 6 Periods :90

Course Objectives

- 1 Identification of garden and horticultural tools
- 2 Study of Preparation of seed bed/nursery bed
- 3 Practice of asexual and sexual methods of propagation
- 4 Preparation of potting mixture, potting and repotting

Course Outcome

- 1) Develop the skill of Identification of garden tools
- 2) Students can understand how seed bed/nursery bed prepared
- 3) Practice of Cutting & Layering
- 4) Practice of Training and pruning of fruit trees
- 5) Practice of Preparation of potting mixture, potting and repotting

Syllabus

Sr no	Topic	Periods
1	Identification of garden tools	6
2	Identification of horticultural crops	6
3	Preparation of seed bed/nursery bed	6
4	Practice of asexual methods of propagation – Cutting & Layering	12
5	Practice of asexual methods of propagation – Budding	6
6	Practice of asexual methods of propagation – Grafting	6
7	Layout and planting of orchard plants	12
8	Training and pruning of fruit trees	12
9	Transplanting and care of vegetable seedlings	6
10	Preparation of potting mixture, potting and repotting	6
11	Visits to commercial nurseries	6
12	Visits to commercial orchard	6
Total		90

References

- 1) Sham Singh .Fruit Culture in India
- 2) Handbook of Horticulture ICAR Publication
- 3) Kunte and Yawalkar. Principles of Horticulture and fruit growing
- 4) Shanmugvelu, K.G. Production Technology of Fruit Crops

ASS 506-Practical based on ASS 503**Credits 6****Periods 90****Course Objectives:**

- 1) Study of External body parts of cattle and buffalo
- 2) Methods of identification marks and dehorning of animal
- 3) Judging of animal for dairy and draft purpose
- 4) Estimation of age and body weight of animal

Course Outcome

- 1) The students are expected to understand External body parts of cattle and buffalo
- 2) The students are expected to understand Routine management practices followed on livestock farm
- 3) The students are expected to understand Methods of handling and restraining of animal
- 4) The students are expected to understand Recording of pulse rate, respiration rate and body temperature of animal

Syllabus

Unit No	Topic	Periods
1	External body parts of cattle and buffalo	6
2	Routine management practices followed on livestock farm	6
3	Methods of handling and restraining of animal	6
4	Methods of identification marks and dehorning of animal	6
5	Recording of pulse rate, respiration rate and body temperature of animal	6
6	Preparation of feeding schedule and feeding different categories of cattle and buffalo	12
7	Estimation of age and body weight of animal	6
8	Clean and hygienic milk production and milking methods	12
9	Judging of animal for dairy and draft purpose	6
10	Vaccination and control of ecto and endo parasites in cattle and buffalo	6
11	Study of various dairy structures	6
12	Visit to dairy farms	6
13	Visit and study to animal farm	6
Total		90

References

- 1) Harban Singh and Moore, E. N. (1968). Livestock and poultry Production
- 2) JagdishPrasa (1996) Goat, Sheep and Pig Production and Management ,Kalyani Publishers 1/1, Rajinder Nagar, Ludhiana
- 3) G. C. Banergee (1999)Text Book of Animal Husbandry –9th ed Oxford and IBH Publishers, New Delhi.
- 4) Thomas, C. K. and Sastri, N. S. R Dairy Bovine Production –, Kalyani Publishers,1/1, Rajinder Nagar, Ludhiana.

THIRD YEAR (Semester -VI)

ASS 601:Agrochemicals
Periods:60

Credits:4

Course Objectives:

- 1 Agrochemicals, their type and role in agriculture
- 2 Fertilizers and their classification
- 3 Fertilizer control order and insecticide Act
- 4 Insecticide Act and rules. Insecticides banned, withdrawn and restricted use
- 5 Herbicide- Classification, Formulations, Methods of application

Course Outcome

- 1) The students are expected to understand agrochemicals, their type and role inAgriculture
- 2) The students are expected to understand of Fertilizers and their classification
- 3) The students are expected to understand Liquid fertilizers
- 4) The students are expected to understand Insecticide Act and rules. Insecticidesbanned, withdrawn and restricted use
- 5) the students are expected to understand of Sulfur fungicides: Organic and inorganic sulfur fungicides their classification and mode of action. Preparation of lime sulfur mixture and chemical reaction involved

Syllabus

Unit No	Topic	Periods
1	Introduction to agrochemicals, their type and role in agriculture	3
2	Effect of agrochemicals on environment, soil, human and animal health. Merits and demerits of their uses in agriculture, management of agrochemicals for sustainable agriculture.	5
3	Fertilizers and their classification	3
4	Liquid fertilizers	3
5	Handling and storage of fertilizers	6
6	Fertilizer control order and insecticide Act	4
7	Introduction and classification of insecticides: Different types of Classification of insecticides. (Based on toxicity, mode of entry, mode of action, chemical nature)	3
8	Insecticide Act and rules. Insecticides banned, withdrawn and restricted use	6
9	Insecticide resistance and its management	3
10	Copper fungicides, formulation of Bordeaux mixture and Bordeaux paste. Chemical reaction involved merits and demerits of Bordeaux mixture. Mode of action of copper fungicides	6
11	Sulfur fungicides: Organic and inorganic sulfur fungicides their classification and mode of action. Preparation of lime sulfur mixture and chemical reaction involved	6
12	Herbicide- Classification, Formulations, Methods of application	6
13	Introduction to adjuvants and their use in herbicides	6
Total		60

References

- 1) Mariakulandi and Manickam. Chemistry of fertilizers and manures
- 2) N.C. Brady. Nature and properties of soil
- 3) Organic manures – Gour, (ICAR publication)
- 4) H.L.S. Tondon. Recycling of crop, animal, human and industrial waste in Agriculture
- 5) Handbook of manures and fertilizers – ICAR publication
- 6) Biswas and Mukharjee .Text book of soil science
- 7) Fundamentals of soil science – ISSS publication 219
- 8) RanjankumarBasak.Text Book of fertilizers
- 9) Tondon HLS (1994) Fertilizer Guide
- 10) Seetharam S, Priswas, BC, Yadav DS,Matneswaru S. (1996) Handbook on fertilizer usage
- 11) Fertilizer control order (1985) The fertilizer Association of India
- 12) The Pesticide manual A world compendium (1995) – British crop production council, UK
- 13) Bahl and Tuli .Outline of organic chemistry
- 14) Nene YL and Thapliyal .Fungicide in plant disease control

ASS 602 Agricultural Marketing Trade and Prices

Credits:4

Periods:60

Course Objectives

- 1 Study of Market and Marketing
- 2 Marketing mix and market segmentation
- 3 Market functionaries and marketing channels: Types and importance of agencies involved in agricultural marketing
- 4 Risk in marketing: Types of risk in marketing

Course Outcome

- 1) The students are expected to understand Market and Marketing
- 2) The students are expected to understand Classification of markets
- 3) The students are expected to understand Marketing mix and market segmentation
- 4) The students are expected to understand Demand, supply and producer's surplus of agri-commodities

Syllabus

Sr No	Topic	Periods
1	Market and Marketing – Meaning – Definitions – Components of market – Market structure – Meaning – Components – Market conduct – Market performance	4
2	Agricultural Marketing – Meaning – Definition – Scope – Subject matter – Importance of Agricultural Marketing in economic development	4
3	Classification of markets – On the basis of location, Area of coverage, time span, volume of transaction, nature of transaction, number of commodities, degree of competition, nature of commodities, stage of marketing, extent of public intervention, type of population served, accrual of marketing margins	6
4	Marketing mix and market segmentation	4
5	Demand, supply and producer's surplus of agri-commodities: nature and determinants of demand and supply of farm products	4
6	Producers surplus- Meaning- Marketable surplus- Marketed surplus-importance- factors influencing marketable surplus- Marketing channels - Definition	4
7	Market promotion – advertising, personal selling, sales promotion and publicity – their meaning and merits & demerits	4
8	Marketing functions – Meaning -exchange functions – buying and selling	4
9	Physical functions – storage, transport and processing	4
10	Facilitating functions – packaging, branding, grading, quality control and labeling (Agmark)	4
11	Market functionaries and marketing channels: Types and importance of agencies involved in agricultural marketing	4
12	National Agricultural Cooperative Marketing Federation (NAFED) and State Agricultural Cooperative Marketing Federations (MARKFED)- State Trading-objectives-Types of state trading.	4
13	Risk in marketing: Types of risk in marketing	4
14	Trade: Concept of International Trade and its need, International trade-definition-difference between international and inter-regional trade- free trade vs protection	6
Total		60

References

- 1) Acharya S.S and Agarwal NL, 2006, Agricultural Marketing in India. Oxford & IBH Publishing Co.Pvt.Ltd. New Delhi
- 2) Kahlon, A.S and Tyagi.D S, 1983 Agricultural Price Policy in India. Allied Publishers Pvt. Ltd., New Delhi.
- 3) Kulkarni, K R.1964, Agricultural Marketing in India. The Co-operators Books Depot, Mumbai.
- 4) Mamoria, C.B. and Joshi. R L.1995, Principles and Practices of Marketing in India, KitabMahal, Allahabad
- 5) Mamoria, C.B., 1973., Agricultural Problems in India, KitabMahal, Allahabad
- 6) 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 135 Delhi, 2010

ASS: 603 Principles of Agronomy

Credits: 04

Total Periods: 60

Course Objectives

- 1 Agronomy, its definition, scope, role of Agronomist
- 2 Tillage, its definition, objects of tillage, types of tillage.
- 3 Methods of sowing seed
- 4 Moisture conservation in dryland Agriculture

Course outcome

- 1) The students are expected to understand Agronomy, its definition, scope, role of Agronomist and relationship of Agronomy with other sciences.
- 2) The students are expected to understand Tillage
- 3) The students are expected to understand Methods of sowing seed
- 4) The students are expected to understand Weather hazards and their mitigation
- 5) The students are expected to understand Composition of atmosphere and structure of atmosphere

Syllabus:

Unit No	Topic	Periods
1	Agronomy, its definition, scope, role of Agronomist and relationship of Agronomy with other sciences.	4
2	Tillage, its definition, objects of tillage, types of tillage, tillage implements and factors affecting tillage, Effect of tillage on soil and crop growth	6
3	Tilth: its definition, characteristics and ideal tilth, Modern concepts of tillage, minimum, zero and stubble mulch tillage.	6
4	Seed, its definition, characteristics of quality seed, seed treatment and its objectives seed dormancy, causes of seed dormancy and multiplication, methods of breaking of seed dormancy.	10
5	Growth and development, its definition, growth curve and factors affecting growth and development.	4
6	Methods of sowing seed	4
7	Weather hazards and their mitigation	8
8	Moisture conservation in dryland Agriculture	8
9	Composition of atmosphere and structure of atmosphere	4
10	Weeds, losses due to weeds, benefits from weeds, classification of weeds and methods of weed control	6
	Total	60

References

- 1) Chhidda Singh, Modern techniques of raising field crops. Oxford and IBH Publishing Co. Ltd., Bangalore.
- 2) Gopal Chandra De. 1980., Fundamentals of Agronomy. Oxford and IBH Publishing Co. Ltd., Bangalore.
- 3) Hand book of Agriculture, ICAR Publication.
- 4) Palaniappan, S.P., Cropping Systems in the tropics – Principles and Practices. Willey Eastern Ltd., New Delhi.
- 5) Panda, S.C., 2006. Agronomy Agribios Publication, New Delhi.
- 6) Reddy, S.R. Principles of Agronomy Kalyani Publishers, Ludhiana, India.
- 7) Sankaran, S and Subbiah Mudliyar, V.T., 1991. Principles of Agronomy. The Bangalore Printing and Publishing Co. Ltd., Bangalore.
- 8) Vaidya, V.G., Sahasrabuddhe, K.R. and Khuspe, V.S. Crop production and field experimentation. Continental Prakashan, Vijaynagar, Pune.
- 9) Rao V.S. (2006), Principles of Weed Science. Oxford and IBH Publishing Co., New Delhi, India.
- 10) Gupta, O.P. (2008), Modern Weed Management Agribios India Publication.

ASS 604: Practical based on ASS 601

Credits: 04

Total Periods: 60

Course Objectives

- 1) Visit to Krishiseva Kendra of nearby village and collect data of Fertilizers, pesticide, biofertilizer available for marketing
- 2) Field visit/industrial training/self learning

Course Outcome

- 1) Development of marketing skill
- 2) Development of marketing skill
- 3) Development of research skill

Syllabus

Unit	Learning Points	Periods
1	Visit to Krishiseva Kendra of nearby village and collect data of Fertilizers available for marketing	12
2	Visit to Krishiseva Kendra of nearby village and collect data of pesticide available for marketing	12
3	Visit to Krishiseva Kendra of nearby village and collect data of biofertilizer available for marketing	12
4	Visit to farmers field and preparation of report on fertilizer, pesticide and biofertilizer utilized by farmers	12
4	Field visit/industrial training/self learning	42
Total		90

References

- 1) Mariakulandi and Manickam. Chemistry of fertilizers and manures
- 2) N.C. Brady. Nature and properties of soil
- 3) Organic manures – Gour, (ICAR publication)
- 4) H.L.S. Tondon. Recycling of crop, animal, human and industrial waste in Agriculture
- 5) Handbook of manures and fertilizers – ICAR publication
- 6) Biswas and Mukharjee .Text book of soil science
- 7) Fundamentals of soil science – ISSS publication 219
- 8) RanjankumarBasak.Text Book of fertilizers
- 9) Tondon HLS (1994) Fertilizer Guide
- 10) Seetharam S, Priswas, BC, Yadav DS, Matneswaru S. (1996) Handbook on fertilizer usage
- 11) Fertilizer control order (1985) The fertilizer Association of India
- 12) The Pesticide manual A world compendium (1995) – British crop production council, UK
- 13) Bahl and Tuli .Outline of organic chemistry
- 14) Nene YL and Thapliyal .Fungicide in plant disease control

ASS 605- Practical based on ASS 602

Credits:6

Total periods:90

Course Objectives

- 1)Identification of marketing channels for selected commodity
- 2)Study of Self help group and functioning
- 3)Visit to APMC to study their organization and functioning

Course Outcome

- 1) The students are expected to understand Plotting and study of demand and supply curves
- 2) Visit to a local market to study various marketing functions performed by different agencies
- 3) the students are expected to understand Identification of marketing channels for selected commodity
- 4) the students are expected to understand Collection of data regarding marketing costs, margins and price spread

Syllabus

Sr No	Topic	Periods
1	Plotting and study of demand and supply curves	6
2	Visit to a local market to study various marketing functions performed by different agencies,	6
3	Visit to regulated market	6
4	Identification of marketing channels for selected commodity	6
5	Collection of data regarding marketing costs, margins and price spread.	6
6	Presentation of report in the class	6
7	Visit to market institution – ADCC to study their organization and functioning	6
8	Study of Self help group and functioning	6
9	Visit to APMC to study their organization and functioning	12
10	Field visit/industrial training/self learning	30
Total		90

References

- 1) Acharya S.S and Agarwal NL, 2006, Agricultural Marketing in India. Oxford & IBH Publishing Co.Pvt.Ltd. New Delhi
- 2) Kahlon, A.S and Tyagi.D S, 1983 Agricultural Price Policy in India. Allied Publishers Pvt. Ltd., New Delhi.
- 3) Kulkarni, K R.1964, Agricultural Marketing in India. The Co-operators Books Depot, Mumbai

ASS: 606 Practical Course based on ASS- 603

Credits: 06

Total Periods: 90

Course Objectives

- 1)Preparation of Vermicompost
- 2)Visit and study of mulching plot
- 3)Preparation of weed album
- 4)Analysis of soil sample using soil testing kit

Course Outcome

- 1) Students able to identified different seeds
- 2) Able to understand method of preparation of vermicompost
- 3) Weed identification

Syllabus

Topic	Topic	Periods
1	ASS: 606 Practical Course based on ASS- 603	6
2	Identification of different tillage implements.	6
3	Visit to seed company	12
3	Preparation of Vermicompost	24
8	Visit and study of polyhouse	6
9	Visit and study of mulching plot	6
10	Preparation of weed album	6
11	Analysis of soil sample using soil testing kit	24
	Total	90

References

- 1) Gopal Chandra De. 1980., Fundamentals of Agronomy. Oxford and IBH Publishing Co. Ltd., Bangalore.
- 2) Hand book of Agriculture, ICAR Publication.
- 3) Panda, S.C., 2006. Agronomy Agribios Publication, New Delhi.
- 4) Reddy, S.R. Principles of Agronomy Kalyani Publishers, Ludhiana, India.
- 5) Somawanshi, *et al.* 2012. Laboratory Methods for Analysis of Soil, Irrigation Water and Plants., Department of Soil Science and Agricultural Chemistry, MPKV., Rahuri. revised Ed. pp. 307.
- 6) Jackson, M.L. 1973. Soil Chemical Analysis. Printice Hall, India, Pvt. Ltd. New Delhi. pp 498.