Established by Govt. of Arunachal Pradesh vide Act 9 of 2012, the Arunachal University of Studies Act, 2012 Recognized as per u/s 2(f) of University Grants Commission Act, 1956 NH-52, Namsai, Arunachal Pradesh -792103

DIPLOMA (AGRICULTURE) – THIRD SEMESTER

Third Semester			
S. No.	**Name of Subject**	**Credits**	**Total Marks**
1	English-II	4	100
2	Concept of Soil & Nutrient Management	4	100
3	Principles of Irrigation Management	4	100
4	Principles of Agriculture Meteorology	4	100
5	Introduction to Computer Application	4	100
6	Principles and Practices of Plant Breeding & Plant Physiology	4	100
Total		**24**	

Subject Name: ENGLISH-II

1. **Functional Grammar:** Articles, Preposition, Tenses: Functions, Synthesis, Transformation, Spotting errors and correction of sentences.
2. **Pre- Requisites of Technical written Communication:** One word substitution, Spelling rules, Words often confused & misused, Phrases.
3. **The Structure of sentences/ clauses:** Adverb clause, Adjective clause, Noun clause. Sentences: Simple, Double, Multiple and complex, Transformation of sentences: simple to complex & vice versa, simple to compound & vice-versa, Interrogative to assertive & to negative & vice-versa.
4. **Technical Communication:** Nature, Origin and Development, Salient features, Scope & Significance, Forms of Technical Communication, Difference between Technical Communication & General writing, Objective Style vs. Literary Composition.

1. Modern English Grammar by N.Krishnaswamy (Maemilan)
2. Spoken English for India by Bansal & Harrison
3. Developing Programmes and Materials for Language Learning by FraidaDubin& Elite Olshtain
4. Communicative Approach to Language Teaching by David H. Wyatt • "Communication skills for Technical students" Compiled by CDC, TTTI, Bhopal. Published by Somaiya Publications Pvt. Ltd. 4th Revised Edition, July, 1995.
5. Greenbaum Sidney, Oxford English Grammar, New Delhi, Oxford University Press. Peregoy, 2009.

Subject Name: CONCEPT OF SOIL & NUTRIENT MANAGEMENT

1. Macro and micro elements essential for plant growth, plant nutrient availability
2. Types of nutrients and their role in crop production
3. Primary ,secondary and micro nutrients
4. Function of Nitrogen,phosphorus,potassium

5. Nutrient deficiency and toxicity symptoms-plant nutrient mobility in plant and symptom appearance location on plant/crop
6. Nutrient recommendations of of rice,Wheat,soyabean,groundnuts and cotton
7. Basic concepts of integrated nutrient management
8. Soil formation,soil profile and components of soil
9. Physical properties of soil,Elementary knowledge of soil taxonomy classification and soils of india
10. Soil water,soil air,Composition,gaseous exchange
11. Soil reaction-PH,soil acidity and alkalinity,buffering ,effect of PH on nutrient availablity
12. Soil collids,Soil organic matter,soil organisms
13. Concept of soil fertility
14. Manures,defination,profile of manure, importance diffrent groups /types, preparation, importance and applications of bulky and concentrated manure, FYM, green manure
15. Fertilizer:Importance,sources,impact and types ,Fertilizer application,Methods-Broadcasting,side placement,deep placement,Foliar spraying etc.,N,P,K carrying fertilizers-their agronomic efficiency,secondary nutrient(CU,Mg,S) supplying fertilizers,Fertilizer management,fertilizer calculation,Fertilizer estimation and recommendation, mixing compatablity,role of plant growth regulators, subsidy on fertilizers both chemical and organic,concept of direct benefit transfer
16. Biofertilizers-1)Rhizobium,Azotobacter 2)Cyanobacteria(BGA),Azolla their production ,multiplication and field application
17. Application of compost,phosphocompst,vermicompost,VAM
18. Basic concepts of sustainable agriculture

Practical's

1. Estimation of available nitrogen in soil
2. Determination of available phosphorus in soil using spectrophotometer (Olsen's method)
3. Determination of available potassium in soil using flame photometer
4. Determination of gypsum requirement of soil
5. Determination of EC and pH of wate
6. Determination of CO_3 , HCO_3 and Cl from water
7. Determination of Ca, Mg and Na from water

References

1. Brady:1990:Nature and properties of soil
2. ICAR Hand book of manures and fertilizers

Subject Name: PRINCIPLES OF IRRIGATION MANAGEMENT

1. Importance of irrigation in crop production
2. Methods of irrigation a)Surface irrigation-1)Border strip
3. 2)check basin 3)Furrow 4)Ring method 4)Sprinkler and drip irrigation
4. Conveyance of irrigation a)Conventional b)Unlined and lined open channels c)Fixed and flexible pipes d)Under ground pipe system.
5. Irrigation scheduling 1)Time of irrigation 2)Physiological stages of the crop 3)Soil moisture status 4)Soil water tension 5)Evapo-transpiration
6. Poor quality irrigation water and their managment
7. Integrated irrigation managmengt,Water shed management,concepts of fertigation

Practical's

1. Practical Measurement of bulk density,
2. Study of soil moisture measuring devices,

3. Determination of field capacity and permanent wilting point,
4. Measurement of infiltration rate, irrigation water,
5. Scheduling of irrigation by IW/CPE ratio method,
6. Calculation on soil moisture, irrigation water needs,
7. Layout of surface methods of irrigation,
8. Demonstration of drip and sprinkler irrigation,
9. Visit to micro irrigation systems in farmer's fields,
10. Water management practices in different crops.

References

1. Efficient use of irrigation water by-G.H sankar reddy and T reddy ,kalyani publishers,Ludhina,India
2. Irrigation water management .Principle and practices-Dilip kumar majumdar
3. Irrigation Theory and practice- A.M Michael ,Vikash publishing house New delhi

Subject Name: PRINCIPLES OF AGRICULTURE METEOROLOGY

1. The earth and its atmosphere,environment factors in agriculture
2. Atmospheric weather variables,Atmosphere pressure,its variation with height:Daily and seasonal variation of wind speed and direction,nature and properties of solar radiation
3. Atmospheric temperature,Daily ans seasonal variation of temperature,heat balance of earth
4. Atmospheric humidity, concept of saturation,vapour pressure,process of condensation,formation of dew,fog,mist,frost,snow,rain and hail,precipitation,cloud formation and movment
5. Agriculture and weather releations,introduction to moonsoon
6. Use of weather data for irrigation scheduling,pesticides spray,fertilizer application

Practical's

1. Study of different types of observatories
2. Layout plan of an agromet observatory
3. Measurement of air temperature and study of Stevenson screen
4. Study of soil and grass minimum thermometers
5. Measurment of precipitation
6. Measurment of evaporation
7. Measurement of wind speed and direction
8. Measurement of relative humidity
9. Study of radiation measuring instruments
10. Measurement of atmospheric pressure

References

1. Introduction to Agrometeorology-H.S Mavi,oxford and IBH publishing co.,New delhi
2. Agricultural climatology-J R Kakade

Subject Name: INTRODUCTON TO COMPUTER APPLICATION

1. Definition of computer
2. History and Evolution of computer
3. Introduction to WINDOWS.
4. Introduction to M.S Office: : MS WORD, MS EXCEL, MS POWER POINT
5. Introduction to Internet
6. Introduction to E-mail.

Practical's:

1. Study of computer
2. How to create folder and short cuts
3. Study and use of MS WORD and its functions / commands
4. Study and use of MS EXCEL
5. Preparation of presentation in MS POWER POINT
6. Study and use of Internet & E-mail

References

1. Computer Studies – a First course – J. Shelly and R. Hunt.
2. Programming in BASIC – E.Balagurusamy
3. Microsoft Windows XP Manual, Microsoft Office XP Manual

Subject Name: PRINCIPLES AND PRACTICES OF PLANT BREEDING & PLANT PHYSIOLOGY

1. Introduction- history- objectives and activities of plant breeding. Basic principles of genetics
2. Basis of heredity- chromosome- DNA- gene. Taxonomy of important crops. Qualitative and quantitative characters
3. Biometrical techniques. Ideotype concept. Centres of origin of important crops
4. Biodiversity and germplasm conservation. Organizations involved in crop improvement – National and International organizations.
5. IPR and related laws. Transport ad translocation of water and solute
6. Photosynthesis- general principles- physiological and ecological considerations. Respiration- assimilation of mineral nutrients.
7. Growth and development- Mode of reproduction and pollination in crop plants
8. Self incompatibility and male sterility.
9. Breeding techniques- introduction, selection methods, hybridization, mutation, biotechnological methods etc
10. Modern technique in plant breeding – biotechnology

Practical

1. Taxonomy- morphology- floral biology and floral diagram of important crops
2. Nutrient deficiency disorders of crops
3. Transpiration- types of stomata.
4. Measurement of Growth parameters.
5. Plant growth hormones
6. Anthesis- pollination- selfing
7. Emasculation- crossing technique 8. Visit to biotechnology lab