Syllabus for B.Sc. (Hons) Agriculture Year – III (Sem. V)

Subject Code: 16AS0516

Subject Short Name: Ag. Met. 5.2

Subject Name: Introduction to Agro-Meteorology

Objective:

1. To introduce the students to the concept of weather and climate and underlying physical processes occurring in relation to plant and atmosphere.
2. To impart the theoretical and practical knowledge of instruments/equipment used for measurement of different weather variables in an agro meteorological observatory.
3. To study the meteorological aspects of climate change in agriculture and allied activities.

Credits Earned: 2 Credits (1+1)

Course Outcomes: After completion of this course, Students will be able to

- Articulate and retain knowledge relevant to meteorology.
- Gain the information of weather and climate which are considered as basic input in agricultural planning viz. land preparation, ploughing, harrowing etc.
- Explain weather hazards, weather forecasting and impact of climate change on agriculture.
- Acquaint with the meteorological instruments and recording the observation from the agro-meteorological observatory.

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	Mid Sem (M)	Progressive Assessment (PA)	Viva (V)	Term work (TW)	
1	0	2	2	40	20	20	10	10	100

Theory Content:

Unit	Topics	Contact Hours
1	Meaning and scope of agricultural meteorology	**1**

2	Earth atmosphere its composition, extent and structure	**1**
3	Atmospheric weather variables	**1**
4	Atmospheric pressure, its variation with height	**1**
5	Wind, types of wind, cyclone, anticyclone, Land breeze and sea breeze	**1**
6	Nature and properties of solar radiation, solar constant, depletion of solar radiation, short wave, long wave and thermal radiation, net radiation, albedo; Atmospheric temperature, temperature inversion, lapse rate, daily and seasonal variations of temperature, vertical profile of temperature, Application of Thermal time concept and Crop/Pest weather calendar; Energy balance of earth;	**1**
7	Atmospheric humidity, concept of saturation, vapour pressure, process of condensation, formation of dew, fog, mist, frost, cloud.	**1**
8	Precipitation, types of precipitation such as rain, snow, sleet and hail.	**1**
9	Cloud formation and classification, Artificial rain making	**1**
10	Monsoon mechanism and importance in Indian agriculture	**1**
11	Weather hazards- drought, floods, frost, tropical cyclones and extreme weather conditions such as heat- wave and cold wave	**1**
12	Agriculture and weather relations Modifications of crop microclimate, climatic normal for crop and livestock production.	**1**
13	Weather forecasting- types of weather forecast and their uses	**1**
14	Climate change, global warming, causes of climate change and its impact on regional and National agriculture	**1**
	Total	**14**

Practical Content:

Unit	**Topics**	**Contact Hours**
1	Visit of meteorological observatories, site selection and layout, exposure of	**2**

	instruments and weather data recording,	
2	Measurement of total, shortwave and long wave radiation and its estimation using Planck's intensity law, Measurement of albedo and sunshine duration, computation of Radiation Intensity using BSS	**4**
3	Measurement of maximum, minimum air temperature and soil temperature	**2**
4	Measurement of wind speed and wind direction, preparation of wind rose	**2**
5	Determination of vapor pressure and relative humidity	**2**
6	Determination of dew point temperature	**2**
7	Measurement of atmospheric pressure and analysis of atmospheric conditions	**2**
8	Measurement of open pan evaporation and evapotranspiration, Computation of PET and AET	**2**
9	Use of synoptic charts, weather reports, weather forecasting-types and methods, crop weather calendar.	**2**
	Total	**20**

Reference Books:

1. Fundamentals of Agrometeorology, Fundamentals of Agrometeorology, Mahi, G.S. and Kingra, P.K., Kalyani Publishers, New Delhi., 2015
2. Agrometeorology , Agrometeorology , Reddy, S. R. and Reddy, D.S., Kalyani Publishers New Delhi., 2008
3. Comprehensive Agrometeorology, Comprehensive Agrometeorology, Mahi, G.S. and Kingra, P.K. , Kalyani Publishers New Delhi., 2014

Suggested Theory distribution:

The suggested theory distribution as per Bloom's taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process.

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyze	Evaluate	Create
25%	25%	20%	10%	10%	10%

Instructional Method:

1. The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by white board may also use any of tools such as demonstration, role play, quiz, brain storming, MOOCs etc.
2. The internal evaluation will be done on the basis of continuous evaluation of students in the class-rooms.
3. Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory/ field.
4. Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.