

SOLAPUR UNIVERSITY, SOLAPUR



NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Faculty of Science & Technology

B.Sc.II (Sem III&IV)

Meteorology (IDS)

CBCS Pattern

With effect from June-2017

Solapur University, Solapur

Faculty of Science
Choice Based Credit System (CBCS)
(w.e.f. June 2017)
Structure for B.Sc.–II

Subject/ Core Course	Name and Type of the Paper		No. of Papers/ Practical	Hrs/Week			Total Marks per Paper	UA	CA	Credits
	Type	Name		L	T	P				
Class:- B.Sc. Part –II (Semester- III)										
Elective:- Meteorology (I. D. S.)	Climatology		Paper I	3	---	----	100	70	30	3
	General meteorology		Paper II	3	---	---	100	70	30	3
	Subject 2		Paper I	3	----	---	100	70	30	3
			Paper II	3	----	----	100	70	30	3
	Subject 3		Paper I	3	----	----	100	70	30	3
			Paper II	3	---	---	100	70	30	3
Total:-				18	---	----	600	420	180	18
Class:- B.Sc. Part –II (Semester- IV)										
Elective:- Meteorology (I. D. S.)	Applied climatology		Paper III	3	---	----	100	70	30	3
	Meteorological Instruments		Paper IV	3	---	---	100	70	30	3
	Subject 2		Paper I	3	----	---	100	70	30	3
			Paper II	3	----	----	100	70	30	3
	Subject 3		Paper I	3	----	----	100	70	30	3
			Paper II	3	---	---	100	70	30	3
Total:- (Theory)				18	---	--	600	420	180	18
Elective: Meteorology (I. D. S.)	Meteorological data representation		Practical I	----	----	8	200	140	60	8
	Meteorological Instruments		Practical II	----	----	8	200	140	60	8
	Subject 3		Practical I	-----	-----	8	200	140	60	8
Total: (Practical)						24	600	420	180	24
Grand Total										

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B.Sc. Part – II (Sem.III)
Subject:- Meteorology (I. D. S.)
Name of the Paper: - Climatology (Paper-I)

Code No: - SG -1

Total Lectures: 45

Course No: SOG-101-S-3

Total Marks: 70+30=100

No of Credit: 2.5

Objectives

1. To acquaint the students with basic concept of meteorology.
2. Main objectives of the course are to synthesize with various factors of meteorology.

Unit No.	Title of the Unit	Name of Topic	No. of Lectures
1	Introduction of modern Climatology	a) Climatology Introduction Nature, Scope, b) Content of Climatology c) Climatology and meteorology d) Composition of atmosphere, Vertical structure of Earth's atmosphere, Climatic records & Statistics	10
2	Global Circulation of the Atmosphere	a) The General circulation primary secondary Tertiary circulation Tropical circulation b) Circulation of Northern and Southern hemisphere c) Surface modification to the idealized General circulation	10
3	Air masses and synoptic climatology	a) Air mass Definition, characteristics b) source region of air mass c) Classification air masses d) Modification of air masses e) Upper air circulation patterns	10
4	Atmospheric Disturbance	a) Theories of the origin of cyclonic depressions b) Cyclone, Anticyclone- origin, stage, life cycle c) Thunderstorms, hurricane	10
5	Seasonal disturbances	Special reference to Indian monsoon	05

References:

1. General Meteorology- H.R. Byeres
2. Meteorology William -L. Dorn
3. Climatology -Lal D.s.
4. Introduction to Meteorology -Pellersons
5. Climate and man Environment -Oliver J.E.
6. An Introduction to Climate -Triwarth G. T.
7. Climatology – R.V.Rohli & A.J.Vega
8. Monsoon Meteorology -Sulochana Gadgil
9. Handbook of statistical methods in Meteorology- C. E. P. Brouks and N. Carrotners
10. Elementary Meteorology -G.F. Taylor
11. Ways of the Weather -P.A. Menon
12. Meteorology -D. Brun
13. Fundamentals of Meteorology. V.C. finch G. T. Trewartha M.H. shearer F.L. caudle L.B.
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B.Sc. Part – II (Sem.III)

Subject:- Meteorology (I. D. S.)

Name of the Paper: - General Meteorology (Paper-II)

Code No: - SG -2

Total Lectures: 45

Course No: SOG-102-S-3

Total Marks: 70+30=100

No of Credit: 2.5

Objectives

1. To acquaint the students with basic concept of general meteorology.
2. Main objectives of the course are to understand physics behind atmospheric processes.

Unit No.	Name of the Unit	Sub Units	Lectures
1	Effects of atmosphere	1.1 Composition of earths atmosphere 1.2 Nature of radiations & Properties 1.3 Scattering, Reflection & Absorption of solar radiations 1.4 Effects of Scattering 1.5 Terrestrial Re radiation 1.6 Green house effect.	9
2	The ozone layer	2.1Tephigram 2.2 Ozone (O_3) formation photochemical processes 2.3 Absorption of solar radiation by ozone 2.4 Depletion of ozone layer & ozone hole 2.5 Ozone (O_3) in Troposphere 2.6 Smog formation due to ozone.	9
3	Atmospheric motion	3.1 The pressure gradient force 3.2 Non-inertial frame of reference and pseudo forces 3.3 The Earth's rotational deflective force (Coriolis force) 3.4 Effects of Coriolis force in nature 3.5 Buys Ballot's law 3.6 The geostrophic wind 3.7 Local winds.	9
4	Satellite Meteorology	4.1 Satellite 4.2 Launching of satellite 4.3 Polar orbiting satellite 4.4 Geostationary satellites 4.5 Solar Cell 4.6 I-V Characteristics of Solar Cell.	9
5	Energy Science	5.1 Energy Science and energy technology 5.2 Various sciences and energy science 5.3 Energy , man and environment 5.4 Laws of conservation of energy 5.5 Energy demand	9

Reference Books:-

Unit No.	Title	Author	Publication	Edition
1)	Climatology	A. A. Miller		
2)				
3)	Introduction to meteorology	S. Petterson		
4)	ATMOSPHERE, WEATHER AND CLIMATE	R. J. Barry & R. J. Chorley	The English Language Book Society & Methuen & Co. L	3 & 5
5)	Energy Technology non conventional, Renewable and Conventional	S. Rao & B. B. Parulekar	Khanna Publishers	3
6)	Environmental Science (Physical principles and applications)	Egbert Boeker & Rienk Van Grondelle.		

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B.Sc. Part – II (Sem.IV)

Subject: - Meteorology (I. D. S.)

Name of the Paper: - Applied climatology (Paper-III)

Code No: - SG -3

Total Lectures: 45

Course No: SOG-103-S-4

Total Marks: 70+30=100

No of Credit: 2.5

Objective:

1. To acquaint the students with basic concept of meteorology.
2. Main objectives of the course are to synthesize with various factors of meteorology.

Unit No.	Title of the Unit	Name of Topic	No. of Lectures
1	Weather and Health-Human response to climate	The Physiological response, urban Climate.	05
2	Climate and Human Activities	Weather application to transportation, Agricultural and industrial activities.	10
3	Weather forecasting and analysis	Historical back ground, types of Weather forecasting – short range, medium range, long range, weather forecasting method, weather modification, satellite studies in Climatology.	10
4	Motion in the atmosphere	Atmospheric pressure, pressure gradient, Coriolis effects, rotational Forces, periodic local winds.	10
5	Marine and Air operations	Marine activities, fishing, offshore drilling, telecommunications.	10

References:

1. General Meteorology -H.R. Byeres
2. Meteorology William -L. Dorn
3. Climatology- Lal D.s.
4. Introduction to Meteorology –Pellersons
5. Climate and man Environment- Oliver J.E.

6. An Introduction to Climate-Triwarth G. T.
7. Monsoon Meteorology -Sulochana Gadgil
8. Handbook of statistical method in Meteorology-C. E. P. Brouks and N. Carrotners
9. Essentials of Meteorology -D.H. McIntosh & A.S. Thom
10. Ways of the Weather -P.A. Menon
11. Meteorology-D. Brun
12. Fundamental of Meteorology- V.C. finch G. T. Trewartha M.H. shearer F.L. caudle L.B. Bation
13. Climatology – R.V.Rohli & A.J.Vega

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B.Sc. Part – II (Sem.IV)

Subject: - Meteorology (I. D. S.)

Name of the Paper: - Meteorological Instruments (Paper-IV)

Code No: - SG -4

Total Lectures: 45

Course No: SOG-104-S-4

Total Marks: 70+30=100

No of Credit: 2.5

Objective:

1. To acquaint the students with basic concept of meteorology.
2. Main objectives of the course are to synthesize with various factors of meteorology.

Unit No.	Name of the Unit	Sub Units	Lectures
1	Rain measurement	1.1 Precipitation 1.2 Types of rain gauges (Classification) 1.3 Ordinary rain gauge 1.4 Self Recording rain gauge 1.5 The float gauge 1.6 Automatic siphon gauge.	9
2	Temperature Measurement	2.1 Temperature scales 2.2 Mercury Thermometer 2.3 Six' Thermometer 2.4 Thermograph	9
3	Pressure Measurement	3.1 Atmospheric pressure 3.2 Mercury barometer 3.3 Aneroid barometer 3.4 Barograph	9
4	Wind measurement	4.1 Wind 4.2 The wind vanes 4.3 Anemometers 4.4 Hooke's Anemometer 4.5 Cup Anemometer 4.6 Constants of Cup Anemometer	9
5	Humidity & Radiation measurement	5.1 Dry and Wet bulb Thermometers 5.2 Hair hygrometer 5.3 Ether Thermoscope 5.4 Crooke's Radiometer 5.5 Seebeck effect 5.6 Thermocouple 5.7 Thermopile 5.8 Radiation pyrometer.	9

Reference Books:-

Sr. No.	Title	Author	Publication	Edition
1)	METEOROLOGICAL INSTRUMENTS	W. E. KNOWLES MIDDLETON & ATHELSTAN F. SPILHAUS	UNIVERSITY OF TORONTO PRESS	3
2)	Energy Technology non conventional, Renewable and Conventional	S. Rao & B. B. Parulekar	Khanna Publishers	3
3)	Environmental Science (Physical principles and application)	Egbert Bookers & Rienk Van Grondelle.		
4)	ATMOSPHERE, WEATHER AND CLIMATE	R. J. Barry & R. J. Chorley	The English Language Book Society & Methuen & Co. L	3 & 5
5)	METHODS OF ENVIRONMENTAL ANALYSIS OF WATER, SOIL & AIR	P. K. GUPTA		

Practical I Meteorological data representation

I) Indian meteorological charts (IMD)

Isobaric patterns (drawing and identification) sign and symbols on IMD charts, interpretation of IMD charts

(Pre monsoon, monsoon, post monsoon), description of pressure, wind, sky condition, precipitation, Departure of pressure and temperature

Beaufort (Scale) Notation

II) Representation of Meteorological data

Graphs – line, Bar, Climograph, Hystograph.

Diagrams- star diagram, wind rose

III) Statistical analysis using climatic data. Measures of central tendency, measure of dispersion, frequency distribution, climatic trends.

IV) Journal.

Reference Books:-

Sr. No.	Title	Author
1	Essential of meteorology	D.H. McIntosh and A.S. Thom.
2	Ways of the weather	P.A. Menon
3	Weather and Man	H.H. Neuberger, F.B. Stephens (A/c No. 2023)
4	Meteorology	D.Brune
5	Elementary meteorology	V.C. Finch, G.T. Trewartha, M.H. Shearer, F.C. Caudle
6	Meteorology	W.C. Dorn
7	Monsoon meteorology	Sulochana Gadgil
8	Fundamentals of meteorology Application weather forecasting / weather modification	L.B. Battan

Practical II

List of Experiments

Sr.No.	Title of the Experiment
1	Rain gauge.
2	Thermometer..
3	Thermograph.
4	Pressure gradient & Coriolis parameter
5	Fortin's barometer.
6	Barograph
7	Cup anemometer
8	Hair hygrometer.
9	Wet & dry bulb thermometer.
10	Ether thermoscope & Crooke's radiometer.
11	Characteristics of photovoltaic cell

Reference Books:-

Sr. No.	Title	Author	Publication	Edition
1	METEOROLOGICAL INSTRUMENTS	W. E. KNOWLES MIDDLETON & ATHELSTAN F. SPILHAUS	UNIVERSITY OF TORONTO PRESS	3
2	Energy Technology non conventional, Renewable and Conventional	S. Rao & B. B. Parulekar	Khanna Publishers	3
3	Environmental Science (Physical principles and application)	Egbert Bookers & Rienk Van Grondelle.		
4	Monsoon meteorology	Sulochana Gadgil		
5	METHODS OF ENVIRONMENTAL ANALYSIS OF WATER, SOIL & AIR	P. K. GUPTA		

Equivalent Subject for Old Syllabus

Sr. No.	Name of the Old Paper	Name of the New Paper
1)	Climatology	Climatology
2)	General Meteorology	General Meteorology
3)	Applied Climatology	Applied Climatology
4)	Meteorological Instruments	Meteorological Instruments