

**The University of Jordan**  
**Accreditation & Quality Assurance Center**

**Course Syllabus**

**Meteorology**

1	Course title	Meteorology
2	Course number	0305203
3	Credit hours (theory, practical)	3 hrs. ( Theory )
	Contact hours (theory, practical)	3 hrs. (Theory / week )
4	Prerequisites/corequisites	
5	Program title	B. Sc. In Geology
6	Program code	
7	Awarding institution	The University of Jordan
8	Faculty	Science
9	Department	Geology
10	Level of course	2 <sup>nd</sup> year B.Sc.
11	Year of study and semester (s)	
12	Final Qualification	B. Sc. In Geology
13	Other department (s) involved in teaching the course	None
14	Language of Instruction	English
15	Date of production/revision	

#### 16. Course Coordinator:

Office numbers, office hours, phone numbers, and email addresses should be listed.

Office number : **Geo 307**  
Phone number (Office) : 009626 5355000 ext. 22254  
Cell: :00962796906169  
Office Hrs. : Sun, Tue, Thu , 10 - 11 am  
: Mon , Wed , 9:30-11 pm  
Email: [mkuisi@ju.edu.jo](mailto:mkuisi@ju.edu.jo)

#### 17. Other instructors:

*Office numbers, office hours, phone numbers, and email addresses should be listed.*

#### 18. Course Description:

Welcome to Introduction to Meteorology! This course introduces atmospheric phenomena and weather. It is designed to provide comprehensive knowledge of the earth's atmosphere and its changing behaviour as it relates to human activities and how it influences our daily lives. This course provides a first look at various aspects of meteorology including solar radiation, global circulation, environmental issues, winds, cloud formation, stability, precipitation processes, weather systems, and severe weather. The course will also cover meteorological terminology, large-scale climate processes such as El Niño, and will discuss techniques of weather forecasting. Basic physical principles and processes are emphasized that are important for understanding the world and have broad implications for students interested in weather and global environmental change and other environmental disciplines.

## 19. Course aims and outcomes:

### A- Aims:

By the end of the course you will be able to:

- interpret weather maps in terms of local weather
- recognize cloud types and be able to describe their formation mechanisms
- plot and interpret vertical temperature and moisture soundings
- describe the basic processes occurring in the atmospheric boundary layer
- describe and explain the structure, physics and dynamics of thunderstorms, tornadoes and hail formation
- describe the layers of the atmosphere from the surface to 100 km +
- explain the basic physics of atmospheric processes, such as radiation at the surface, water in the atmosphere and its phase changes
- observe and plot weather elements in standard format

**B- Intended Learning Outcomes (ILOs):** Upon successful completion of this course students will be able to ...

- Demonstrate a familiarity with the basic vocabulary of meteorology.
- Understand the mechanics of the earth's atmosphere.
- Describe and explain the origin, composition, structure, short-term and long-term behaviours of the earth's atmosphere.
- Understand and analyse important environmental problems related to the earth's atmosphere.
- Have a basic understanding of the atmosphere and its processes to enhance appreciation of our planet.
- Critically examine the phenomena of the Solar and Terrestrial Radiation and understanding the energy transfer by radiation, conduction, convection, and evapotranspiration and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
- Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.
- Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.
- Define a cold and warm front, explain the processes leading to the formation of each, and explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.
- Understand and describe the formation of thunderstorms, lightning and thunder.
- Describe and analyse the changing climate in the past, present and future
- Understand the impact that people have on the atmospheric environment.
- Differentiate between global warming and the greenhouse effect
- Describe the phenomenon of El Nino-Southern Oscillation and the impacts it has on global precipitation and cloud patterns.
- Describe various types of atmospheric optical phenomena including rainbows, mirages, halos, crepuscular rays, sundogs, sun pillars, corona and glories.

## 20. Topic Outline and Schedule:

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
Course Syllabus, Weather and Climate Intro Atmospheric Composition, Vertical Structure	1	Mustafa Al Kuisi	100%	Quiz on Ch. 1	Meteorology Today: 10 <sup>th</sup> edition by Ahrens, C. Donald
Temperature and Heat Transfer, Absorption, Emission Earth's Annual Energy Balance, Seasons	2	Mustafa Al Kuisi	100%	Quiz on Ch. 2	Meteorology Today: 10 <sup>th</sup> edition by Ahrens, C. Donald

Air Temperature (vertical and global) Air Temp. Applications of Temperature Data	3	Mustafa Al Kuisi	100%	Quiz on Ch. 3	Meteorology Today: 10 <sup>th</sup> edition by Ahrens, C. Donald
Water in the Atmosphere, Dew and Frost Fog, Cloud Types, and Identification	4	Mustafa Al Kuisi	100%	Quiz on Ch. 4	Meteorology Today: 10 <sup>th</sup> edition by Ahrens, C. Donald
Atmospheric Stability, Cloud Development Precipitation Processes Precipitation Types	5	Mustafa Al Kuisi	100%	Quiz on Ch. 5	Meteorology Today: 10 <sup>th</sup> edition by Ahrens, C. Donald
Atmospheric Pressure, Why Wind Blows Surface and Vertical Winds	6	Mustafa Al Kuisi	100%	Quiz on Ch. 6	Meteorology Today: 10 <sup>th</sup> edition by Ahrens, C. Donald
Scales of Atmospheric Motion, Local Wind Systems Cell Models, Global Wind Patterns and the Ocean	7	Mustafa Al Kuisi	100%	Quiz on Ch. 7	Meteorology Today: 10 <sup>th</sup> edition by Ahrens, C. Donald
Air Masses and Fronts Mid-Latitude Cyclones	8	Mustafa Al Kuisi	100%	Quiz on Ch. 8	Meteorology Today: 10 <sup>th</sup> edition by Ahrens, C. Donald
Weather Forecasting Focus on an observation	9	Mustafa Al Kuisi	100%	Quiz on Ch. 9	Meteorology Today: 10 <sup>th</sup> edition by Ahrens, C. Donald
Thunderstorms, Supercells, Thunder and Lightning Tornadoes –Formation and Observation	10	Mustafa Al Kuisi	100%	Quiz on Ch. 10	Meteorology Today: 10 <sup>th</sup> edition by Ahrens, C. Donald
Hurricanes Formation and Weakening Hurricane Damage, Naming and Notable Hurricanes	11	Mustafa Al Kuisi	100%	Quiz on Ch. 11	Meteorology Today: 10 <sup>th</sup> edition by Ahrens, C. Donald
Past Climate and Natural Climate Change Anthropogenic Climate Change, Climate Predictions	12	Mustafa Al Kuisi	100%	Quiz on Ch. 12	Meteorology Today: 10 <sup>th</sup> edition by Ahrens, C. Donald
Types and Sources of Air Pollutants Air Pollution and the Urban Environment	13	Mustafa Al Kuisi	100%	Quiz on Ch. 13	Meteorology Today: 10 <sup>th</sup> edition by Ahrens, C. Donald
Sky Color, Mirages Halos, Sundogs, Sun Pillars and Rainbows	14	Mustafa Al Kuisi	100%	Quiz on Ch. 14	Meteorology Today: 10 <sup>th</sup> edition by Ahrens, C. Donald

## 21. Teaching Methods and Assignments:

A number of problem sets will be assigned. These will be collected and will constitute a portion of your grade. The Monday class of every two weeks will normally be a recitation section during which the problems will be discussed. The student will be expected to participate in these discussions. Similar problems can be expected on the quizzes and the final exam. Thus the student who waits until the last minute to do these problems, or simply copies down the instructor's or fellow student's solutions without attempting to do the problems, will have an excellent shot at an F.

## 22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

### 23. Course Policies:

- Attendance Policy: attendance is mandatory. Class non-attendance usually results in poor grades.
- All students are expected to follow the policies of the Student Code of Ethics as outlined in the Student Handbook.
- During class lectures, please make sure that all cell phones and pagers are silenced or are in vibrate mode. If you need to answer an urgent call (except during an exam), please leave the class to speak on the phone.
- Please make sure to arrive at class on time, as entering late is a distraction to the students and instructor. Students arriving after an exam has already been passed out (without legitimate excuse) will lose 10 points on that exam, and will have less amount of time to finish the exam compared with the rest of the class.
- Cheating may, at my discretion, result in an **F** for the course. \

Grading will not necessarily be “on a curve.” There is no expectation of what the average grade should be, nor what the grade distribution should look like. If everyone were to demonstrate outstanding understanding of all the material, then everyone deserves a grade of A (and I would be very happy to give each one of them)! I therefore encourage you to discuss the course material with each other to get the most out of the class.

Note: the points and percentages given are approximations and may vary slightly

Letter	Percentage
A	> 92
A-	90.00-91.99
B+	86.50-89.99
B	83.50-86.49
B-	80.00-83.49
C+	76.50-79.99
C	73.50-76.49
C-	70.00-73.49
D+	66.50-69.99
D	63.50-66.49
D-	60.00-63.49
F	59.99 and below

### 24. Required equipment:

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### 25. References:

A- Required book (s), assigned reading and audio-visuals: Meteorology Today: 9 <sup>th</sup> or 10 <sup>th</sup> edition by Ahrens, C. Donald
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B- Recommended books, materials, and media:

Essentials of Meteorology: An Invitation to the Atmosphere, 6<sup>th</sup> or 7<sup>th</sup> edition by Ahrens, C. Donald

The Atmosphere: An Introduction to Meteorology 11<sup>th</sup> edition by Lutgens and Tarbuck

**26. Additional information:**

Name of Course Coordinator: Mustafa Al Kuisi Signature: ----- Date -20/08/2017

Head of curriculum committee/Department: ----- Signature: -----

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Head of Department: ----- Signature: -----

Head of curriculum committee/Faculty: ----- Signature: -----

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Dean: ----- -Signature: -----

Assurance

Copy to:  
Head of Department  
Assistant Dean for Quality

Course File