2014–2015

 ***Soran University***

 ***Faculty Education***

 ***Basic Education School***

 ***General science Dept.***

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| Course title  | **Meteorology & Astronomy** |
| Semester credit hours | 2( theory) |
| Units | 3 units  |
|  Stage  | Third  |
| Class schedule | 120 minute, one sessions per week |
| Course coordinator's name  | Lecturer Assistant Amjad Ahmad |
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| Prepared by | Lecturer Mazin Sherzad Othman |
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**Course Description and Prerequisites:**

This course provides a quantitative introduction to atmospheric science for both meteorology majors and science and engineering students. Students will be exposed to the various components of the atmospheric sciences including thermodynamics, radiation, synoptics, physical meteorology, mesoscale and large-scale dynamics. The course is a survey of atmospheric science including a significant emphasis on developing problem solving skills, and thus moves along at a fairly quick pace. Students should leave the course with a good understanding of the different components related to atmospheric science, and a foundation for further studies in Meteorology.

**Learning objectives**

Learning objectives are developed to assist students in understanding the main goals of the course. During the semester, teaching and learning activities are designed with these objectives in mind. Assessment activities play the role of measuring to what level students achieved these learning objectives. The particular learning objectives for this course include:

* To develop an understanding of the fundamental processes responsible for the structure and evolution of the atmosphere.
* To develop the analytical and technical skills necessary to solve a variety of atmospheric science related problems.

**Assessment**

Each student will be assessed based on a combination of activities, quizzes, midterms and a comprehensive final exam. Activities will include both in-class and take home components and will require both problem solving and written responses. The quizzes are short (approximately 15 minutes long), focus on current topics, and are designed to keep students up with the material. The midterms will contain material only from their corresponding section, while the final exam will contain material from the entire course.

Activities 35%

Quizzes 05%

Midterms (2) 30%

Final Exam 70%

 **Total** 100

***Course Web Page:***

The course web page may be used to access additional information and as a communication tool.

[**https://sites.google.com/a/soran.edu.iq/sugs-phys/**](https://sites.google.com/a/soran.edu.iq/sugs-phys/)

[**http://www.met.sjsu.edu/~cordero/met61/**](http://www.met.sjsu.edu/~cordero/met61/)

***outline:***

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| --- | --- |
| Week 1 | Introduction to Meteorology, The general atmosphere, the atmosphere (history) |
| Week 2 | Weather, Climate and more definitions, Water in the Atmosphere, The Earth's seasons |
| Week 3  | Weather instruments and application, International Organizations of Meteorology  |
| Week 4 | The name and place of the agricultural meteorology, Station installed in Kurdistan Region, Rain according to the areas in Kurdistan. |
| Week 5  | The atmosphere of Earth, Composition of the atmosphere, Layers of the Atmosphere, Air |
| Week 6 | Air Pressure, Density, and Temperature Structure, Atmospheric Hazards |
| Week 7  | Exam I |
| Week 8  | Ideal Gas Law, Virtual Temperature, Hydrostatic Equation, the First Law of Thermodynamics, |
| Week 9  | Enthalpy Specific Heat, Adiabatic Process, |
| Week 10 | Dry Adiabatic Lapse Rate |
| Week 11 | Radiativen Transfer, Blackbody Radiation, Emission and Absorption of Radio waves in the Earth's atmosphere, Greenhouse effect |
| Week 12 | Greenhouse effect |
| Week 13  | Conduction, Convection, Advection, Radiation,  |
| Week 14  | Heat Transfer on Earth, Heating the atmosphere, Absorption of infrared radiation*,* Heat loss and equilibrium |
| Week 15  | Exam II |
| Week 16 | Introduction the universe Cycle and Solar system |
| Week 17  | Galaxy, asteroids, comets, meteoroids  |
| Week 18  | Discovering the atmosphere on different planets |
| Week 19 | Astronomical unit and other definitions |
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| Week 20 |  Answers Problem |
| Exam III  |

***Question and answer***

Q1) [what is composition of the atmosphere of earth?](http://wiki.answers.com/Q/What_is_composition_of_the_atmosphere_of_earth)

Answer:

78% Nitrogen 20.9% Oxygen 0.03% Carbon Dioxide 0.9% Argon and many other trace amounts of other gases

## Q2) Meteorology is the scientific study of…………………….

1. The Earth B) the Biosphere C) the Atmosphere D) Weather.

Answer: C) the Atmosphere