**Ministry Of Higher Education and Scientific Research**

**Mustansiriyah University/College of Science/Dept. of Atmospheric Sciences**

**(الخطة الدراسية للمساق)**

**Course Plan**

|  |  |
| --- | --- |
| **Course No.:2** |  |
| **Course Name: Boundary Layer Lab2** | **Time Division:** |
| **Course Websitehttps://uomustansiriyah.edu.iq/e-learn/profile.php?id=463** | **Semester & Year:**   2 , **2023/2022** |

**Course Description**

* The second course: Calculates the effect of thermal buoyancy on wind movement, and calculation of surface roughness and zero displacement height.

**Course Intended Outcomes:**

* At the end of the second course, we expect the student to know the effect of heat buoyancy and turbulent kinetic energy on the nature of wind flow in the boundary layer.

Lab **Course Outline:**

|  |  |
| --- | --- |
| **Week** | **Description depends on the Timing table (Theoretical & Practical)** |
| 1 | Lab 1: Calculation of displacement length (Zd) by using Bottema          formula |
| 2 | Lab 2: Discussion the results. |
| 3 | Lab3: Calculation of surface roughness length by using Bottema          formula |
| 4 | Lab 4: Discussion the results. |
| 5 | Lab 5: Calculation the function of roughness and stability (p) in            neutral conditions |
| 6 | Lab 6: Discussion the results. |
| 7 | Lab 7: Vertical movement  eddy heat flux. |
| 8 | Lab 8: Discussion the results. |
| 9 | Lab 9: Calculation of turbulent kinetic energy (TKE). |
| 10 | Lab 10: Discussion the results. |
| 11 | Lab 11: Second Exam |
| 12 |  |
| 13 |  |
| 14 |  |
| 15 |  |

**Textbooks:**

|  |
| --- |
| 1. Stull , R. , 2004 : An Introduction to Boundary layer Meteorology ,Kluwer Academic Publishers, London. |

**Suggested references:**

|  |
| --- |
| 1. McIntosh, D. H. and A. S. Thom., 1981: Essentials of Meteorology.   Taylor and Francis LTD, London. |

**Marking:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Course** | | | | | **Final Exam** | **Final Mark** |
| **1st exam** | **2nd exam** | **Practical** | **Activity** | **Total** |  |  |
| **10** | **10** | **10** | **2** | **12** | **20** | **32** |
|  |  |  |  |  |  |  |

**Assignments and/ or Projects:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Assignment/ Project** | **Description** | **Due Date** | **Marking** |
| **A report** | **A report submitted by the student on any external subject** | **Weakly** | **10** |

**Instructor(s) information**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Section:     Atmospheric Sciences Building** | | **Lecture Room:** | **Boundary Layer Lab Office No.:** | |
| **Instructor's Name: L.Nagham Abbas Mohammed E-Mail**: **setnagham @uomustansiriyah.edu.iq** | | | |  |
| **Office Hours:5** | **days : Sunday, Tuesday**  **NOTES:**  **-Office Hour: Other office hours are available by appointment.**  **-The content of this syllabus not be changed during the current semester.**  **Lecturer Signature Chairman Signature** | | | |

**L.Nagham Abbas Mohammed**