**Department of ---Environmental Sciences and Health**

**College of ……Science……….**

**University of ………Salahaddin……….**

**Subject: Air Pollution (Practical)**

**Course Book – (Third stage)**

**Lecturer's name MSc. Jamal Kamal Muhhamed Amin**

**Academic Year: 2023/2024**

 **Course Book**

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| **1. Course name** | Air Pollution (Practical), |
| **2. Lecturer in charge** | Jamal Kamal Muhhamed Amin |
| **3. Department/ College** | Environmental Sciences and Health/Science |
| **4. Contact** | e-mail:Jamal.muhhamedamin@su.edu.krdTel:009647504687552 |
| **5. Time (in hours) per week**  | Practical: 4 hrs |
| **6. Office hours** | 2 hours in a week |
| **7. Course code** |  |
| **8. Teacher's academic profile**  | I am Jamal Kamal Muhhamed Amin. I have got MSc. in Environmental Science/Environmental Pollution in 2014 at Environmental Department in College of Science-Salahaddin University. In addition, I got Bachelor degree in 2009 at the biology department at Salahaddin university. I participated in different training courses such as, English course and Teachining method courses.  |
| **9. Keywords** |  |
| **10. Course overview:****The course will cover environmental Pollution in general, we will describe the types of pollution which include Air Pollution, Water Pollution, Soil Pollution, Noise Pollution, Visual Pollution, Light Pollution, also we have experiments for these Pollutions in the laboratory.**  |
| **11. Course objective:**1. We can summarize course objectives to the following points:
2. 1- To know the types of Pollution practically.
3. 2- To know the effects of pollution on our lives.
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| **12. Student's obligation**Every student must have three examinations, the attendance, classroom activities, translations and the weekly quizzes also taken into account by 5 marks for all. As well as the final examination of the course will be on 15 marks. So that the final grade will be based upon the following criteria:\* Mean of three practical examinations: 12 %\* Daily quizzes: 3%\* Final practical examination: 15 % |
| **13. Forms of teaching**Different forms of teaching will be used to reach the objectives of the course: power point presentations for the head titles and definitions and summary of conclusions, classification of materials and any other illustrations, besides worksheet will be designed to let the chance for practicing on several aspects of the course in the classroom, furthermore students will be asked to prepare research papers on selective topics and summarize articles contents published in English into either Kurdish or Arabic language, those articles need to be from printed media or internet articles. There will be classroom discussions and the lecture will give enough background to translate, solve, analyze, and evaluate problems sets, and different issues discussed throughout the course.To get the best of the course, it is suggested that you attend classes as much as possible, read the required lectures, teacher's notes regularly as all of them are foundations for the course. Lecture's notes are for supporting and not for submitting the reading material including the handouts.try as much as possible to participate in classroom discussions, preparing the assignments given n the course given in the course. |
| **14. Assessment scheme**The overall marks are of two part daily quizzes and monthly exams. The daily tests (quizzes) will be given 10 marks and finally calculated on 3% in addition to the monthly tests (2-3 tests), all these marks calculated as the yearly attempt mark 15% this is the yearly quest degree and the final exam will be done on 20%.‌ |
| **15. Student learning outcome:**Students will learn the types of Pollution practically in general, also they will learn how to control, minimize the sources of Pollution and the effects. |
| **16. Course Reading List and References‌:**1. Frankt T., SIAN P. (2000). Air Pollution and Acid Rain. Division of Mathematics, Physical Sciences, & Engineering South Mountain Community College.
2. Radojevic, M. and Bashkin, V. N. (2006). Practical Environmental Analysis. 2nd Edition. The Royal Society of Chemistry.
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| **17. The Topics:** |  |
| **Course program****-Introduction, course outline, Main safety rules of working in the laboratory****-Acid Rain**1. **Effect of acid rain on seed germination**.
2. **Effect of acid rain on building materials.**

**-Particulate Matter (PM) Analysis**1. **Importance of PM in air pollution.**
2. **Gravimetric and optical methods for PM measurement.**
3. **Data interpretation and reporting.**

**-Determination of pollutant gases in the air**1. **Importance of PM in air pollution.**
2. **Gravimetric and optical methods for PM measurement.**
3. **Data interpretation and reporting.**

**First Examination** **-Indoor Air Quality Assessment**1. **Common indoor pollutants and sources.**
2. **Sampling methods for indoor air quality.**

**-Field Trip and Practical Exercises (if conditions allow).** 1. **Field visit to a pollution monitoring station.**
2. **Hands-on experience with air quality monitoring instruments.**
3. **Sample collection and initial analysis**

**-Role of plants in cleaning indoor pollution** **-Atmospheric CO2 and temperature raising** **-Visual Pollution****-Light Pollution****-Noise pollution** **- Project and Presentation**1. **Group projects on pollution assessment and mitigation.**
2. **Data collection, analysis, and interpretation.**
3. **Presentation of findings and recommendations.**

**-independent student experimentation" or "self-guided laboratory work."** | **Week 1****Week 2****Week 3****Week 4****Week 5****Week 6****Week 7****Week 8****Week 9****Week 10****Week 11****Week 12****Week 13****Week 14** |
| **18. Practical Topics (If there is any)** |  |
| **19. Examinations:** |
| **20. Extra notes:**Here the lecturer shall write any note or comment that is not covered in this template and he/she wishes to enrich the course book with his/her valuable remarks. |
| **21. Peer reviewپێداچوونه‌وه‌ی هاوه‌ڵ** This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in this section.*(A peer is person who has enough knowledge about the subject you are teaching, he/she has to be a professor, assistant professor, a lecturer or an expert in the field of your subject).*ئه‌م کۆرسبووکه‌ ده‌بێت له‌لایه‌ن هاوه‌ڵێکی ئه‌کادیمیه‌وه‌ سه‌یر بکرێت و ناوه‌ڕۆکی بابه‌ته‌کانی کۆرسه‌که‌ په‌سه‌ند بکات و جه‌ند ووشه‌یه‌ک بنووسێت له‌سه‌ر شیاوی ناوه‌ڕۆکی کۆرسه‌که و واژووی له‌سه‌ر بکات.هاوه‌ڵ ئه‌و که‌سه‌یه‌ که‌ زانیاری هه‌بێت له‌سه‌ر کۆرسه‌که‌ و ده‌بیت پله‌ی زانستی له‌ مامۆستا که‌متر نه‌بێت.‌‌  |

College Of Science Environmental Pollution (Practical) Third Stage

Depart. Of Environmental Science First Exam

Name: Group:

Q1) Complete the following (2 marks)

A- Write the title of this lab—**The effect of acid rain on seed germination**.

B- Seeds were immersed in a 10% sodium hypochlorite solution for 10 min. to –**to sterilize**.

Q2): Complete the following. (4 marks)

A- Name the building materials which have used to show the effects of acid rain on building materials **limestone, Granite, Marble.**

B- Which of them are resistant, why? **Granite**.

Q3) Complete the following. (2 marks)

A- Why we used NaOH in Acid rain test? **to make Base media**.

B-Why we used Hcl in Acid rain test? **to make Acid media**.

Q4) Complete the following. (2 marks)

A- The majority of CO emissions to ambient air come from-**Mobile** sources.

B- Why we use AQI colors? **to understand the air quality easily**.

Q5) Complete the following. (2 marks)

A-Why we used these devices? **To measure air quality.**

Q6) Complete the following. (3 marks)

A-We measure noise level by- **Sound level meter.**

B-We use Lux meter to measure **light pollution.**



 **Supervisor Jamal kamal Mohammedamin prof. Yahya Ahmed Shekha** Lecturer