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**Department of Physics**

**College of Education**

**Salahaddin University**

**Subject: Differential equations**

**Course Book – Second year**

**Second semester**

**Lecturer's name : Dr. Fryad Hisein Abdulqadr-Ph.D**

**Scientific title: Assistant professor**

**Academic Year: 2023-2024**

**Course Book**

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| **1. Course name** | **Differential equations** |
| **2. Lecturer in charge** | Dr. Fryad H. Abdulqadr |
| **3. Department/ College** | Mathematics\ College of Education  |
| **4. Contact** | E-mail: fryad.abdulqadr@su.edu.krd |
| **5. Time (in hours) per week**  | Theory: 6  |
| **6. Office hours** | Group A: Tuesday:9:30-11:30 Wednesday: 8:30-9:30 Group B: Tuesday:8:30-10:30 Wednesday: 8:30-9:30  |
| **7. Course code** |  |
| **8. Teacher's academic profile**  | I was born in Erbil-Kurdistan. I have got the B.Sc. degree in Mathematics from Salahaddin University-Erbil in 1997, the MSc. degree in Complex Analysis from Salahaddin University-Erbil in 2002, and the Ph.D. degree in algebra and Graph Theory from the Mosul University in 2015. My doctoral research concerned with Zero divisor graph of commutative rings. Now, I am a lecturer in Mathematics department and I teach complex analysis and its applications. |
| **9. Keywords** | Functions of several variables, Differentiation, and differential equations. |
| **10. Course overview:**  **Differential equations** is a branch of mathematics that have many applications in Physics such as: Fluid flow, Harmonic motions and wave equation. In this course, we give the definition of differential equations with some methods for solving them.  |
| 11. Course objective: The objective of this course is to introduce the differential equations and its applications. |
| **12. Student's obligation**The student are obliged to attend to the class room. Student also enforced to make examination and discussion in the classroom.  |
| **13. Forms of teaching**The kind of teaching method includes explaining the subject and the discussion with students. |
| **14. Assessment scheme**1. There examinations will be given, each 30%
2. Daily activities (Home work, and Quiz) 10%
3. Final exam 60%‌
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| **15. Student learning outcome:** The student will be familiar with main topics in Physics such as: Differentiation and integrations. |
| **16. Course Reading List and References‌:**1. differential equations by Row.2. Ordinary differential equations by V. Krishnamurthy.3. طرق حل المعادلات التفاضلية ‘ خالد احمد السامرائى |
| **17. The Topics:** | **Lecturer's name** |
| **Course Program**Week1-2: Functions of several variables Week3: The partial derivativesWeek4: Differential equations Week5: Separation of variablesWeek6-7: Exact differential equations Week8: Linear differential equationsWeek9-10: Bernoulli differential equationsWeek11: Homogeneous differential equationsWeek12: Linear differential equations with constant coefficients.Week13: Linear differential equations with variable coefficients.Week14: Laplace transformations. | Assistant Profesor Dr. Fryad H. Abdulqadr (6 hrs) |
| **18. Practical Topics** In this section The lecturer will write titles of all practical topics he/she is going to give during the term. This also includes a brief description of the objectives of each topic, date and time of the lecture **19. Examinations:**1. Compositional: In this type of exam the questions usually starts with Explain how, What are the reasons for…?, Why…?, How….?With their typical answersExamples should be provided2. True or false type of exams:In this type of exam a short sentence about a specific subject will be provided, and then students will comment on the trueness or falseness of this particular sentence. Examples should be provided3. Multiple choices:In this type of exam there will be a number of phrases next or below a statement, students will match the correct phrase. Examples should be provided. |  |
| **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 review پێداچوونه‌وه‌ی 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.‌‌  |