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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%‌ | | | |
| **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 derivatives  Week4: Differential equations  Week5: Separation of variables  Week6-7: Exact differential equations  Week8: Linear differential equations  Week9-10: Bernoulli differential equations  Week11: Homogeneous differential equations  Week12: 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 answers  Examples should be provided  2. 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 provided  3. 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.‌‌ | | | |