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**Department of Mathematic**

**College of Basic Education**

**Salahaddin University**

**Subject: Finite Mathematics**

**Course Book – *First* Year / first semester**

**Lecturer's name: MSc/ Zhyan Rafaat Ali**

**Academic Year: 2022/2023**

**Course Book**

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| **1. Course name** | **Finite Mathematic** |
| **2. Lecturer in charge** | **MSc/ Zhyan Rafaat Ali** |
| **3. Department/ College** | **Mathematic Department** **/ College of Basic Education** |
| **4. Contact** | **e-mail :** [**zhyan.ali@su.edu.krd**](mailto:zhyan.ali@su.edu.krd) |
| **5. Time (in hours) per week** | **Theory: 2** |
| **6. Office hours** |  |
| **7. Course code** |  |
| **8. Teacher's academic profile** | 1) B.Sc. in Mathematic. Mathematic Department- College of Education- Salahaddin University- Erbil in 1997.  2) M.Sc. in Mathematic. Mathematic Department- College of Science - Salahaddin University- Erbil in 2010. |
| **9. Keywords** | Mathematical induction, Complex Number. |
| **10. Course overview:**  In this course we introduce some concepts of mathematics, as mathematical  induction, complex numbers, solving the equation of higher degrees, matrices,  determinants and system of linear equations. The goal is solving the equations  in general in different degree; but this has two sides, the first side is solving  equation by traditional form and we discusses some introductory ideas  associated with complex numbers, their algebra and geometry. This includes a  look at their importance in solving polynomial equations, how complex  numbers add and multiply, and how they can be represented. Finally we look  at the nth roots of unity, that is, the solutions of the equations Zn = 1. Other  side includes of solving equations by using matrices and determinants. | |
| **11. Course objective:**  Finite Mathematics, is an introductory level course covering mathematical  ideas needed by students of business management, social science, or biology.  The general object of this course is to continue providing a deeper  understanding and working knowledge of mathematics, while in the process  strengthening analytical skills increasing student’s ability to communicate  mathematics symbolically and orally, making them comfortable with reading and understanding mathematics on their own and continuing to develop their  appreciation for mathematics. | |
| **12. Student's obligation**   * **Questions on the exams**   will be drawn from homework, reading, and lectures. I also encourage you  to ask questions and participate in class. 10% of your final grade will be based on class participation.   * **Homework**: A list of homework problems will be given on the course web   page every few weeks. Not all homework will be collected. Nonetheless, it is  important for you to do all the homework to keep up with the material we  are learning and to prepare for exams. | |
| **13. Forms of teaching**  Using one of the following or may be using all of the following:   1. The lecture method. 2. Discussion method.   3. The method of exploration.  Data Show, White board, notes of teacher | |
| **14. Assessment scheme**  Term Exams 40%  Final exam 60% | |
| **15. Student learning outcome:**  After successfully completing the course the student will be able to apply concepts of Linear Algebra to solve a variety of practical problems also you will have a good understanding of the following topics and their applications: | |
| **16. Course Reading List and References‌:**  ▪ **Key references**:  **1. David A. Santos, Linear Algebra, 2008**  **2. K. R.Matthews, Elementary Linear Algebra, 2010**  المصادرالعربية:  المصادرالعربية:طرق رياضيات متنوعة،د.سليم حسن عبدعلي-د.كاضم محمد حسن | |
| **17. The Topics:** | |
| |  |  | | --- | --- | | Lesson 1 | **Mathematical Induction** | | Lesson 2 | **Complex number & Geometric Representation** | | Lesson 3 | **Complex Conjugate** | | Lesson 4 | **Modulus of a complex number** | | Lesson 5 | **Argument Of a complex number** | | Lesson 6 | **De Mover's Theorem** | | Lesson 7 | **The root of complex number** | | Lesson 8 | **Polynomials** | | Lesson 9 | **Division Algorithm** | | Lesson 10 | **Decartes** | | Lesson 11 | **Ferrari** | | |
| **19. Examinations:**  Q1/ State and prove Demoiver's Theorem for complex number.  Q2/ prove that 3n > 3n-2, for all n by mathematical induction.  Q3/ Find x and y in the following equation:  (1+4i)2 –2(x-iy) = x+iy | |
| **20. Extra notes:**  Note About office Hours: I encourage you to come by my office if you have any questions, need help with homework problems, or would just like to talk about the material. I will be in my office during my office hours, but if you plan to come by it may help to send an email before to let me know to expect you. If you want to meet with me but cannot make it to office hours, email me and we can set up a mutually convenient time to meet. | |
| **21. Peer review پێداچوونه‌وه‌ی هاوه‌ڵ** | |