



Postgraduate Course book

Department of Mathematics

College of Education

Salahaddin University - Erbil

Subject: Advanced Mathematical Analysis

Course Book Level: M. Sc.

**Lecturer's name: Assist. Prof. Dr. Rashad Rashid
Haji**

Academic Year: 2023 – 2024 First Semester

Stochastic Processes, and Stochastic Calculus .

11. Course objective:

This should not be less than 100 words

12. Student's obligation:

The attendance of students is very necessary in order to understand the subjects of the module throughout the semester, completion of all example class exercises, tests, and exams.

13. Forms of teaching:

Data show, lecture notes. We use chalk and green boards, white boards as tools of writing to explain the theoretical steps of the module to students.

14. Assessment scheme:

Throughout this Semester there are two Exams, Midterm and Final term. We set different types of questions such as: Prove or disprove, giving examples, short proves. In addition, four Quizzes during whole the term.

15. Student learning outcome:

Our aim in this module is to teach the students. They will learn the following new topics:

1. Fundamental Concepts of set theory
2. Family of sets
3. Some Special Types of Family of Sets
4. Set Functions
5. Extension of Measures
6. Lebesgue Measure
7. General set functions
8. Measurable Functions
9. Sequences of measurable functions
10. The Integration
11. Integrable Functions
12. Radon-Nikodym Theorem and Related Results
13. Space of Measurable Functions
14. Stochastic Processes
15. Stochastic Calculus

16. Course Reading List and References:

- [1] Burrill C., Knudson J., Real variables, Halt, Rimehart and Wiston. Inc. New York, 1966.
- [2] Royden H., Real analysis, The Macmillan co., New York, 1968.
- [3] Walter Rudin. Principles of Mathematical analysis. McGraw-Hill Book Co., New York, 1964.
- [4] Richard G., Methods of real analysis,
- [5] Apostol T., mathematical Analysis, Addison Wesley publishing co. Mass, 1957.
- [6] Walter Rudin. Real and complex analysis. McGraw-Hill Book Co., New York, second edition, 1974. McGraw-Hill Series in Higher Mathematics.

17. The Topics:	Lecturer's name
A family of subsets of a set Ω, a semi ring, a ring, a σ-ring. The relation between them. Semi field, field, σ-field, δ- field, λ-field and the relationship between them. Mesurable space and topological space and Borel sets.	Assist. Prof. Dr. Rashad Rashid Haji ex: (3 hrs) ex: 15/10/2023
18. Practical Topics (If there is any)	
In this section The lecturer shall 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	Assist. Prof. Dr. Rashad Rashid Haji ex: (0 hrs) ex: 15/10/2023
19. Examinations:	
<p>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</p> <p>2. Prove or disprove the statements:</p> <p>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</p> <p>3. state and prove the following:</p> <p>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.</p>	
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	
<p>پیداچوونہوہی ھاوہل</p> <p>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). ئەم کۆرسبووکە دەبیت لەلایەن ھاوہلیکی ئەکادیمیەوہ سەیر بکریت و ناوەرۆکی بابەتەکانی کۆرسەکە پەسەند بکات و جەند وشەپەک بنووسیت لەسەر شیاوی ناوەرۆکی کۆرسەکە و واژووی لەسەر بکات. ھاوہل ئەو کەسەپە کە زانیاری ھەبیت لەسەر کۆرسەکە و دەبیت پلەیی زانستی لە ماموستا کەمتر نەبیت.</p>	