



مركز الاعتماد
وإضمان الجودة
ACCREDITATION & QUALITY ASSURANCE CENTER



The University of Jordan

Accreditation & Quality Assurance Center

COURSE Syllabus: Information
Theory

1	Course title	Principles of Statistics
2	Course number	(0301933)
3	Credit hours (theory, practical)	3
	Contact hours (theory, practical)	3
4	Prerequisites/corequisites	None
5	Programtitle	PhD
6	Programcode	
7	Awarding institution	The University of Jordan
8	Faculty	Science
9	Department	Mathematics
10	Level of course	College requirement
11	Year of study andsemester (s)	all Semesters
12	Final Qualification	PhD. in Mathematics
13	Other department(s) involved in teaching the course	None
14	Language of Instruction	English
15	Date of production/revision	27.10.2020

16. Course Coordinator:

Officenumbers,officehours, phonenumber, andemailaddresses shouldbelisted.

Dr.MoradAhmed

17.Other instructors:

Officenumbers,officehours, phonenumber, andemailaddresses shouldbelisted.

18. Course Description:

Functional equations, classification of information measures, survey of well known measures, required properties of information measures, axiomatic approach to characterizations of entropies, extensions of entropies to the continuous case, relationship measures, sufficient partitions and efficiency, maximum-entropy models, Akaike information criterion and model selection, Kullback-Leibler divergence and testing statistical models.

19. Course aims and outcomes:**A- Aims:**

1. Describe and classify the information measures.
2. Apply the basic notions and rules of entropy .
3. Use criterion to select models testing them.

B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to...

Successful completion of the course should lead to the following outcomes:

A. Knowledge and Understanding Skills: Student is expected to

- A1. Distinguish between information measures.
- A2. Know the concepts of: axiomatic approach, sufficient partitions and efficiency.

B. Intellectual Analytical and Cognitive Skills: Student is expected to

- B1. compare between measures of information.
- B2. compare between discrete and continuous cases.
- B3. identify the main properties of information measures.
- B4. state axiomatic approach to continuous case.

C. Subject- Specific Skills: Student is expected to

- C1. Select the best model using Akaike criterion.
- C2. Test the statistical models.
- C3. Apply the Kullback-Leibler for divergence.
- C4. Survey of well known measures.

D. Creativity /Transferable Key Skills/Evaluation: Student is expected to

- D1. Choose the right method select models
- D2. Draw appropriate statistical conclusions about populations based on confidence estimates or based on hypotheses testing.
- D3. Explain similarities/differences of information measures.

20. Topic Outline and Schedule:**21. Teaching Methods and Assignments:****Development of ILOs is promoted through the following teaching and learning methods:**

In order to succeed in this course, each student needs to be an active participant in learning – both in class and out of class.

- The instructor will spend most of the class time on presenting the new material as well as on discussing homework problems.
- Group work in class is encouraged.
- To actively participate in class, you need to prepare by reading the textbook and to do all assigned problems before class. (Problems will be assigned each class period and discussed the following period).
- You should be prepared to discuss your homework at each class meeting.
- You are encouraged to work with other students and to ask questions and seek help from your professor (in and out of class).
- Students are also encouraged to use graphing calculators extensively and to use computer software supplements.

22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

ILO/s	Learning Methods	Evaluation Methods	Related ILO/s to the program
	Lectures	Exam	A1, A2, A3, A4, B1, D2

3. Course Policies:

- Attendance is absolutely essential to succeed in this course. You are expected to attend every class; please notify your instructor if you know you are going to be absent. All exams must be taken at the scheduled times. Exceptions will be made only in extreme circumstances, by prior arrangement with the instructor.
- If a student is absent for more than 10% of the lectures without an excuse (of sickness or due to other insurmountable difficulty), then the student shall be barred from sitting for the final examination. Also he/she will get a failing grade in the course.
- Medical certificates for excuses of exam absences should be introduced to the University Physician for authorization. These authorized certificates should also be presented to the Dean of the Faculty within two weeks of the student's ceasing to attend classes.
- Test papers shall be returned to students after correction. The student mark is considered final after a lapse of one week following their return to students.
- Cheating is totally prohibited, where University cheating regulations will be applied on any student who cheats in exams or on homeworks.

24. Required equipment:

Data Shows

25. References:

A- Required book (s), assigned reading and audio-visuals:
Information Theory A Tutorial Introduction, James V Stone.

B- Recommended books, materials, and media:

- Introduction to probability and mathematical statistics, Bain Engelhardt, second edition.

26. Additional information:

Name of Course Coordinator: Dr. Morad Ahmad Signature: ----- Date: 27.10.2020

Head of curriculum committee/Department: Dr. Emad Abu Osha Signature: -----

Head of Department: Prof. Mohammad Raqab Signature: -----

Head of curriculum committee/Faculty: Dr. Amal Abodi Signature: -----

Dean: Dr. Fuad Kittaneh Signature: -----

Copy to:

Head of Department
Assistant Dean for Quality Assurance
Course File