

**King Fahd University of Petroleum and Minerals**  
**Department of Mathematics and Statistics**  
**STAT501: Probability and Mathematical Statistics**  
**Term 221**

**Instructor:** Dr. Taleb Alkurdi

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**Office Hours:** 12:50 pm – 1:50 pm UTR

**Course Objectives:** To master the basics of probability theory with an aim to apply it to popular probability models and to samples for statistical inference.

**Course Description:**

**STAT 501: Probability and Mathematical Statistics**

**(3-0-3)**

Axioms and foundations of probability. Conditional probability and Bayes' theorem. Independence. Random variables and distribution functions and moments. Characteristic functions. Laplace transforms and moment generating functions. Function of random variables. Random vectors and their distributions. Convergence of sequences of random variables. Laws of large numbers and the central limit theorem. Random samples, sample moments and their distributions. Order statistics and their distributions.

**Pre-requisite:** Graduate standing

**Textbook:** Rohatgi, V.K. and Saleh, A.K. (2015) An Introduction to Probability and Statistics, Wiley 3<sup>rd</sup> Edition.

**Software:** Minitab.

**Assessment\***

Activity	Weight
Class Evaluation (homework, project, attendance, etc.)	15%
Exam I (Week 6)	20%
Exam II (Week 12)	20%
Final Exam (Comprehensive)	45%

**Grade Assignment**

Relative Grading based on overall performance of the students registered in this course.

**Academic Integrity**

All KFUPM policies regarding **ethics** and **academic honesty** apply to this course.

**General Notes**

Students are encouraged to regularly check the blackboard announcements.

**Class Attendance**

Graduate students are subject to the same rules governing class attendance, the performance of assigned tasks, and course examinations as undergraduate students at the University. Regular and punctual attendance is both a University regulation and a mark of courtesy to the instructor. A DN grade will be awarded to any student who accumulates more than 6 unexcused absences or more than 10 excused and unexcused absences of lectures.

**Missing Exams**

In case a student misses an exam (Exam I, Exam II, or the Final Exam) for a legitimate reason (such as medical emergencies), he/she must bring an official excuse from Students Affairs/Graduate Studies. Otherwise, he/she will get zero in the missed exam.

## Syllabus (Tentative)

Week	Chapters	Topics
<b>1</b> August 28-30	<b>CH 1</b>	<b>Probability</b>
<b>2</b> Sept 4- 6	<b>CH 1</b>	<b>Probability</b>
<b>3</b> Sept 11 -13	<b>CH 2</b>	<b>Random Variables and Their Probability Distributions</b>
<b>4</b> Sept 18- 20	<b>CH 2</b>	<b>Random Variables and Their Probability Distributions</b>

<b>Thursday 22<sup>nd</sup> September 2022: National Day Holiday</b>
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<b>5</b> Sept 25- 27	<b>CH 3</b>	<b>Moments and Generating Functions</b>
<b>6</b> Oct 2-4	<b>CH 3</b>	<b>Moments and Generating Functions</b>
<b>7</b> Oct 9-11	<b>CH 4</b>	<b>Multiple Random Variables</b>
<b>8</b> Oct.16-18	<b>CH 4</b>	<b>Multiple Random Variables</b>
<b>9</b> Oct 23-25	<b>CH 4</b>	<b>Multiple Random Variables</b>
<b>10</b> Oct 30-Nov 1	<b>CH 5</b>	<b>Some Special Distributions</b>
<b>11</b> Nov 6- 8	<b>CH 5</b>	<b>Some Special Distributions</b>
<b>12</b> Nov 13-15	<b>CH 6</b>	<b>Sample Statistics and Their Distributions</b>
<b>13</b> Nov 20- 22	<b>CH 6</b>	<b>Sample Statistics and Their Distributions</b>

<b>Midterm Break: 27<sup>th</sup> November 2022 – 1<sup>st</sup> December 2022</b>
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<b>14</b> Dec 4- Dec 6	<b>CH 7</b>	<b>Basic Asymptotics: Large Sample Theory</b>
<b>15</b> Dec 11- 13	<b>CH 7</b>	<b>Basic Asymptotics: Large Sample Theory</b>