Department	General Study		**Major**	All Majors				
Course Name	Advanced Statistics		**Course Code**	STAT481				
Prerequisites			**Credit Hours** **CRH**	**4**		CTH	6	
				L	**4**	P	**0**	T	**2**

CRH: **Credit Hours** L: **Lecture** P: **Practical** T: **Tutorial** CTH: **Contact Hours**

Course description :

This course is designed for students majoring in engineering of technology. Topics include: probability, random variables, discrete and continuous probability distributions, statistical process control, and parameters estimation.

Behavioral Objectives: Student is able to :

- Be acquainted with Probability distributions
- Be familiar with Discrete Probability distributions
- Be aquainted with Continuous Probability distributions
- Be acquainted with Statistics
- Be familiar with Parameter estimations.

Topics :

- Introduction to Probability Vectors spaces
- Random variable and Probability Distributions
- Some Discrete Probability Distribution
- Some Continuous Probability Distribution
- Introduction to statistics
- Parameter Estimation

Experiments: If applicable, it will support the course topics.

References :

- Keith E. Hirst,Keith Edwin Hirst, Numbers, Sequences and Series

Detailed of Theoretical and Practical Contents		
	Contents	**Hours**
1-	**Introduction to Probability:** • Random Experiment • Sample space • Event – Counting Sample space • Probability of an Event • The Axioms of Probability • Conditional Probability • Independent Events	**16**
2-	**Random variable and Probability Distributions:** • Concept of a Random Variable • Discrete Probability Distribution • Continuous Probability Distribution • Mean and Variance of a Random Variable	**16**
3-	**Some Discrete Probability Distribution:** • Bernoulli Trials • Binomial Distribution • Poisson Distribution	**16**
4-	**Some Continuous Probability Distribution:**	**14**

	• Continuous Uniform Distribution • Normal Distribution • Exponential Distribution	
5-	**Introduction to statistics and Parameter Estimation:** • Sampling Theory • Sample Distribution Function • Samples and Statistics • Methods of Estimation (Point , Interval) • Confidence Interval	**16**
Total		**78**

Textbook:	• A First Course in Probability , Ross, S, edition 9, illustrated, 2014 • Introduction to Probability and Statistics for Engineers and Scientists, Sheldon M. Ross , Academic Press , fifth edition 2014