



BAHRIA UNIVERSITY
DEPARTMENT OF SOFTWARE ENGINEERING
COURSE SYLLABUS

Course Title	Course Code	Semester	Credit Hours/Week		Total Credits
			Theory	Practice	
LINEAR ALGEBRA	GSC-121	FALL 2014	3	0	3
CourseType	Core				
Degree Program	BS Software Engineering				
Prerequisites Course(s) (compulsory)	Having successfully completed the basic course in Calculus				
Course Instructor(s)					
Name SURNAME	Mail	Web			
Assist. Prof. Dr. Kashif ZIA	kashif5095@gmail.com				
Course Assistant(s)/Tutor(s)					
Name SURNAME	Mail	Web			
Course Web Site					
Course Objectives					
This course aims to make the students become familiar with the basic concepts of linear algebra with a thorough understanding of vector spaces, linear transformations and matrix operations enhancing the students' ability to reason mathematically and able to apply this knowledge to many fields in engineering, statistics and computer science.					
Course Content					
Systems of Linear Equations (vector and matrix spaces and their solutions), Homogeneous Linear Systems, Transformations (Euclidean Vector Spaces, Line, Planes, and More, Linear Transformations, General Vector Spaces), Matrix Operations, Determinants, Eigensystems, Inner Product Vector Spaces, Orthogonality.					
Learning Outcomes of the Course					
Upon successful completion of this course, the enrolled students will be gaining the following knowledge, skills and competences:					
1	To make the students become familiar with the basic concepts of linear algebra.				
2	To enhance the students' ability to reason mathematically.				
3	To make the students aware of the crucial importance of linear algebra to many fields in engineering, statistics				

Course Outline/Schedule (Weekly) Planned Learning Activities			
Week	Topics	Preliminary Preparation	Teaching Methods(Theory, Practice, assignment etc.)
1	·Course information ·Motivation ·What is linear algebra? ·Chapter 1. Systems of Linear Equations –1.1 Solving Linear Systems		Theory
2	–1.1 Solving Linear Systems (cont) –1.2 Vectors and Matrices		Theory, Practice (quiz 1)
3	–1.2 Vectors and Matrices (cont)		Theory, Assignment 1
4	–1.3 Homogeneous Linear Systems		Theory
5	·Chapter 2. Vector Spaces and Transformations –2.1 Euclidean Vector Spaces		Theory, Practice (quiz 2)
6	– 2.1 Euclidean Vector Spaces (cont)		Theory, Assignment 2
7	– 2.3 Linear Transformations		Theory
8	– 2.3 Linear Transformations (cont)		Theory
9	MID-TERM EXAMS		1.5 Hrs Exam
10	·Chapter 3. Matrix Operations 3.1 Matrices	-	Theory
11	– 3.1 Matrix inverses		Theory
12	·Chapter 4. Determinants	-	Theory, Assignment 3
13	– 4.2 Determinants: Properties and Applications		Theory
14	·Chapter 6. Eigensystems	-	Theory, , Practice (quiz 3)
15	– 6.1 Eigenvaluesand Eigenvectors (cont)		Theory, Assignment 4
16	·Chapter 7. Inner Product Vector Spaces	-	Theory
17	·Chapter 7. Inner Product Vector Spaces	-	Theory, , Practice (quiz 4)
18	Final Exam		2 Hr Exam
Resources			
Required Course Material(s)/Reading(s)/Text Book(s)			
1	Linear Algebra : Theory and Applications, 2ed, (2011) by Ward Cheney & David Kincaid, Jones and Bartlett		
Recommended Course Material(s)/Reading(s)/Other			
2			
Assessment Methods			
Semester Activities/ Studies		No	WEIGHT in %
Mid-Term		1	20
Attendance		0	0
Quiz		4	15
Assignment(s)		4	15
Project		0	0
Field Studies(Technical Visits)		0	0
Presentation/Seminar		0	0
Practice(Laboratory, Virtual Court,Studio Studies etc.		0	0
Others(Placement/Intership etc.)		0	0
Final Examination		1	50
TOTAL		12	100
Contribution of Semester Activities/Studies to the Final Grade			50
Contribution of final Examination/final Project/Dissertation to the final Grade			50
TOTAL			100