

King Fahd University of Petroleum and Minerals
Department of Mathematics & Statistics
Math 514 - Term 182 – 2018-2019

Syllabus
Prof. Bilal Chanane

Course No	Math 514
Title	Advanced Mathematical Methods
Credit	3-0-3
Text Book Reference	James P. Keener, Principles of Applied Mathematics, Addison Wesley Publishing Company Brian Davis, Integral transforms and their applications, Springer 2002
Description	Integral transforms; Fourier, Laplace, Hankel and Mellin transforms and their applications. Singular integral equations. Wiener Hopf technique. Applications of conformal mapping. Introduction to asymptotic expansions.

Week	Date	Section	Topics
1-2	January, 6-17	6.1,6.2	Review of Complex Integration. Branch points and integration along branch cuts
3-4	January, 20-31	7.2	Fourier and Laplace transforms, analyticity of transforms and inversion
5-6	February, 3-14	Additional material	Applications of Fourier and Laplace transforms
Major I: : Tuesday 19 Feb 2019 at 7 PM			
7	February, 17-21	7.3	Hankel transform, properties and applications
8	February, 24-28	Additional material	Mellin transform, properties and applications
9	March, 3-7	3.1 + Add. material	Singular integral equations
10	March, 10-14	Additional material	Wiener-Hopf method for singular integral equations
11	March, 17-21	Additional material	Wiener-Hopf method for mixed boundary value problems
Major II: Tuesday 26 March 2019 at 7 PM			
12	March, 24-28	6.3	Conformal mappings, applications
13	March31- April 4	10.1	<i>Little o and big O symbols, asymptotic functions</i>
14-15	April 7 - 18	10.2-10.3	Asymptotic sequences and series. Asymptotic approximation of integrals
Final Exam: Thursday 25 April 2019 at 7 PM			

Evaluation Scheme:	Major Exam I and II	25% each
	Assignments/Attendance	15%
	Final	35%

Office: 5-431 Phone 2741
 Office Hours: by appointment
 Email: bilal.chanane@gmail.com