UNIVERSITY OF CALIFORNIA
Mechanical Engineering
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E117–Engineering analysis
Fall 2015

Text. Course notes at Copy Central, Shattuck Square.
Grading. Quizzes (best 5 out of 7) 10%; 2 in–class tests 20% each; final 50%.

All quizzes and tests are **closed book**.

Week	Date	Topic
1	8/27	Introduction: PDEs and subsidiary conditions
2	9/1	Separation of variables
	9/3	Complex algebra
3	9/8	Fourier series
	9/10	Fourier sine and cosine series
4	9/15	Fourier series and PDEs
5	9/22	Curvilinear coordinates
6	9/29	Sturm–Liouville theory
	10/01	**Test 1: closed book**
7	10/6	Euler equation. Bessel equation
	10/8	Bessel functions: plain and modified
8	10/13	Bessel series. Applications
9	10/20	Legendre functions
	10/22	Application: nanofibres and electrostatics near a conical tip
10	10/27	Fourier transform
	10/29	Application: Laplace's solution for the heat equation
11	11/3	Fourier sine and cosine transform
	11/5	**Test 2: closed book**
12	11/10	Laplace transform
13	11/17	Green's functions for ODEs
14	11/24	**American Physical Society Meeting: no class**
15	12/1	Classification of PDEs: shallow water flow past a slender body
	12/3	Classification and characteristics
16	12/8	Review week

FINAL TEST (closed book): Friday 2015.12.18, 7-10 pm