PHYSICS 307 – Mathematical Physics

Fall 2016

Instructor: Luis Anchordoqui, Gillet 132, phone: 347-577-4119, E-mail: luis.anchordoqui@gmail.com

Text: *Mathematical Models of Physics Problems, Luis Anchordoqui and Thomas Paul (Nova, 2013)*
ISBN 13-978-1626186002 $143,00

Course website: http://www.lehman.edu/faculty/anchordoqui/307.html

Lectures: Mondays and Wednesdays   4:00 – 5:40 PM, Gillet 331.   Lectures begin August 29, 2016.

Office Hours: Mondays 1:15 PM – 1:45 PM and Wednesdays 5 :45 PM - 6 :15 PM

Worksheets: Homework sets are available on the course website. Each homework set consists of questions used as worked examples in lecture, questions covered during discussion, and questions assigned as homework exercises.

Tests: Three tests will be given during the semester (October 6, November 7, and December 12)**.**

Final: There will be a comprehensive final exam; Monday December 19, 2016   3:45 -5:45 PM.
The final is mandatory and you are responsible for making sure that you can attend at this time.

Grading: The overall course grade will be determined as follows:
       10 % - homework assignments (blackboard presentations)
       20% - quizzes
       45% - midterm exams (15% each)
       25% - comprehensive final exam

Grading policy:

Letter grades will be assigned according to the guidelines

       A = 90 - 100
       B = 80 - 90
       C = 65 - 80
       D = 50 - 65
       F = below 50

The cutoffs for +'s and -'s will be decided at the end of the semester.

Bibliography

L. A. Anchordoqui and T. C. Paul, Mathematical Models of Physics Problems (Nova Publishers, 2013)

G. F. D. Duff and D. Naylor, Differential Equations of Applied Mathematics (John Wiley & Sons, 1966)

G. B. Arfken, H. J. Weber, and F. E. Harris Mathematical Methods for Physicists'' (7th Edition) (Academic Press, 2012)

Provisional Course Outline

(Please note this may be revised during the course to match coverage of material during lectures, etc.)

1st week: *Analytic Functions*

2nd week: *Integration in the Complex Plane*

3rd week: *Isolated Singularities and Residues*

4th week: *Elements of Linear Algebra*

5th week: *Initial Value Problem (Picard's Theorem)*

6th week: *Initial Value Problem (Green Matrix)*

7th week: *Boundary Value Problem (Sturm-Liouville Operator)*

8th week: *Boundary Value Problem (Special Functions)*

9th week: *Fourier Series and Fourier Transform*

10th week: *Hyperbolic Partial Differential Equation (Wave equation)*

11th week: *Parabolic Partial Differential Equation (Diffusion equation)*

12th week: *Elliptic Partial Differential Equation (Laplace equation)*

Midterm Exams: *October 6, November 7, December 12, 2016*

August 29:	Lecture 1
August 31:	Lecture 2
September 7:	Homework 1
September 12:	Lecture 3
September 14:	Homework 2
September 19:	Lecture 4
September 21:	Homework 3
September 26:	Lecture 5
September 28:	Homework 3 (cont'd)
October 5:	Homework 4
October 6:	Midterm
October 17:	Lecture 6
October 19:	Homework 5
October 24:	Lecture 7
October 26:	Homework 6
October 31:	Lecture 8
November 2:	Homework 7
November 7:	Midterm
November 9:	Homework 8
November 14:	Lecture 9
November 16:	Homework 9
November 21:	Lecture 10
November 22:	Homework 10
November 28:	Lecture 11
November 30:	Homework 11
December 5:	Lecture 12
December 7:	Homework 12
December 12:	Midterm