Spring 2013

# PHYS 5312-001 – Mathematical Methods in Physics II

**Instructor:** Dr. Dora Musielak

The main emphasis of PHYS 5312 is to study partial differential equations and complex variable theory with application to modeling of physical systems. We will start with Cauchy's Integral Theorem, proceed to Partial Differential Equations, and then study Special Functions of Mathematical Physics.

**Prerequisite:** Mathematical Methods in Physics I.

**Text Book: Mathematical Methods for Physicists** by G.B. Arfken and H.J. Weber, Elsevier 2005, Sixth Ed.

**Course Overview:**
- Chapters 6 and 7 - Topics from Complex Variable Theory
- Chapter 9  - Partial Differential Equations
- Chapter 10 - Green's Functions
- Chapter 14 - Bessel Functions
- Chapter 15 - Legendre Functions
- Chapter 18 - More Special Functions
- Chapter 20 - Integral Transforms
- Chapter 21 - Integral Equations
- Chapter 22 - Calculus of Variations

**Class Time:**        Tu-Th      11:00 a.m. – 12:20 a.m.
**Class Room:**        SH  205
**Office Hours:**      10:10 a.m. - 10500 a.m., Tu, Th, or by appointment
**Professor Office**:  SH 132 B

**EXAMINATIONS:** (Any change to these dates will be announced in class)
- Two Midterms: Feb 16, and March 29
- One Final Exam: May 8, 2012

**MAKE-UP EXAMINATION POLICY**:

If you miss a midterm for an authorized reason (hospitalization, death in the family, major illness, etc.), which can be verified with official documentation, I may replace the missed test grade by the grade from the final exam or a previous test score.

Please underline contact Dr. Musielak immediately if such eventuality occurs: dmusielak@uta.edu.

**NO TEXT MESSAGING, NO TWEETS DURING CLASS**!

## Final Exam:
The final exam is comprehensive (i.e., cover all course material) and mandatory.

## Grading : Course average = (T1 + T2 + H + FE) / 4
where **T** is a midterm exam score, **H** is the grade for homework, **FE** is the final exam score. Partial credit may be given on exams or for special projects and extra homework. <u>No scores will be dropped</u>. Letter grades will be assigned in the ranges below:

A: 90 – 100
B: 80 – 89
C: 70 – 79
D: 60 – 69
F:   0 – 59

## Homework: This is the <u>most important activity outside the classroom to learn the material covered in the course</u>.

**Homework has the same weight as the regular exam**. Thus, I urge you all to attempt to solve all problems assigned, otherwise your final grade will be affected.  Problems will be assigned every week and no assignment will be accepted after the day it is due.

If you need help solving problems, please email me immediately.

## Academic Environment:

A university graduate classroom provides an ambience that traditionally is significantly different than the environment found in college. In graduate level classes, the burden of the educational effort is on the shoulders of the student—the instructor conveys some information and answers some questions, but it is the student's responsibility to become an active learner.

Also, the amount of outside work (i.e., homework) done for a class may be significant. As a minimum, for every hour (i.e., standard 50 minute period) spent in the classroom, a student should plan on spending at least two hours outside the classroom learning the subject matter of the course through additional reading and solving the problems in the weekly assignments.