Abdus Salam School of Mathematical Sciences

ASSMS INTENSIVE COURSE

ON

Recent and interesting results in Fluid Mechanics

October 12 - November 14, 2016

Resource Persons:

Prof. Constantin Fetecau, Prof. Dumitru Vieru, Azhar Ali Zafar

Introduction:

The analysis of the behaviour of fluids is based on the fundamental laws of mechanics which relate continuity of mass and energy with force and momentum together with the familiar solid mechanics properties. There are two aspects of fluid mechanics which make it different to solid mechanics:

1. The nature of a fluid is much different to that of a solid
2. In fluids we usually deal with continuous streams of fluid without a beginning or end.

The aim of this course is to introduce and discuss some known theories together with recent and interesting results in fluid mechanics.

Contents of the Course:

Effects of the thermal radiation in linearized Rosseland approximation. Combined magnetic and porous effects on the motions of Newtonian fluids. On the governing equations for some unidirectional fluid motions and their applications.

Original Cosserat theory. Indeterminate couple-stress theory of Mindlin, Tiersten and Koiter. General strain gradient theories. Micropolar, microstretch and micromorphic theories. Consistent size-dependent couple-stress theory.

General boundary conditions for convective heat transfer. Approximate solutions (solutions in the power series. Solutions by integral methods). Analytical methods for solving conjugate convective heat transfer problems (Universal eigen functions for unsteady conjugate heat transfer problems. Integral transforms and similar methods. Green's function and the method of perturbation).

Prerequisites: Basic of Classical mechanics, Tensor Analysis, Differential Equations

Schedule:

The course will comprise about 10 lectures (each of 2 hours duration). There will be two lectures per week on Monday and Wednesday. The course is scheduled during October 12 - November 14, 2016.

Organizers: Dr. Azhar Ali Zafar, Dr. Imran Anwar

Registration:

There is no registration fee for this course but we are restricted to limited number of participants. Undergraduate students and graduate students can apply to participate in this school by sending this application form (.doc or .pdf) before **October 10, 2016** via email to: asif.sohail@sms.edu.pk

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VENUE:

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