**Guideline for** **Abstract Submission**

Topic:

**Title (Times New Roman, 12 Font, Bold, Center align)**

*Authors (Times New Roman, 12 Font, Italic, Center align)*

*Affiliations (Times New Roman, 11 Font, Italic, Center align, for multiple affiliations use number)*

*Email (Times New Roman, 11 Font, Italic, Center align)*

**The abstract should contain the following components: Objectives, Methods, Results, Conclusions, and a maximum of five (05) keywords. The body of the abstract should be written in Times New Roman, 12 Font, Justify.**  **Maximum word limit: 300 words. A sample abstract is given below.**

Topic: Numerical Heat Transfer

Preferred presentation mode: Oral

**Effects of Thermal and Solutal Buoyancy Forces on Fluid Flow through A Vertical Porous Flat Plate**

*R. Nasrin1 and M.J. Uddin2*

*1Department of Mathematics, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh*

*2Department of Mathematics, University of Dhaka, Dhaka, Bangladesh.*

*Email: —------------------------------------------*

**Abstract:**

The present research aims to study the effects of thermal and solutal buoyancy forces on the unsteady boundary layer flow in the presence of thermal radiation over a vertical porous flat plate.  The considered fluid is viscous, incompressible, and electrically conducting. The heat and mass transfer mechanisms happen due to thermal and solutal buoyancy forces. The dimensional partial differential equations of continuity, momentum, energy, and concentration are deliberated with suitable transformations. The energy and momentum equations expose the impressions of thermal radiation and buoyancy forces, respectively. An explicit finite difference method is functional for numerical simulation to solve a set of nonlinear dimensionless partial differential equations. The Studio Developer FORTRAN 6.2 and Tecplot 10.0 are employed for numerical simulation of the schematic model equations and graphical representation. The stability and convergence analysis are also established to complete the formulation of the model. The thermo-physical effects of entering physical parameters on the velocity, temperature, and concentration profiles are analyzed. The variations in local and average skin friction, material, and heat transfer rates are also discussed for the physical interest. The analysis of the attained results is presented graphically, and pertinent parameters pointedly prejudice the flow field. The innovative result appears among the significant findings that the velocity profile rises for rising values of the Grashof number due to the thermal buoyancy force, which induces pressure gradient. The fluid temperature decreases within the boundary layer due to the increasing values of thermal radiation. To see the rationality of the present research, we compare these results with the results available in the literature.

**Keywords:** Thermal and solutalbuoyancy forces;Porosity; Fluid flow; Heat-mass transfer; Finite difference method.