

I-STEM Software Request - Guide Approval Form

User Details

- **Name of Researcher:** _MD AZIZUL ISLAM JUNAID_____
- **User Type:** [] Ph.D. Scholar [] Postdoctoral Researcher [☒] Bachelor's [] Masters
- **Institution Name** : _GURU NANAK DEV UNIVERSITY_____
- **Institutional Contact No:** _: 0183-2823528,29_____
- **Research Topic:** _Lithium ion battery thermal management on EV ____

Software Request Details

- **Software Name:** _COMSOL Multiphysics_____
- **Justification for Software Request:** I am conducting research on *Lithium-ion battery thermal management for electric vehicles (EVs)*, Under the supervision of Dr. Ravita Lamba at Indian Institute of Technology Roorkee, which involves analyzing the thermal behavior, heat dissipation, and structural integrity of battery packs under different operating conditions. COMSOL Multiphysics provides the essential tools and multiphysics capabilities required for coupling **heat transfer, fluid flow (CFD), and electrochemical behavior** within battery systems. It also supports structural analysis for thermal expansion and mechanical stress, which are critical for battery safety and packaging design. The software's modular flexibility allows for simulating real-world conditions and optimizing thermal management solutions, such as phase change materials (PCMs), liquid cooling, and airflow strategies. As a beginner researcher, COMSOL's graphical interface and built-in physics modules make it ideal for developing and validating computational models relevant to my research objectives.

Guide/Supervisor Approval

I, _Dr. Ravita Lamba_,

- Confirm that the above-mentioned researcher is affiliated with our institution
- Have reviewed the software request and its relevance to the researcher's academic work
- Approve the software request for research purposes

Approval Confirmation

- I approve the software request
- The software aligns with the researcher's research objectives
- The request meets the institutional research guidelines

Guide/Supervisor Signature:

Date: _____

Official Stamp/Seal:

रविता लाम्बा/Ravita Lamba
सहायक प्राध्यापक/Assistant Professor
जल एवं नवीकरणीय ऊर्जा विभाग
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रुड़की/Roorkee-247667

Ravita
27/06/2025

Important Notes

1. This form must be signed and scanned
2. The scanned copy must be uploaded with the software request
3. Electronic signatures are acceptable if from an official institutional email