



STEM-Ed

Science, Technology, Engineering
and Math Education

GENERAL BROCHURE

ABOUT STEM-Ed

STEM-Ed (STEM-Education) is a four-month long mentoring cum project presentation program focused on school students and teachers intending to help the children to develop their skill sets in STEM.

It focuses on improving the attitude of students toward STEM fields and careers. It is packed with vibrant and insightful training hands-on sessions which increase the self-confidence of the students in tackling science classes and projects at the very basic level itself.

Hands-on workshops and mentoring on technical topics can boost up the technical skills and interest of students in the industry. Students will also be acquainted with the latest in-demand skills including communication, teamwork, and analytical thinking while working as a team.

ABOUT IEEE PES KERALA CHAPTER

Our mission is to be the leading provider of scientific and engineering information on electric power and energy for the betterment of society, and the preferred professional development source for our members. The scope of the society embraces research, development, planning, design, construction, maintenance, installation and operation of equipment, structures, materials and power systems for the safe, sustainable, economic and reliable conversion, generation, transmission, distribution, storage, and usage of electric energy, including its measurement and control.

44

**STUDENT BRANCH
CHAPTERS**

3595

**IEEE PES STUDENT
MEMBERS**

300+

**EVENTS ORGANISED
TILL DATE**

What is STEM-Ed

STEM-Ed (STEM-Education) is a four-month-long mentoring cum project development program focused on school students and teachers intending to help the children develop their skill sets in STEM. The project offers various training areas - basic electronic skills, fundamental programming skills, problem solving skills, teamwork, solving real life Engineering problems, application level thinking, etc.

The event consists of workshops, followed by training sessions on Project Development and Implementation. Meanwhile, a Project Proposal has to be submitted by each team based on their preferred domain. The submitted proposals will be then analysed by an expert committee and will be provided with all the necessary components for the development. Developed projects will be then presented before the judging panel followed by a Virtual Project Fair. On the whole, 'STEM-Ed' initiative empowers students via effective project-based learning and enhances their proficiency and interest in future professions in STEM-related disciplines.

The program embodies several stages starting from basic learning sessions to successful implementation of their learnt lessons through projects.

Benefits of STEM-Ed

- **The program aims to introduce the students to STEM at an early age, which will facilitate to develop an affinity among them towards the field of Engineering and Technology.**
- **The project implementation will help them to familiarize basic electronic components and sensor technology, by providing hands-on experience.**
- **Over the course of the project, the students will be able to develop elementary software skills, identify and address real life problems and formulate viable solutions for the same.**
- **The program helps to inculcate soft skills, like team management, planning, organization and time management, problem solving and communication skills.**
- **Involvement in such projects will help them to equip them with the ability to face challenges and churn out solutions.**

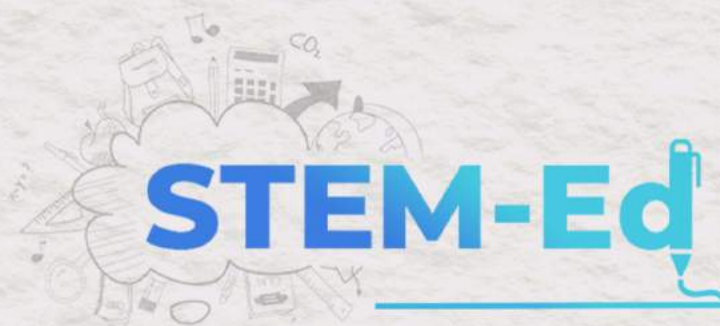
WHO CAN AND HOW TO APPLY ?

Registration will be opened for students belonging to 8th, 9th and 10th grades.

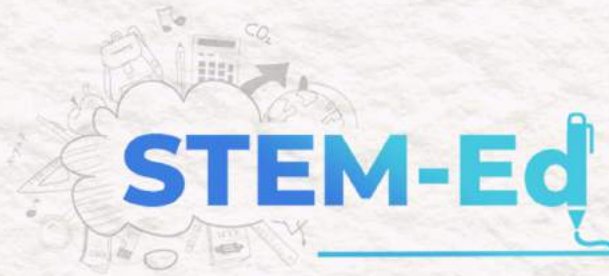
- **Students must have a laptop as mandatory during the basic training sessions.**
- **Each team should consist of 4-5 students with their respective teacher being their team leader cum mentor.**
- **Only one team per school will be allowed to participate.**

Registration link:

Only 10 teams will be allowed to participate in the further mentoring and project stage.



Science, Technology, Engineering
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General Structure

**Mentoring
Workshops
Developing a Project**

Mentoring

Teams are registered as a team of 4-5 students with their respective teachers who will act as mentors for their respective teams. Special training will be provided to the teachers to mentor their teams in achieving the goals of the program. Students will be given training workshops based on their preferred domains which include: Basic electronics, basic coding, various smart systems, etc. which will be taught by experts, from the grassroots level.

Workshops will be followed by training sessions on project development and Implementation thereby enlightening the students about the procedures and guidelines to be considered while developing a project.

Thereafter, a Hackathon will be hosted and the responses received will be screened and selected for the project proposal submission based on their preferred domain.

Workshops

In Order to give in-depth knowledge on topics, we will be organising various workshops. It will be taken by experts in the respective fields. This will give students an opportunity to interact with industry experts as well as gain first-hand knowledge on various subjects.

The workshops taken will include workshops on basics of circuits and simulation using tinkercad, basics of coding and block coding (MIT App Inventor). Workshops on motion detection system, light detector system, laser security system and capacitance based switching will also be included. These workshops shall act as stepping stones to familiarize students with STEM and IEEE. We look forward to creating a learning environment where students will be provided with a basic knowledge of electronics, electrical, programming and so on. Moreover, we aim to develop and enhance essential soft skills among students. Team management and team building are necessary skills that we aim to develop through this program. Furthermore students will also learn various aspects of completing a project such as writing a project proposal, its implementation, working and so on.

Developing a Project

In this phase the teams have to face hackathons (to assess how effectively the students can apply the knowledge acquired in the workshops in real life problems), project presentation sessions, working model live video demonstration and finally provide global exposure through an online Science fair. The top three hardware implementations will be encouraged and awarded through Certificates.

A problem statement will be given to the students on which they will have to submit their project proposals. Students will have to present their projects which will be reviewed by an expert panel of judges. Following the review, the top ten best projects will be shortlisted.

Since the motive of this initiative is to empower students through hands-on and practical knowledge, the top ten shortlisted teams will be provided with the hardware components required for their project prototype implementation. Each project will be analysed by an expert committee and the remaining components will be purchased and provided to the respective teams according to the project requirements submitted by each team.

Timeline

28 AUG

*Orientation session on Introduction to STEM
(General information)*

02 SEP

Registration Closing

04 SEP

Hackathon (Online Treasure Hunt)

15 SEP

Announcing Selected Teams

18 SEP

*Teacher Training Session on Overview of Workshops
and Student Team Coordination*

19 SEP

*Common Mentoring Session on Program (Structure,
Requirements, Timeline, skills that will be developed)*

23 SEP

Call for Project Proposals

25 SEP

Workshop on Basics of circuits, simulation using Tinkercad

26 SEP

*Workshop on Basics of coding, Block coding
(MIT App Inventor)*

02 OCT

*Workshop on Motion detection system,
Light detector system, Workshop on Laser security system,
Capacitance based switching*

Timeline

03 OCT

Project Orientation on How to approach a project?

08 OCT

Deadline for call for projects proposals

09 OCT

Project presentation

10 OCT

Distribution of Components

25 OCT

Hardware Implementation Span

13 NOV

Project Presentation and Working Model Video Demonstration

28 NOV

Closing Ceremony and Online Science Fair



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