

Indian Science Technology and Engineering facilities Map (I-STEM)

Invites application for

Partial financial support for creating skilled manpower

(Format-4)

Format for requesting support for accessing and using facilities through the I-STEM web portal.

(i) Profile:

a.	Name of the Training Coordinator :	Prof. Shailendra Kumar Shukla
b.	Name of the R&D facility :	Incubation Centre for Grass Root Innovators,
c.	Name of the Department	Department of Mechanical Engineering.
d.	Name of the Institution	IIT BHU
e.	Mob. No. 7388115582	f. Email ID: skshukla.mec@iitbhu.ac.in

Details of training

Name of R&D Equipment

1. Solar Thermal Test Rig
2. Wind Energy training System
3. Wind Emulator training System

Duration and Hours of Usage of Tools/day (Practical Training) : 2 hours

Duration of Theoretical Training : 2 hours per day

No. of trainer Involved: 03

1. Name of the trainer (3): **Prof.S.K.Shukla**
Designation: Professor and Coordinator, Incubation Centre for Grass Root Innovators, Mechanical Engineering, IIT(BHU), Varanasi-221005
Qualification (Details) (For Honorarium Purpose) PhD
Email: skshukla.mec@iitbhu.ac.in
Phone Number: 0542-7165584 (o) 7388115582 (m)
2. Name of the trainer: **Dr.P.K.S.Rathore**
Designation: Assistant Professor, Dr. A.P.J. Abdul Kalam Technical University, Lucknow, India, 226031
Qualification (Details):PhD
Email:rathoresamurai@gmail.com
Phone Number:9627467194
3. Name of the trainer : **Dr. R.Santhosh**
Designation: Assistant Professor, Mechanical Engineering, IIT(BHU), Varanasi-221005
Qualification (Details): PhD
Email: rsanthosh.mec@iitbhu.ac.in
Phone Number:8892887465

No. of Manpower to be trained per training (Duplication and overlapping of candidate may be

avoided) : 30 people

Details of the Training module/Course Content : Enclosed

No. of Training in a Year: 02

Total number of days of first training: 15 days

Estimated date when first training can be started (From & To) : July 15-30,2022

Details of the Budget (in Rs):

I. Cost break-up of the Trainers for 15 days: Honorarium to each trainers for @Rs.3000/ per dayx3= Rs. 9000/ per day

For 15days =Rs9000x15 days= **135,000/ [A]**

Honorarium for Lab Assistance @1000x15 days= **Rs.150000/[B]**

Total cost (A+B) =Rs.150,000/

II. Cost break-up of lodging cost: Cost of guest house @Rs.1500 for 15 days =**Rs.22500/** for outstation trainer (Dr.P.K.S.Rathore)+ DA @1000 or food as per actuals=Rs15000/ for 15 days=**Rs.37500/-[A]**

Working Lunch and tea for trainers and staff for 15 days = **Rs.12500[B]**

Transportation cost (hiring vehicle) = **Rs.10000/ for 15 days [C]**

Total cost (A+B+C) =Rs.60,000/

III. Any other cost/Contingency : Rs.50,000/ (Stationary and printing work and office work)

Printing of materials for trainees and audio visual: Rs. 25,000

Teaching materials /photocopy: Rs.10,000

Stationary and other expensive: Rs. 15,000

(Please submit the details of the budget required. The Institution must be required to submit the original bills (Consolidated) signed by the Head of the Institution and Finance Controller for the reimbursement.)

Note: Proposed proposal must be executed within stipulated duration (max. 12 month) to avoid fund availability issues. Travel form will be provided by the I-STEM office. The users will submit the technical report, original invoice (duly signed by the Head of the Institution) raised by the Host Institution through I-STEM portal only along with a copy of the travel forms and original tickets through post to the Nodal Officer, I-STEM, Indian Institute of Science, Bangalore. A scan copy of all the documents may be sent in advance.

Details of the Course Content

1. Pre-requisites
2. Course Objectives
3. Course Outcomes
4. Introduction to Course (Theory lecture)
5. Introduction to Incubation Centre for Grass Root Innovators (Practical)
6. Lecture on Solar system's (Theory lecture)
7. Solar Thermal Test Rig (Practical)
8. Lecture on wind energy system (Theory lecture)
9. Wind Energy training System (Practical)
10. Wind Emulator training System (Practical)
11. Course Conclusion.

1. Pre-requisites

Basic Mechanical Engineering, Basic Electrical and Electronics Engineering and Heat Transfer

2. Course Objectives

- To understand fundamentals of solar and wind energies.
- To understand constructions, working principle of solar thermal Test Rig.
- To understand constructions, working principle of wind Energy training System and wind Emulator training System.
- To apply basic engineering principle to design a simple solar and wind power system

3. Course Outcomes

On completion of the course, participants will be able to -

- Explain the application and dependency on non-conventional energy source.
- Demonstrate the principle of solar thermal technology.
- Demonstrate the principle of wind energy training technology.
- Demonstrate the principle of wind emulator training technology.
- Design simple solar and wind power system
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4. Introduction to Course (Theory lecture)

Introduction to course coordinator, trainer, course structure, schedule of course, details of Pre-requisites, course objective and course outcomes, basic tools required in the course, Present energy scenario, world energy futures, basic of non-conventional energy and energy principle.

5. Introduction to Incubation Centre for Grass Root Innovators

Introduction to laboratory, rule and regulation of laboratory, facility availability of lab, ongoing research in laboratory, success story of lab, brief introduction of different test rig available in lab, brief discussion on solar thermal Test Rig, wind Energy training System, brief discussion on Wind Emulator training System.

6. Lecture on Solar system's (Theory lecture)

Solar Energy Principles, solar radiations and its measurements, solar radiation data, estimation of average solar radiation, Types of Solar thermal collector, Solar Concentrating collectors, Solar Photovoltaic and Applications.

7. Solar Thermal Test Rig (Practical)

Introduction to solar thermal test rig, details of component, working of component, standard operating procedures of system, observation required on test rig, details of

mathematical calculations required, result preparation and discussion, application of test rig in research.

8. Lecture on wind energy system (Theory lecture)

Introduction to wind energy, Principle of wind energy conversion, Basic components of wind energy conversion systems, various types and their constructional features, analysis of aerodynamic forces acting on windmill blades and estimation of power output, wind energy potential and installation in India.

9. Wind Energy training System (Practical)

Introduction to wind energy training system, details of component, working of component, standard operating procedures of system, observation required on wind energy training system, details of mathematical calculations required, result preparation and discussion, application of wind energy training system in research.

10. Wind Emulator training System (Practical)

Introduction to Wind Emulator training system, details of component, working of component, standard operating procedures of system, observation required on wind Emulator training system, details of mathematical calculations required, result preparation and discussion, application of wind Emulator training system in research.

11. Course Conclusion

Summary of course, talk on overall experience of course, objective test on course, detailed feedback of course, details on “what need to include in course”, remark on how this course help participants for their future research, course completed certificate distribution, Thanking speech.