- Tissue culture protocol for development of selected plants
- Studies on secondary metabolites in tissue culture
- Protein isolation and related studies using SDS PAGE
- Phytochemical analysis of tissue derived callus and antimicrobial studies
- Effect of bacterial phytohormones in tissue culture

**Ecology & Environment**

- Solid and liquid waste management studies
- Biodegradable of plastics and disintegration of synthetic plastics using microorganism
- Lifestyle diseases
- Bioaccumulation of metals by microorganisms
- Bioethanol production
- Screening of hydrocarbon degrading bacteria
- Role of effective microorganism in waste degradation

*For full list project topics log on to our web site or contact Project counsellor at office telephone. International students can choose topics as per their credit requirement.*

## SALIENT FEATURES OF TIES RTP

- Research methods and thesis format are *at par* with international standards. Facilitates publication of paper in local/national journal based on the project work
- Supervision and guidance by well known research guides
- Strict time schedule and well designed work plan. Students should submit the bound thesis on the last day of their training.
- A to Z assistance to each student on research methods,literature collection, review preparation, lab and field methods, data analysis and thesis writing.
- Full time assistance by experts in the concerned field on every aspects of the project.
- In house reference library with all relevant and up to date journals and books
- Everyday internet based updating service for latest research publications. Training on key word search on the web.
- 24 hour broad band internet facility
- State-of-the art photography equipments including microphotography
- Well equipped laboratories and other facilities
- Collaborations with neighboring research institutions for GC/HPLC or Electron Microscope studies.
- Hostel facilities are available on request
- Observing strict discipline and dress code.

## Fee Structure (For Indian students)

| | Duration | Fee (In Rs.) | Caution Deposit |
|---|---|---|---|
| **Major projects** | | | |
| M Phil | 6 Months | 25000. 00 | 3000. 00 |
| P.G | 2-3 Months | 14000. 00 | 2000. 00 |
| **Minor Project** | | | |
| U.G | 2 week to 1 month | 7000. 00 | 1000. 00 |
| **Hands on Training** | | | |
| For any student | 1 week to 1 month | 4000. 00 | 1000. 00 |

**Note:**

1. Institutional fee should be remitted as DD along with TRTP application in advance. This will cover all lab, field and institutional expenses.
2. The expenses for DTP, printing and binding of thesis, photography and plate making are not covered in the prescribed fee.
3. Caution Deposit should be remitted at the time of joining and the same will be refunded, just after the submission of one copy of thesis to this institute.
4. Fee details and areas of research for foreign students are available on request.

## How to apply?

Students who wish to join TIES Research Training Programme shall send a request letter for the same through the Head of the Department or Institution, to the Coordinator, TIES Research Training Programme, well before the expected commencement of the programme. A copy of bio-data of the candidate showing previous academic record also should be attached.

## Mode of admission

Applications will be screened on the basis of their previous academic record. Selected students will be intimated through letter/ email. Such candidates may submit the duly filled application along with the DD for institutional fee in order to confirm their admission.

*All communications should be sent to:*


The Coordinator
**TIES Research Training Programme**
Tropical Institute of Ecological Sciences
K.K. Road, Velloor P.O. Kottayam,
Kerala,India. Pin. 686 501.
Tel.: 0481 2957050, 09497290339
E mail: tropicalschool@gmail.com
www.ties.org.in

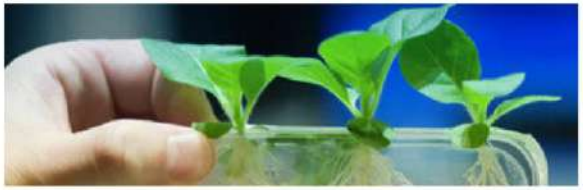

Students from USA shall apply through our collaborative organisation IISAC, New York, USA:
www. iisac.org
Tel: USA 908-461-2606
India +91 9446 540 922

TROPICAL INSTITUTE OF ECOLOGICAL SCIENCES

# TIES RESEARCH TRAINING PROGRAMME (TRTP)

Project Training for Under Graduate, Post Graduate and M. Phil. Students

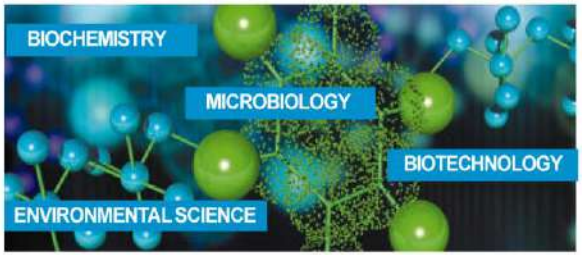
India's Best Student Project Training



The pioneer and only comprehensive package for students in short term research training in India.

TRTP trained students have been consistently bagged first positions and highest scores for projects in major ten South Indian Universities since 2005.

Most of the student projects have been published in journals or presented in conferences/ seminars by students themselves




TIES
TROPICAL INSTITUTE OF ECOLOGICAL SCIENCES
*Approved Research Centre of Mahatma Gandhi University, Kottayam*

## TIES - ties Mind and Nature

Tropical Institute of Ecological Sciences (TIES) is a leading environmental research organization governed by a group of experts from the field of education, management, and conservation. TIES is an autonomous institution dedicated to research, education, capacity building and community development.

TIES is approved research center of Mahatma Gandhi University, Kottayam and conducting Ph. D Programmes in Environmental Sciences.

Our principal area of research covers Wildlife Conservation Issues, Environmental Biotechnology, Agricultural Problems, Ecotourism, Resource Ecology, Public Health Issues, Biochemistry and Environmental Microbiology.

TIES has been conducting several research projects supported by national and international agencies.Our recent and ongoing research projects include survey on rodentborne diseases, river pollution studies, studies on Vembanadu Lake and River Pamba, survey on self medication of antibiotics,mushroom cultivation techniques, epidemiology of viral fever epidemics, biodiversity studies, microbial consortium for home composting machine, developing natural dyes, *etc.* TIES is also an accredited research lab for several agencies.

## Student Projects

Investigatory projects are an integral part of present day curriculum. Most of the Indian universities have set apart a period (3-6 months) for doing projects, allowing students to do their project in a reputed research centre under the supervision of a guide.

TIES offers excellent research training programme for Under Graduate (U.G), Post Graduate (P.G) and M. Phil. Students, undergoing their course in any Indian/foreign University or affiliated colleges. We are now catering more than ten Indian Universities and three foreign universities. Our research methodology training and thesis are rated as best in all collaborating institutions.

## Type of Projects

| | |
|---|---|
| 1. Major Projects | 2-6 months; with full fledged thesis |
| | For final semester U.G Final semester P.G and M. Phil. Students. |
| 2. Minor Projects | Two weeks to one month with a training report and thesis, if needed |
| | For first year P.G and final semester U.G students |
| 3. Hands-on-training | one week to one month with a training report |
| | For any aspirant student (school level onwards) |

*Note:* For foreign universities 15-45 day credit sharing programme is offered.

All students undergoing any mode of the training will be awarded a course certificate and evaluation grades on successful completion.

## Major topics of Student Projects

### Public Health Issues

- Microbial contamination from street food vendors and vegetables
- Comparitive analysis of different sources of drinking water
- Bio control potential against mosquito larvae
- Studies on multi drug resistant pathogens
- Mycotoxins: characterization, occurrence and detection
- Antibiogram studies of bacterial pathogens isolated from mastitis milk
- Influence of climate change on vector borne diseases
- Pathogenic bacterial and fungal studies among man with respect to various diseases
- Isolation, diversity and density studies of bacterial and fungal pathogens from pollution exposed sites.

### Microbiology

- Actinomycetes: sources of bioactive compounds
- Microbial contamination of kitchen scrubs
- Diversity of actinobacteria from different ecosystem
- The inhibitory effects of plant extract on bacterial pathogens isolated from ready to eat food products
- The antimicrobial activities of some commonly used disinfectants/ plant extracts/ mushrooms/ oils
- Contribution of pink pigmented facultative methylotrophic bacteria in agriculture
- Variation of soil microbial population in different soil horizon
- An integrated approach towards *in vivo* control of mushroom contamination
- Isolation, identification and diversity of different mychorrhizael associations in plants
- Isolation, identification and analysis of probiotic properties of *Lactobacillus* spp.
- Studies on soil micro biota in relation to pollution and other anthropological influences
- Bio control and plant growth promoting activities of microorganisms.

### Biochemistry

- Studies on biologically synthesized silver nanoparticles
- Evaluation of antimicrobial activity of curcuminoids isolated from turmeric
- Synthesis of plant-mediated silver nanoparticles using papaya fruit extract and evaluation of their anti microbial activities
- Screening and characterization of pullulan producing microorganisms from plant leaves
- Phytochemical studies on medicinal plants and spices (chromatography, histological techniques and electrophoresis) and their application
- Hepato-toxic studies on commonly used pharmaceutical drugs and medicines
- Geno-toxicity/cyto-toxicity of pesticides, heavy metals, fast food ingredients, plastic derivatives and additives and other common pollutants
- Characterization of biological pigments as antioxidant and natural food colorants/as dye

### Biotechnology

- Tissue culture studies on medicinal, aromatic and selected garden plants
- Evaluation of cost-effective nutrient media using locally available, ingredients for tissue culture