



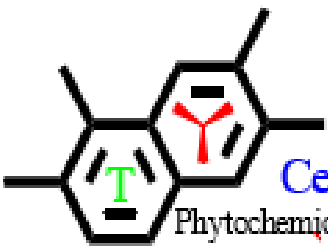
EASTERN & SOUTHERN AFRICA HIGHER EDUCATION CENTERS OF EXCELLENCE (ACEII)

**CENTER OF EXCELLENCE IN PHYTOCHEMICALS, TEXTILE AND
RENEWABLE ENERGY**

MOI UNIVERSITY – KENYA

Prof. Ambrose K. KIPROP (Ph.D.), Center Leader





Center of Excellence
Phytochemicals, Textile and Renewable Energy



ACEII-PTRE Background

KEY DEVELOPMENT CHALLENGES

The manufacturing sector is only 10% of Kenyan GDP.

To play a critical role in under Kenya Vision 2030.

Need for increased highly skilled personnel in the area of STEM to facilitate manufacture of skill-intensive products of high value and quality.

VISION

To be a CoE in Phytochemicals, Textile and **Renewable Energy training, research, innovation and technology** for enhancement of the industrial sector.

MISSION

To provide highly trained, skilled and empowered human capacity in Phytochemicals, Textile and **Renewable Energy**, with the potential to develop innovative products of high value and quality, offer services and solutions for the industrial sector.



PhD, MSc and Short Courses at ACEII-PTRE

The Center currently offers 7 academic programs that are accredited namely;

PhD programs (accredited)

PhD in: Energy Studies; Analytical Chemistry; Materials and Textile Engineering

MSc programs (accredited)

MSc. in: Energy Studies (Renewable Energy, Energy Management & Economics, Energy & Environment); Textile Engineering; Industrial Engineering; Analytical Chemistry

The following three programs are being finalized for accreditation

1. MSc. in Physics (Renewable Energy option)
2. PhD in Physics (Renewable Energy option)
3. PhD in Industrial Engineering

Africa Centre of Excellence in Phytochemicals, Textile and **Renewable Energy** (ACEII –PTRE) at Moi University

Background

Department of Energy Engineering offers;

1. Graduate training and specialized research in Energy Engineering to address the needs gap in new and emerging renewable energy technologies, energy optimization & management, energy economics, energy policy and law, energy materials, energy safety & health as well as environmental aspects of energy.

Curriculum is being developed in MSc Energy Engineering with specialization in: Energy Informatics, Electrical Power systems & Petroleum.

2. Short courses for capacity building and Continuous Professional Development (CPD).

Licensed to offer short professional course, the Certified Renewable Energy Professional (REP) in collaboration with the Energy Training Foundation of South Africa.

Student Enrollment at MSc and PhD programmes in Energy

1. MSc Programme

	No. of new students		No. of new international students
Academic year	Female	Male	Both male & female
2018/19	8	17	2
2017/18	5	12	1
2016/17	1	6	0
2015/16	2	5	0

2. PhD Programme

	No. of new students		No. of new international students
Academic year	Female	Male	Both male & female
2018/19	2	9	1
2017/18	2	10	2
2016/17	0	6	0
2015/16	0	5	0

Academic Staff/Faculty

The graduate faculty involved in training and research in energy comprise; Professors, and lecturers with expertise in energy specialties.

They are drawn from different departments including; Electrical Engineering, Mechanical Engineering, Chemical Engineering and Physics.

Academic Staff/Faculty cont'd

S.No.	Name	Designation	Specialization
1	Prof Siagi Zachary	Associate Professor	Thermodynamics
2	Prof. Anil Kumar	Associate Professor	Renewable Energy
3	Prof. Kirimi Kiriamiti	Associate Professor	Environmental Engineering
4	Eng. Prof. Simiyu Sitati	Associate Professor	Power Systems
5	Eng. Prof. Augustine Makokha	Associate Professor	Mechanical Engineering
6	Prof. Saul Namango	Associate Professor	Chemical Engineering
7	Prof. Samuel Rotich	Professor	Physics
8	Prof. Edwin Ataro	Associate Professor	Electrical/Optical Systems
9	Prof. Cornelius Sitters	Associate Professor	Computational Techniques
10	Dr. Lawrence Letting	Senior Lecturer	Power systems
11	Dr. Milton Arimi	Senior Lecturer	Environmental Engineering
12	Dr. Charles Nzila	Senior Lecturer	Applied Science
13	Dr. Isiah Mwachira	Lecturer	Instrumentation

Physical Facilities and Infrastructure

They include:

- Instrumented Fluidized Bed Combustor with data acquisition system
- Laboratory Diesel Engine system for bio-fuels studies
- GC-Column for biogas measurement
- High Performance Liquid Chromatography
- UV – Vis Spectrophotometer
- COD Digester and Bench Photometer
- Solar Module Quantum efficiency measurement system.

The University has computer laboratories with research software like CFD, MATLAB, Auto-Desk Inventor and Modern Library facilities including e-resources and free internet services.

Linkages with Industry

Departments within ACEII-PTRE have very strong linkages with industry in areas of collaborative research, internship of students, joint curriculum development and review, staff exchange, physical facilities development and short courses to address skills gap.

Research Areas

Focus of our research is on renewable energy technologies and energy efficiency. Main areas of research include the following:

- Low head Mini/Micro Hydro power systems: Design & performance optimization.
- Biomass and bio-fuels
- Combustion
- Waste to energy
- Creative energy storage systems
- Solar Photovoltaics and Solar Thermal systems
- Solar drying Technologies
- Wind Turbines
- Geothermal Energy
- Clean Coal Technologies

Research Areas

The broader objective is of expanding use of renewable resources, allowing more efficient use of traditional resources, improving reliability of power systems, and lowering emissions and costs associated with energy systems.

The experimental studies are complimented with modeling and simulation studies to add appropriate insight to processes being investigated. The simulation programs available in our laboratory are Computational Fluid Dynamics (CFD) and MATLAB.

Areas of possible collaboration

ACEII-PTRE would be interested in collaboration with IIT Bombay and any other IIT in the areas of:

- Solar PV modules – Fabrication and characterization
- Grid integration of renewables
- Creative energy storage systems
- Computational Fluid Dynamics
- Clean Coal Technologies

Faculty on Exchange



Exchange : Sudan



Exchange : Belgium



Exchange : Kenya



Exchange : Kenya – lecturing MSc

Key Partners





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THANK YOU



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