

# *“Science Education in Northern Uganda”*

## **GuluNap-Science**

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# Gulu - Uganda



# Collaboration in Science Education

## Teacher-to-be = BSE (Biol, Chem, Phys, Math)

- Re-design of Curricula and Lab-work
- Preparation of Gulu University Young Staff
- Proposals/Materials (Science Education Research)

## In-service Teachers (Physics, Secondary Schools)

- Re-construction of Knowledge
- Team Work
- Low-cost Experiments (easy-to-disseminate)
- Notes (lack/scarcity of Textbooks)
- Personalised Suggestions

# Gulu: Bachelor in Science Education

**Scarce Power, NO Public Transport**

**NO (or Old) Textbooks, Very Scarce ITC**

**Few Teachers (often from outside)**

**Inadequate or No Labs, Very Guided Approach**

**Few (or None) Questions by Students**

**Often Mnemonic Learning (from Notes)**

**Very Few Women**

**Costly University Fees**

**National Exam for Government Support**

**Great Formality (ex Britannic Empire)**



**BSE (I, II, III year) NEW COURSES**

**Basic Physics Education, General  
Astronomy, Introductory General Physics**

- **Sinergic Mix: Lecture/Lab/Question-Time**
  - **Co-presence of 2 professors**
  - **Conceptual Nodes**
  - **Lab-work: low-cost, local materials**
- **Proposals from Physics Educ. Research**
  - **Activities' Notes**
  - **Esperiments' Worksheets**
  - **Problems, Port-folios**

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**BIOLOGY 2006 →**  
**Animal Histology and Physiology**  
**Ecology**

**CHEMISTRY 2008 →**  
**Organic Chemistry I**

**MATHEMATICS 2009 →**  
**Differential Equations II**

# In-service Physics Teachers NUTS1 (11-16 Dic. 2006)



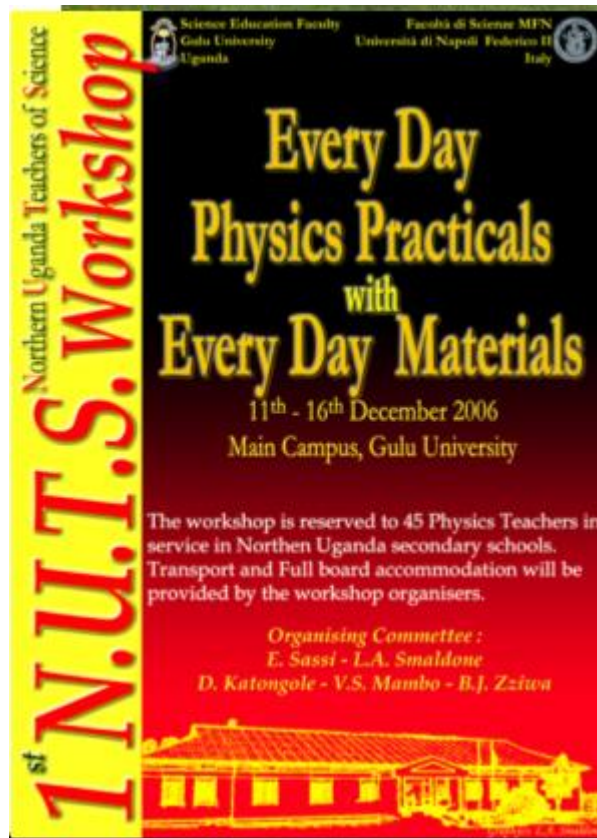
**Secondary Schools: often No Resources**  
**Teachers: often Not Prepared**

**First Workshop in Northern Uganda**

- **32 Teachers (17 Schools)**

**Previous Teaching: 6800 IDP Studs**

- **Team- Work, Experiential**
- **Knowledge Re-Construction**
- **Lab: Local, No-cost Resources**
- **Apparatuses: Easily Reproducible**
- **Portfolio**
- **Notes as Textbooks**



# NUTS 1

# Example LAB-WORK: Telemeters





# In-service Physics Teachers NUTS2 (17-22 Gen. 2010)

## “*LIGHT IN NORTHERN UGANDA*”

- 35 Teachers (19 Schools) (75%)  
Previous Teaching: 3500 IDP Studs
- Team-Work, Full Immersion
- Re-building of Optics Knowledge  
+ some XX century Physics
- Lab-work (also low-cost)

Northern Uganda Teachers of Science

Faculty of Science  
Gulu University  
Uganda

Facoltà di Scienze MFN  
Università di Napoli Federico II  
Italy


Naples Student Chapter

# Light in Northern Uganda

2<sup>nd</sup> N.U.T.S. : 17<sup>th</sup> - 22<sup>nd</sup> January 2010  
Main Campus, Gulu University

Each workshop is reserved for 40 in-service Teachers of Physics from Northern Uganda Secondary Schools. The subjects will span from low-cost no-cost experiments on shadows, water lenses, colors perception, light dispersion to laser and optical fibers. Two teachers will be accepted from each school. Transport and full board accommodation will be provided by the workshop organisers.

Organising Committee:  
E. Sassi - L.A. Sordani - Naples OSA Student Chapter  
J. Okello-Otien - J.Z. Byansi



2<sup>nd</sup> N.U.T.S. Workshop



**SECONDARY SCHOOL EDUCATION**

**(13 years, including Primary)**

**Secondary School "A" Level (7)**

**Diploma in Secondary Education (14)**

**UNIVERSITY DEGREE**

**Bachelor in Science Education (3 years) (13)**

**BSE + Postgraduate Diploma in Secondary Education (1)**

**19 Schools from 5 Northern Uganda Districts**

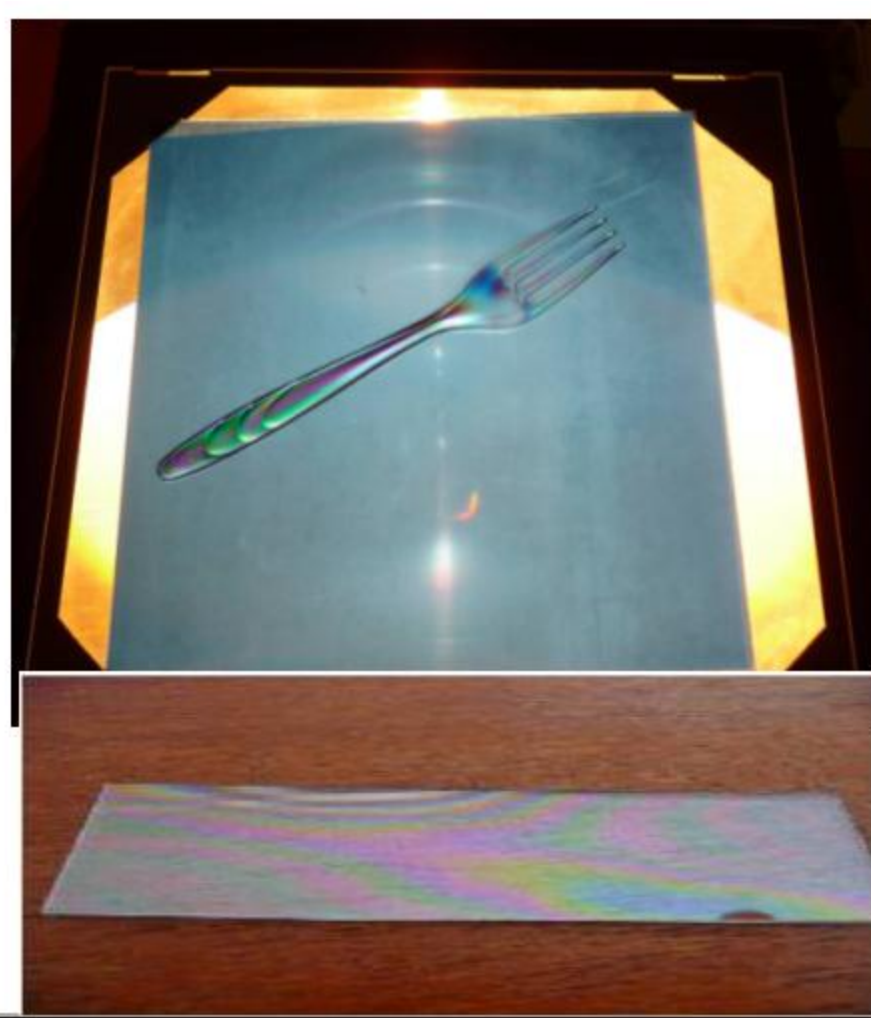
**ADJUMANI (4) - GULU (4)**

**KITGUM (4) - LIRA (4) - PADER (3)**

# OPTICS Experiments: Interference, Polarization



**Most Expensive Material:  
a Cheap Laser Pointer**



# OPTICS Experiments: CD Spectrometer, Total Internal Reflection



**NEXT FUTURE (2012 →)**

**More NUTS for in-service Teachers  
(PHYSICS, MATH, BIO, CHEM)**

**Basic Science for Agriculture**

**Post-harvest Technology of Fruits**

