

UNIVERSITY OF CAPE COAST
DEPARTMENT OF ECONOMICS
COURSE OUTLINE – FIRST SEMESTER (SANDWICH - 2014)

ETD 801S: SCIENCE, TECHNOLOGY & THE DEVELOPMENT PROCESS

Instructor: BENEDICT AFFUL JR.

Credit hours: 3

A. Course Description

The industrial revolution, although certainly not solely a technological event, slowly re-shaped agriculture and trade-based societies into manufacturing-oriented economies. This course provides a review of the theoretical/scientific/industrial revolutions and seeks to understand present-day technological progress and how they impact on the economy. Principally, the interaction between S&T and the changing nature of growth within and across countries will be explored with a view to facilitating discussion on further development of technological knowledge.

B. Course Objectives

The course seeks to provide insights into the triangle of science/technology/development and explore what that set of interconnections means for both the formulation of public policy and the ability to accomplish public goals through policy. In doing this, the course aims to:

1. Deepen comprehension of elements of Science, Technology and Development, drawing lessons from theoretical, empirical, industrial revolutions as well as country-based best practices;
2. Examine selected platform generic technologies with wide applicability for development and how they are contributing to achieving national goals;
3. Assess various institutional and organisational resources needed for the growth of S&T for the purposes of development.

C. Course Content

1. Conceptualization of Science, Technology and Development

- i. Basic definitions/concepts
- ii. Technology evolution (characteristics)
- iii. Invention, innovations and Diffusion
- iv. Technology cluster

2. Historical and Theoretical insight into Science, Technology and Development

- i. Economic Theory and Technology Historical Perspectives
- ii. Theories of the firm in Technology and Development
 - The behavioural theory of the firm
 - Evolutionary theory of the firm
- iii. The Neoclassical and Evolutionary Theories of Technological Change
- iv. The Saboto's Triangle on the Interaction between Science and Technology
- v. The Triple Helix Model of Innovation

3. How S&T can contribute to achieving Development Goals

- i. Contribution to human welfare, energy, health, water and sanitation, political stability and global security.

ii. Platform Technologies with wide applicability for development

4. Empirical and Country – Level insights

i. How the West grew Rich

ii. The technology link to economic development

iii. Second best development strategy

iv. Excerpts from Japan's Industrial Development, 1868-1939

v. Lessons from the Silicon Valley, California, US

vi. The situation in Ghana

5. Key Areas for Policy Actions

D. Course Delivery Method & Assessment

The course applies a combination of lectures, class discussions, case studies and practical exercises. Student participation is a key component of the course. Final grades will be determined by taking into consideration the grade obtained from continuous assessment [term paper (20%), article review (10%) and seminar presentation (10%) – more details on these assessment methods will be discussed in class] and final examination which carry 60%.

E. Expected Outcome

- Develop the capacity to explain the role of science and technology in the development process of a nation.
- Contribute to issues and arguments relating to importation of technology and its impact on the economy.
- Contribute to the discussion on further development of science and technology.

F. Course Website

<http://wikieducator.org/Benafful/ETD801S>

G. Course Rules:

- i. You are responsible for regularly attending lectures.
- ii. While in class you are responsible for being courteous and attentive.
- iii. DO NOT bring food, eat, or talk out of turn while in class.
- iv. Cell phones MUST be put on vibration while in class.
- v. Classroom involvement is important to your success. Therefore, particular class periods will be devoted to in-class problems and discussions of the readings.
- vi. Form study groups to prepare for exams.
- vii. You are responsible for taking tests/assignment/project at scheduled times and for not missing them.

H.

TERM PAPER

Students are required to choose a topic related to the course and write a 3 – 7 pages article on the selected topic. The term paper will be due on the last day of class discussion. More details on this term paper, including suggestions for topics, will be discussed in class.

FORMAT OF ANSWERS & SUBMISSION:

Assessment detailed above:

1. The research needs to be structured precisely, word – processed, neatness and clearly being an important format [**Font style:** Times New Romans or Tahoma, 1 inch margin on all sides of the assignment pages, **Font Size:** 12 and **Line spacing:** 1.5].

2. ALL learners should make sure their written work is correctly referenced.
3. ALL learners must have a reference at the back of their document.

I. Course Plan

Date /Day	Morning (7:30 – 10:30 am)	Afternoon (3:30 – 5:30 pm)
Monday [09/06/2014]	Discussion of course outline and socialization	Topics: 1(i, ii, iii & iv) Synergy: 30 minutes
Tuesday [10/06/2014]	Topics: 2 (i & ii) Synergy: 30 minutes	Topics: 2 (iii, iv & v) Synergy: 30 minutes
Wednesday [11/06/2014]	Topics: 4 (i – iv) Synergy: 30 minutes	Topics: 4 (v & vi) & 5 Synergy: 30 minutes
Thursday [12/06/2014]	Topics: 3 (Presentation) 1. ICT 2. Biotechnology Class discussion	Topics: 3 (Presentation) 3. Nanotechnology Class discussion
Friday [13/06/2014]	Overview & synergy	Tutorials & Submission of assignment Synergy: 30 minutes

J. Reading list

- ◆ Ruttan, V.W. (2001) *Technology, Growth and Development: An Induced Innovation Perspective*. New York, NY: Oxford University Press.
- ◆ Morris Suzuki, T. (1994) *The Technological Transformation of Japan* (Cambridge: Cambridge University Press).
- ◆ James, J. (1995) *The State, Technology and Industrialization in Africa* New York: St Martins Press and London: Macmillan
- ◆ Marshall, K. (1983) *Package deals: A study of Technology Development and Transfer*. (London: Intermediate Technology Publications).
- ◆ Afful, K. N. (2002) “Technology – The Missing Link in Ghana Development Efforts”, *The Oguaa Journal of Social Science*, vol. 3, June pp. 1-30.
- ◆ Other relevant articles will be distributed in class and can also be sourced from the internet.