Consepts of Science and Technology Development (Konsep Pengembangan Sains dan Teknologi,KPST)

Modul 1 INTRODUCTION

Brief Description

- This course is giving the understanding on how science and technology are formed and developed in human civilization

- Giving knowledge on conceptss, methods and approaches that are used for science and technology development.

- The knowledge will help students to undrstand lecture/course during their studies, have critical thinking to solve scientific complex problems creatively

Objectives Learning

Students know

- The learning objectives "Konsep Pengembangan Sains dan Teknologi"
- The organization of teaching "Konsep Pengembangan Sains dan Teknologi"
- The outlines of the development of "Konsep Pengembangan Sains dan Teknologi", terminology, basic terminology
- Teaching methodology, and how the assessment

Rules:

- Every started college conducted the prayer led by one students who was appointed lecturer relevant:

"*Oh God, give us strength and ability to accept and understand science and lecture today*"

- To be able to join UTS or UAS, presence of at least 75% or in accordance with institutional regulations.

- For participants who do not follow the UTS and UAS, will get the value E

- See complete info at: BPI (Buku Panduan Institusi)

1. Course Details

- Lecturer this semester (updated each semester) :

No	Lecturer	Teaching schedule	
1	Erwin Susanto	Monday	7.30 am
2			
3			
4			

Recommended Textbooks:

- T. Bowell and G. Kemp, Critical Thinking; A concise guide, 2ed, Taylor and Francis, New York, 2005

- L. von Bertalanffy, General System Theory, George Braziller, New York, 1968

- Lars Skyttner, General System Theory: Ideas and Application, World Scientific, Singapore 2001

- B. Gower, Scientific Method An historical and philosophical introduction, Routledge, London 1997

2. Assessment Grading

- Component assessment
  - Mid Test   : 30-40%
  - Final test (Presentation)   : 30-40%
  - Quiz / Task / HW   : 0-40%

- The presence of a minimum requirement 75 %

Brief Syllaby

Main contents of the course

- Perspective on Science and Technology Development

- Critical and creative thinking

- Scientific Methods & Scientific Thinking,
  - Scientific methods, observation, experiments, analysis on observation and experiments, hypotheis, identificate wheter something scientific or not

Brief Syllaby (1)

- Science development:

  - History of science development, examples of recent sciences and their trends in the future

- Technology Concept:

  - Technology in hardware, rule and system, technology evolution.

- Ethics problem in technology.

- Updating Technology from past to present day

PERSPECTIVE ON SCIENCE AND TECHNOLOGY PROGRESS

Perspective on science and technology progress

Bachelor Program,

Electronics Eng

Telkom University

Electronics Engineering, Bachelor Degree

Telkom University

Analog & Digital Eletronic

Electric Energy and Generating

Basic: Elecrical Circuit and Electronics

Control Systems

Information System, Signal Processing and Telecommunication

Biomedic

.telkomuniversity.ac.id
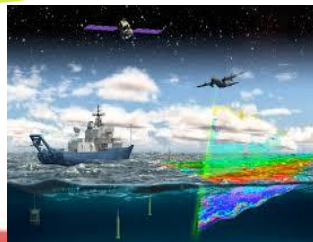
Introduction to Technology and Engineering
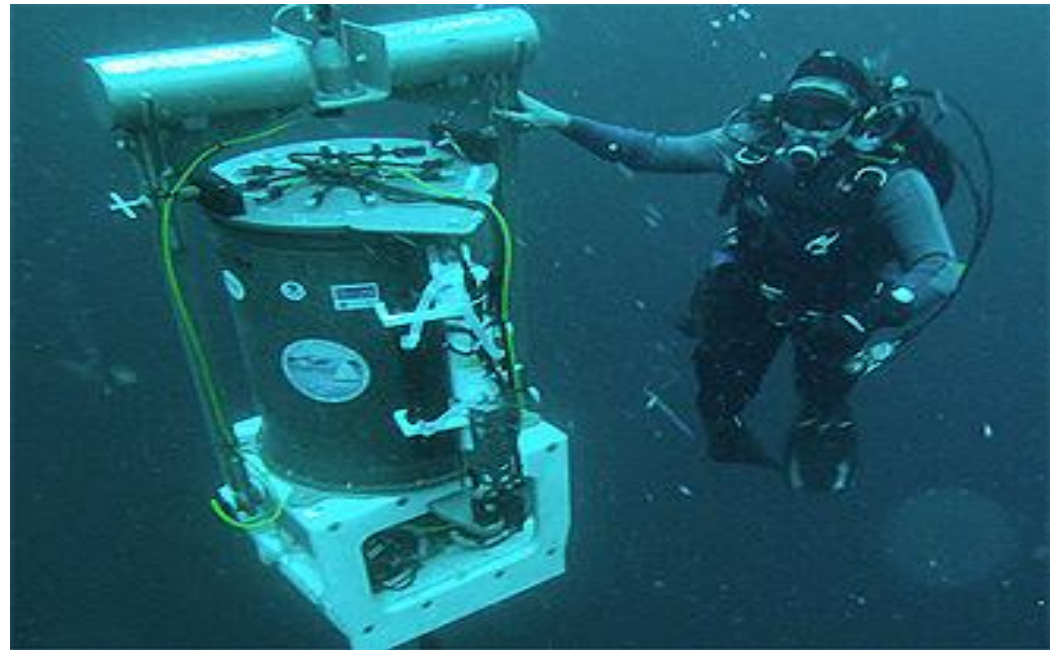
Electrical/Electronic Engineering

Electrical/Electronic

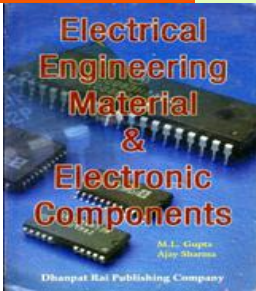Engineering

Engineering or Rekayasa refers to Kamus Besar

Engineering is :

- Application of science and technology based on scientific method
- For design, construction, operation etc
- To perform a desired system effectivelly

Raw Material

Design and set-up systems, instruments and tool operation

Effective Performance Systems,

Scientific Method (Physics, Mathematics)
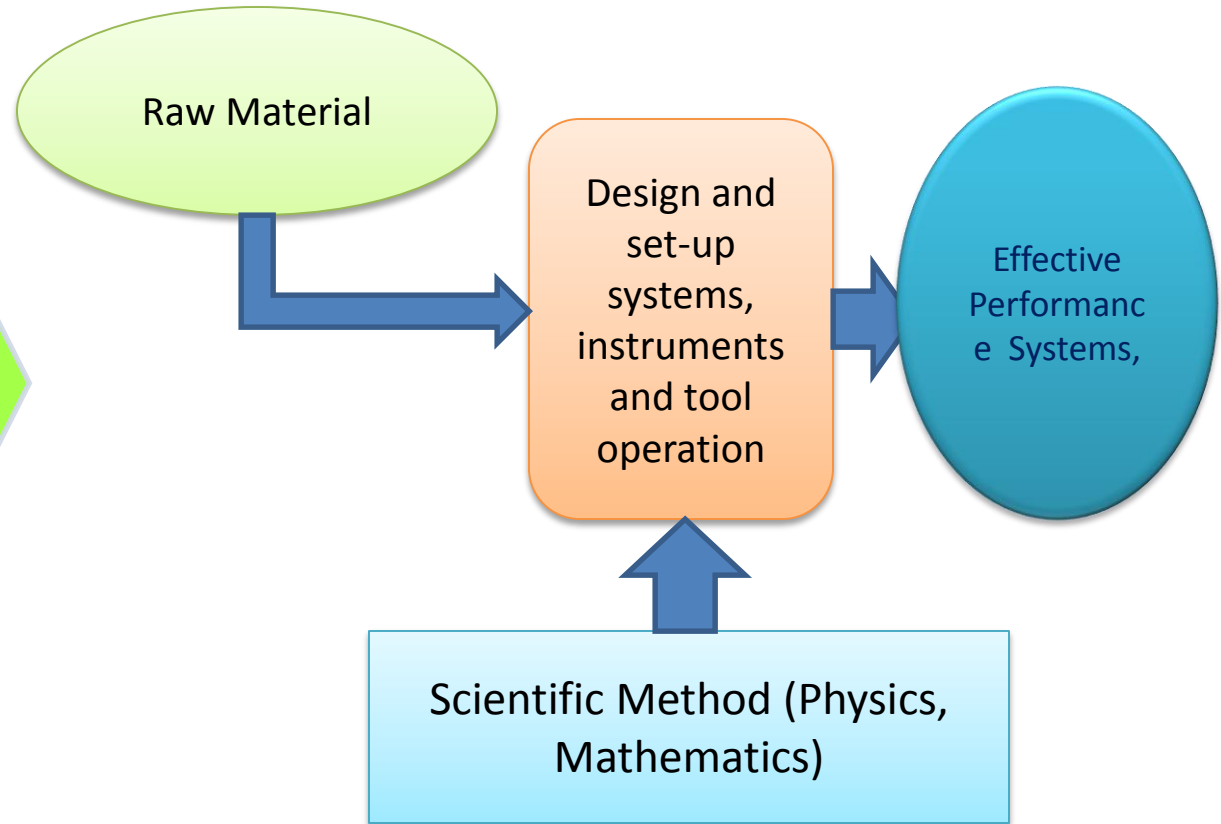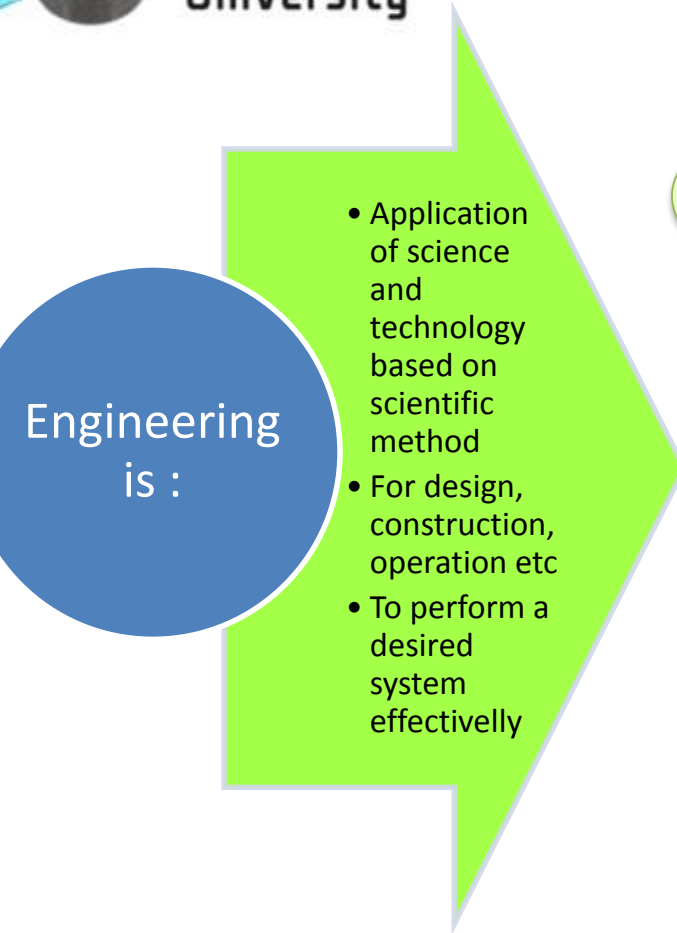
Not
Crime act or conspiracy that makes others suffering
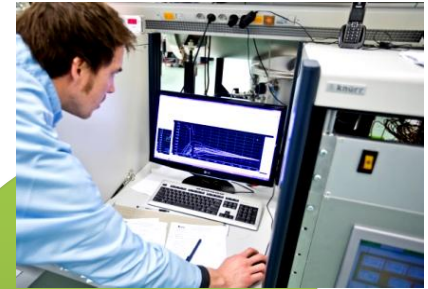
Engineering

Raw Material

Design and set-up systems, instruments and tool operation

Effective Performance Systems,

Intrinsic Semiconductors (cont.)

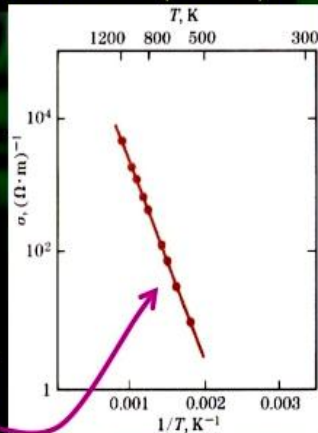Since σ is proportional to the number of carriers:

$$\sigma = \sigma_0 e^{-E_g/2kT}$$

or

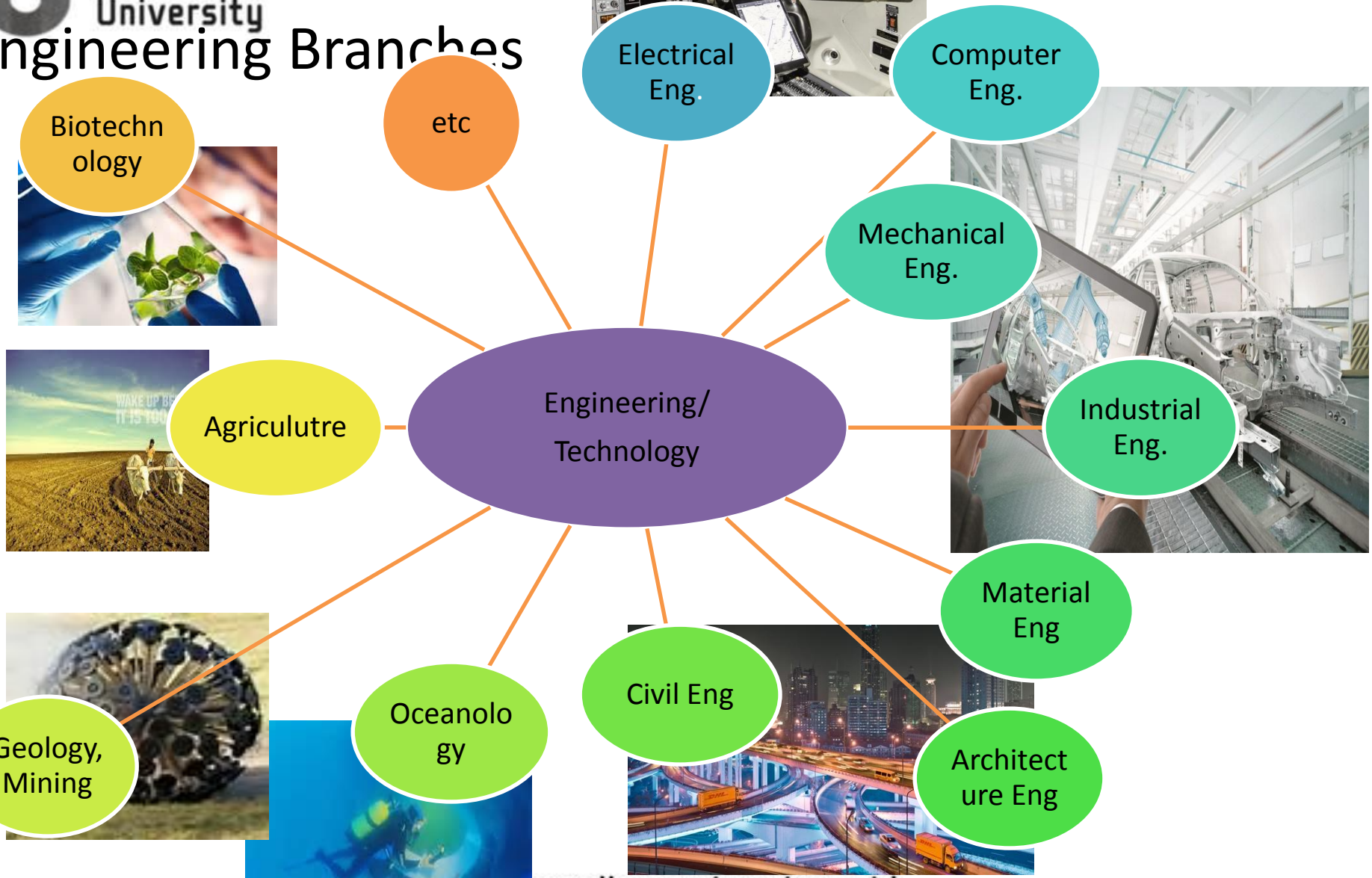$$\ln \sigma = \ln \sigma_0 - \frac{E_g}{2kT}$$

So, how do you measure E_g from the graph?

Then what is the difference with metals?

Scientific Method (Physics, Mathematics)

Engineering Branches

Biotechnology

etc

Electrical Eng.

Computer Eng.

Mechanical Eng.

Agriculutre

Engineering/ Technology

Industrial Eng.

Material Eng

Geology, Mining

Oceanology

Civil Eng

Architecture Eng

Quiz I
(Science and Technology)

- Describe the differences between science and technology

- Give your opinion on arts and religious belief, are they belongs to science and technology?

- Pictures below are figuring past and today means of travel, give comparation and their contrast. How will kind of means of travel for the future? What will fuel /energy source be used in that future?