DR. ROHANA BINTI HAMZAH
Dr. Rohana Binti Hamzah was born in Kuantan, Pahang. She received her BSc in Education from Universiti Putra Malaysia in 1997, Master in Technical and Vocational Education from Universiti Teknologi Malaysia in 2000 and PhD in Art and Design from Universiti Teknologi MARA (UiTM). She started her career in academia to serve Universiti Teknologi Malaysia (UTM) since 1997. Starting 2016, she resumed service at the Centre of Modern Languages and Human Sciences (CMLHS), Universiti Malaysia Pahang (UMP) after serving UTM for 18 years. Among the subjects she has taught are the Philosophy of Education, Teaching and Learning Models, Curriculum Development and Basic Design. Her research interest concerns with integrated and holistic approach in education. This module is produced to provide an overview concerning the philosophy of science and how it relates with the purpose of knowledge development process. It introduces the concept of philosophy and its underlying questions. This module is developed for post graduate students to ensure higher education institutions, in particular UMP, to produce scientists and engineers who are able to contribute significantly and ethically to the civilization process of their respective countries.

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PHILOSOPHY OF SCIENCE & ETHICS IN RESEARCH
PHILOSOPHY OF SCIENCE & ETHICS IN RESEARCH

ROHANA HAMZAH & ZURAINA ALI
The rebranding of 8 modules has been approved by the UMP Senate in February 2016. The 8 modules comprise:

i. Philosophy of Science and Ethics in Research
ii. Research Overview
iii. Literature Review
iv. Methodology
v. Data Collection and Analysis
vi. Scientific Writing
vii. Preparation for viva-voce
viii. Conceptual Paper

8 modules are one of the Institute of Postgraduate Studies (IPS) initiatives in helping students to understand ways and means to carry out research at Master’s and PhD level. There are 2 sets of 8 modules provided by IPS in accordance with the technology and engineering cluster. These 8 modules are intended to help students in conducting systematic research owing to its utmost importance in determining the effectiveness and efficiency of the research process. The 8 modules shall help students to understand the research problem and identify the areas of research. The modules also assist students on how to write a literature review in order to understand how other researchers approach, define or manage the problem to keep the research pertinent to what is current in the field. In addition, 8 modules also facilitate students to understand the methods of collecting data in an organized and controlled way to achieve valid results, analyze the data according to the considered problem and make conclusions. Therefore, IPS hopes that these modules will be able to provide some insights and benefit students in conducting research at Master’s and PhD level.
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**Topic 1: Introduction**

1.0 An Overview on Philosophy of Science  
1.1 What is Philosophy?  
1.1.1 Activity: My Real World Today  
1.1.2 Activity: Find The Definition of Philosophy  
1.1.3 Activity: My Philosophy Tree  
1.2 What is Science?  
1.3 What is Philosophy of Science?  

**Topic 2: The Reality of Existence**

2.0 What is Reality of Existence?  
2.1 Where Does The Truth End?  
2.1.1 Activity: What is Your Name?  
2.1.2 Activity: Let's Draw  
2.1.3 Activity: The Smallest, The Biggest  
2.1.4 Activity: Where Does The Truth End?  

**Topic 3: The Truth and Epistemology of Knowledge**

3.0 What is The Truth or Epistemology of Knowledge?  
3.1 The Categories of Knowledge  
3.2 The Source of Knowledge  
3.3 The Obstacles in Knowledge Development Process  
3.4 Epistemology of Knowledge  
3.4.1 The Unity of God  
3.4.2 The Unity of Creation  
3.4.3 Unity of Humanity  
3.4.4 The Unity of The Truth and Unity of Knowledge  

**Topic 4: Good and Bad: Esthetic and Etiquette Value**

4.0 What is Good and What is Bad (Esthetic and Etiquette)  
4.1 The Reality of Human Nature  
4.2 Man Has Been Created With Ability to Know What is Good (Right) and What is Bad (Wrong)  
4.3 What is Good and What is Bad; Questions of Justice  

**Topic 5: Philosophy and Thinking System**

5.0 Philosophy and The Development of Thinking System  
5.0.1 Activity: To Summarise  

**Topic 6: Ethics in Research**

6.0 What is Ethics?  
6.1 Ethics in Quantitative Research  
6.1.1 Ethics in Sampling Size  
6.1.2 Ethics in Measurement Choices: Reliability, Validity and Generalization  
6.1.3 Ethics in Conducting Experimental Research
MODULE DESCRIPTION

This module provides an overview concerning the philosophy of science and how it relates with the purpose of knowledge development process through education. It introduces the concept of philosophy and its underlying questions. It is crucial to understand this concept because knowledge development through R&D occurs intensively at higher education level. Therefore, this module will discuss the reality of existence, epistemology of knowledge, ethics and aesthetic and the inter-connection between the topics. Knowledge or science development process that is not properly guided or fails to consider ethical issues will result in making it worthless. Therefore, this module also integrates lessons in understanding ethics in quantitative and qualitative research. This module is developed for post graduate students in higher education institutions, in particular UMP to produce scientists who are able to contribute their findings in science and technology significantly and ethically to the society as well as the civilization process of this country.

MODULE OUTCOMES

At the end of this module, user should be able to:
1. Explain the concept of philosophy
2. Summarize the concept of knowledge
3. Explain the key questions behind a philosophy
4. Demonstrate ability to consider ethical issues in research

MODULE SUBTOPICS

- TOPIC 1 INTRODUCTION
- TOPIC 2 THE REALITY OF EXISTENCE
- TOPIC 3 THE TRUTH AND THE EPISTEMOLOGY OF KNOWLEDGE
- TOPIC 4 GOOD OR BAD; AESTHETIC AND ETIQUETTE VALUE
- TOPIC 5 ETHICS IN RESEARCH
- CONCLUSION