



**COURSE DESCRIPTION**  
CENTRE FOR GRADUATE STUDIES  
**UNIVERSITI TEKNIKAL MALAYSIA MELAKA**

**RESEARCH METHODOLOGY**

MPSW5013/PPSW6013

EVERY SEMESTER

SESI 2010/2011

**1.0 Synopsis**

The course is designed to introduce students to the principles and good practices of Research and Development (R & D). Activities at each step of the research process will be elaborated in order to develop the skills and competencies required to facilitate a successful research program at postgraduate level. At the end of the course, students are expected to submit a research proposal on the topic of their interest.

**2.0 Learning Outcomes**

After the completion of this course, the student will be able to:

- a. Explain the conceptual understanding of 'Research', 'Research Activities' and 'Types of Research'.
- b. Identify the problem area for research, and focusing on a specific topic.
- c. Develop a cohesive and robust research proposal on a chosen topic.
- d. Implement research methodology techniques and tools within the Research Proposal.
- e. Write technical reports, journal and conference papers.
- f. Disseminate research findings through conferences and journals.
- g. Write a high quality dissertation or thesis on the research carried out.
- h. Develop an awareness of important ethical and societal issues and carries out his or her research at the highest ethical standards.
- i. Manage the research process to meet the stated objectives.

**3.0 Practical Application**

Students will be required to produce and present a cohesive and robust research proposal on their chosen topic.

**4.0 Reference :**

- [1] Barbie, Earl R., 1998, **Survey Research Methods**, 2<sup>nd</sup> Edition, Wadsworth Publishing Company, California, USA., 1998.
- [2] Linda Cooley and Jo Lewkowitz, 2003, **Dissertation writing In Prattice, Turning Ideas Into Text**, 1<sup>st</sup> Edition, Hong Kong University Press.
- [3] James, E.M., Jack, W.B., 1983, **Guide To, The Successful Thesis And Dissertation**. 3<sup>rd</sup> Edition, Marcel Dekker, Inc., New York, USA.
- [4] Syed, V.A., and Victor, B.L., 2005, **The Art of Scientific Innovation, Cases of Classical Creativity**, 1<sup>st</sup> Edition, Pearson Prentice hall, New Jersey, USA.
- [5] Estelle, M.P., D.S., 1987, **How To Get A PhD, Managing The Peaks And Troughs Of Research**, 1<sup>st</sup> Edition, Open University Press, Milton Keynes, UK.

- [6] Blaxter, L. et al., 1995, **How to research**, 1<sup>st</sup> Edition, Open University Press, Milton Keynes, Buckingham, UK.
- [7] Martha, D., 2005, **Scientific Papers and Presentation**, 2<sup>nd</sup> Edition, Elsevier, Academic Press, New York. USA.
- [8] Sandy, P., 1989, **Systematic Problem-Solving and Decision- Making**, 1<sup>st</sup> Edition, Crisp Publication, Inc., California, USA.
- [9] Raymond, F., Muhammad Razin, A., 1996, **Penyelesaian Masalah Untuk Jurutera dan Ahli Sains, Suatu Pendekatan Kreatif**, 1<sup>st</sup> Edition, Dewan Bahasa dan Pustaka, Kuala Lumpur, Malaysia.
- [10] Pusat Pengajian Siswazah, 2008, **Research Policy and Guidelines**. Universiti Teknikal Malaysia Melaka.
- [11] Beach, D. and Alvager, 1992, **Handbook for Scientific and Technical Research**, 1<sup>st</sup> Edition, Prentice Hall, Upper Sanddle River, New York, USA.
- [12] Booth, W. et al., 1995, **The Craft of Research**, University of Chicago Press, Chicago, USA.
- [13] Sekaran, U., 2003, **Research Method For Business: A Skill-Building Approach**, 4<sup>rd</sup> Edition, John Wiley & Son, New York, USA.
- [14] Neuman, W.L., 2000, **Social Research Methods - Qualitative and Quantitative Approaches**, 4<sup>rd</sup> Edition, Allyn and Bacon, Boston, USA.

## 5.0 Course Implementation

a. Lecture	=	34 hrs
b. Tutorial/Case Study	=	4 hrs
c. Presentation	=	4 hrs

## 6.0 Course Assessment

a. Assignments	5 x 10 %	=	50%
b. Research Proposal	1 x 30 %	=	30%
c. Presentation	1 x 20 %	=	20%
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Total			100%
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## 7.0 Detail Syllabus and Teaching Plan

Week	Date	Hours	Contents	Lecturer / Remaks
1	25/09/2011	1	<b>1. INTRODUCTION</b> 1.1 Introduction and Overview of Research 1.2 Definitions and explanations of the related terms 1.3 Characteristics of a good research	<b>Dr. Badrul Hisham Bin Ahmad (FKEKK)</b>  Course Outline Briefing.
		1	<b>2. CHOOSING THE RESEARCH TOPIC</b> 2.1 Introduction and importance of selection of research topic. 2.2 The process of selecting a research topic: <ul style="list-style-type: none"> <li>• Sources of topics,</li> <li>• Idea generation,</li> <li>• Focusing</li> </ul> 2.3 Factors to be considered 2.4 Class exercise	
5	12/11/2011	2	<b>3. DEFINING THE RESEARCH PROBLEM</b> 3.1 Formation and formulation of research problem 3.2 Writing a problem statement 3.3 Developing research questions based on problem statement 3.4 Developing research hypotheses 3.5 Relationship between hypotheses and data analyses technique 3.6 Common mistakes in writing problem statements and hypotheses. 3.7 Class exercise	<b>Dr. Kok Swee Leong (FKEKK)</b>  Assignment #1
		2	<b>4. CRITICAL REVIEW OF THE LITERATURE</b> 4.1 Understanding Literature Search 4.2 Sources of Literature Search 4.3 Search Techniques 4.4 What is a Review of the Literature? 4.5 Critical Appraisal 4.6 Summarising and Synthesising 4.7 Paraphrasing 4.8 Citing References 4.9 Referencing 4.10 Class exercise	
3	9/10/2011	4	<b>5. RESEARCH DESIGN</b> 5.1 Understanding the meaning and importance of research design	<b>Parallel Sesion</b>

			<p>5.2 Design parameters:</p> <ul style="list-style-type: none"> <li>• Research method/approach (qualitative vs quantitative, experimental, etc.)</li> <li>• Source of data</li> <li>• Data gathering (procedure, how much, how long)</li> <li>• Data analysis and evaluation (tools, validation)</li> </ul> <p>5.3 Preparing a work plan 5.4 Keys to successful research design 5.5 Preparing a Research Proposal</p> <ul style="list-style-type: none"> <li>• The importance of research proposal</li> <li>• The format and contents of a research proposal</li> </ul> <p>5.6 Class exercise</p>	<p><b>Dr. Yusmady Bin Mohamed Arifin (FKM)</b> <b>For Engineering Student</b></p> <p><b>&amp;</b></p> <p><b>Dr. Ismi Rajiani (FPTT)</b> <b>For FPTT student</b></p> <p>Assignment # 2</p>
2	2/10/2011	4	<p><b>6. STATISTICAL CONCEPTS AND APPLICATIONS</b></p> <p>6.1 Data analysis 6.2 Inferential statistics 6.3 Correlation and regression</p>	<p><b>Dr. Tay Choo Chuan</b></p> <p>Assignment #3</p>
7	19/11/2011	4	<p><b>7. RESEARCH TOOLS / OR techniques and Social Sciences</b></p> <p>7.2 Numerical methods 7.3 Optimization techniques</p>	<p><b>Parallel session:</b></p> <p><b>Dr. Hamzah Sakidin (FKE)</b> <b>For Engineering student</b></p> <p><b>&amp;</b></p> <p><b>??</b> <b>For FPTT student</b></p> <p>Assignment #4</p>
4	30/10/2011	4	<p><b>8. INTERNET AS A RESEARCH TOOL</b></p> <p>8.1 Internet and its potential in research 8.2 Search strategies, engines and directories 8.3 Key sources of online information</p>	<p><b>Mr. Ho Yih Hwa (FKEKK)</b></p>
6	13/11/2011	4	<p><b>9. DATA GATHERING</b></p> <p>9.1 Data 9.2 Data gathering techniques 9.3 Instruments for data gathering 9.4 Factors for consideration</p>	<p><b>Dr. Muhammad Fahmi Bin Miskon (FKE)</b></p>
8	20/11/2011	4	<p><b>10. DESIGN OF EXPERIMENT</b></p> <p>10.1 Conventional approach to experimentation 10.2 DoE – factors, levels, response 10.3 DoE Approaches</p>	<p><b>Prof. Dr. Qumrul Ahsan (FKP)</b></p> <p>Assignment #5</p>

			<ul style="list-style-type: none"> <li>• Factorial Design</li> <li>• Taguchi Method</li> <li>• Response Surface Design</li> </ul>	
10	11/12/2011	2	<b>11. THESIS WRITING</b> 11.1 Attributes of a good thesis 11.2 A generic thesis skeleton 11.3 Format of thesis 11.4 Thesis writing tools 11.5 Common citation styles and its corresponding references style 11.6 Common mistakes in writing citations and references. 11.7 Plagiarism 11.8 Quality of thesis	<b>Dr. Kok Swee Leong (FKEKK)</b>
		2	<b>12. RESEARCH MANAGEMENT &amp; ETICHS</b> 12.1 Research management – from inception to completion 12.2 Challenges facing a researcher 12.3 Decision making in research 12.4 Managing tasks: <ul style="list-style-type: none"> <li>• Keep a journal of research activities and ideas.</li> <li>• Read a lot of technical papers</li> <li>• Maintain positive attitude and stay motivated</li> <li>• Breaking down a project into smaller pieces</li> </ul> 12.5 Managing resources – time, finance 12.6 Getting feedback 12.7 Working with supervisor 12.8 Ethical considerations 12.9 Copyright 12.10 Confidentiality 12.11 Informed consent 12.12 Online etiquette (netiquette) 12.13 Case Studies	
9	4/12/2011	4	<b>13. ARTIFICIAL INTELLIGENCE</b> 13.1 Neural Networks 13.2 Fuzzy Logic	<b>Dr. Tan Chee Fai (FKM)</b>
11	18/12/2011	4	Presentation of Research Proposal	<b>All Lecturers involved</b>

**Notice to Subject Coordinator and Lecturers:**

- i) For weeks 3-5, parallel lectures will be conducted separately for post graduate students in the engineering, ICT and technology management. However this is subject to availability of suitable numbers.
- ii) This schedule is valid for lectures conducted on Sundays ONLY.
- iii) MODIFICATIONS are required for lectures conducted during the weekdays and for Off-Shore programs.
- iv) The number of hours for each topic is INDICATIVE only. The actual number of hours may vary, BUT it must be implemented within the stipulated number of weeks.

DEKAN

PUSAT PENGAJIAN SISWAZAH