

FINAL YEAR PROJECT INDUSTRY (FYPi) HANDBOOK

FYPi 2u2i Committee

FACULTY OF COMPUTING
UNIVERSITI TEKNOLOGI MALAYSIA
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INTRODUCTION

1.1 What is the Final Year Project Industry (FYPi)?

Projek Sarjana Muda Industry (FYPI) is a course whereby each undergraduate student under Bachelor Science in Science Computer (Data Engineering) programme must undertake and pass in order to graduate. It aims is to equip students with knowledge and skills in problem solving/programming technique through appropriate academic and research activities. It is undertaken in two semesters each for SCSP 4112, SCSP 4233, SCSP 4235 and SCSP 4234.

1.2 The Objectives

There are four code subject for student should been registered which are: SCSP 4112, SCSP 4233, SCSP 4235 and SCSP 4234. Each subject have specific objective as mention below:

SCSP4112-Initial Industry Project Proposal

- To write the project progress.
- To deliver initial project proposal written and orally in a clear, effective and comprehensive manner.
- To act ethics in carrying out duties.

SCSP4233- Industrial Integrated Project Proposal

- To produce a project report based on organization standard
- To design the project solutions according to user requirements
- To deliver the project solution clearly

SCSP4235– Industrial Integrated Project Development

- To write the project progress.
- To develop the project based on the proposal.
- To present a working prototype that fulfill user requirements.

SCSP4234 – Industrial Integrated Project Report

- To compose a technical report.
- To demonstrate the contents of technical report through UTM Thesis

1.3 FYPi Announcement Platforms

Student can access all the necessary information and documents relating to FYPi by using E-learning @ Google Drive and Whatsapp@Telegram group. The details included are:

- i. FYPi Calendar
- ii. FYPi Presentation Schedule
- iii. Forms

1.4 The Phases of FYPi

FYPi is undertaken in two phases over the period of two (2) semesters that consist of four (4) subjects, which are SCSP 4112, SCSP 4233, SCSP 4235 and SCSP 4234. The SCSP 4112 is in Semester 1, while the rest of the subjects are taken in Semester 2. Appendix A refers to flowchart of execution procedures.

In general, it begins with students' registration at the beginning of the semester, followed by a discussion with the industry and university coaches to propose suitable project topics. Once, the title has been approved, the students need to regularly meet and discuss with the industry and university coaches on matters related to the execution of the project and get themselves ready for **Initial Integrated Project Proposal (SCSP4112)** presentation and evaluation at the end of the first semester. The **Integrated Project Proposal (SCSP4233)** presentation during 6th week of the second semester. Next is project development that falls under **Industry Integrated Project Development (SCSP 4235)**. Finally, students will complete their report for submission in **Industrial Integrated Project Report (SCSP 4234)**.

1.4.1 Project/Research Areas Briefing

At the beginning of the semester, FYPi Coordinator will brief the students on suitable projects/areas related to the FYPi.

1.4.2 Registration

Only final year students of Bsc. Computer Science (Data Engineering) are allowed to register. The registration could be done either during the pre-registration week (usually at the end of previous semester) or during the normal registration week (usually a week before semester opens). It is very important for students to remember that they have to register the correct SUBJECT CODE, which is **SCSP4112** (in the first semester of the fourth year) and **SCSP4233, SCSP4235, SCSP4234** (in the second semester of the fourth year).

1.4.3 Industry and University Coaches Appointment

Students will be assigned two (2) coaches, which are an industry coach and university coach to supervise them in the execution of their final year project. University coach will be appointed by FYPi Committee before students start their internship, while industry coach will be assigned by the industry just after the students join the industry. The appointed coaches will supervise the student's project.

1.4.4 Log Book and Supervision Meeting

Regular review from industry and university coaches will ensure that students execute their project according to the university's procedure and standards, as well as the project objectives and aims. Students are strongly advised to arrange a weekly meeting with the industry and university coaches to address issues related to project execution. All meetings must be recorded in a logbook and the industry and university coaches's signature of approval of each meeting is required in log book. The evaluation for log book for Semester 1 together with Profesional and Development (PDP) program, and in Semester II in SCSP 4235.

1.4.5 Initial Integrated Project Proposal (SCSP4112)

SCSP 4112 carries two (2) credits and is done in the first semester of the fourth year. This subject is an initial industry proposal for the project. It is a prerequisite for the SCSP 4233, SCSP 4235 and SCSP 4234. This means that students must undertake and pass SCSP 4112 before they can register for SCSP 4233.

Project topics can be a suggestion from a industry coach. Upon finding a title that suits you, put together a basic information search, discuss with your industry and university coaches and prepare initial integrated project proposal (In Chapter 1 and Initial Methodology).

1.4.4.2 Procedure to Change Project Title

In some cases, students need to change their project title due to inevitable reasons.

1.4.4.4 Initial Integrated Project Proposal – SCSP4112 Presentation

Students are required to present their Initial Integrated Project Proposal (**SCSP4112**) for evaluation during week 18 (first semester) at the industry. The evaluation panel consists of one examiners from university.

Guidelines and Procedures Related to Integrated Project Proposal –Presentation

Thirty (30) minutes is allocated to each student for presentation, with 10 minutes for slides presentation, 10 minutes for the question and answer session and another 10 minutes for all industry coach, university coach and examiners finalize the students' marks. It is advisable for the students to include only important points in the slide to ensure that the presentation time is not exceeded. As a rule of thumb, one slide is

equivalent to one minute of presentation time. However, the whole presentation should contain the following items: An introduction to introduce presenter, the project title, as well as the industry and university coaches.

- i. An overview of the overall presentation (i.e. structure of the presentation, outline)
- ii. Project background, aim, objectives, and scopes of the project
- iii. Initial Methodology
- iv. Summary of research/system development methodology.
- v. Conclusion of the presentation

Students are advised to follow the subsequent good practices for their projects' presentations:

- i. Arrive early for the presentation.
- ii. Limit the use of text in slides and make sure there is no spelling error
- iii. Include more figures, pictures, charts, etc.
- iv. Have eye contact with the audience
- v. Dress according to the UTM's student dress code
- vi. Speak clearly. Do not mumble
- vii. Manage the presentation time so that there is ample time for Q & A session.
Practice beforehand
- viii. Do not forget to thank the audience for listening

1.4.5 Integrated Project Proposal – SCSP4233

SCSP 4233 carries three (3) credits and is done in the second semester of the final year. This subject involve industry integrated project proposal.

1.4.6 Integrated Project Proposal – SCSP4233 Report Submission

Each student is required to submit their **Integrated Project Proposal (SCSP4233)** for evaluation (refer to FYPI calendar). Students must get their industry and university's approval before submitting the report proposal to their industry and university coaches and two (2) examiners along with several important forms. The required forms are:

- i. SCSP 4233 Evaluation Form (3 copies)
- ii. SCSP 4233 Report (4 copies)

1.4.6.1 Integrated Project Proposal – SCSP4233 Presentation

Students are required to present their Integrated project proposal (**SCSP4233**) for evaluation in week 6 of their final semester at the industry. The evaluation panel consists of two examiners. Each student's project is evaluated to determine that the objectives and scope are adequate and are aligned with project aim. A passing grade in SCSP4112 is a requirement for SCSP 4233.

Guidelines and Procedures Related to Integrated Project Proposal – SCSP4233 Presentation

Fourty (40) minutes is allocated to each student for presentation, with 15 minutes for slides presentation, 5 minutes for system demonstration, 10 minutes for the question and answer session and another 10 minutes for all industry coach, university coach and examiners finalize the students' marks. It is advisable for the students to include only important points in the slide to ensure that the presentation time is not exceeded. As a rule of thumb, one slide is equivalent to one minute of presentation time. However, the whole presentation should contain the following items:

- vi. An introduction to introduce presenter, the project title, as well as the industry and university coaches
- vii. An overview of the overall presentation (i.e. structure of the presentation, outline)
- viii. Project background, aim, objectives, and scopes of the project (this should be enough to cover what has been written in Chapter 1 of the project's report)
- ix. Summary of literature review (as explained in Chapter 2 of the project's report)
- x. Summary of research/system development methodology. This may include the data collection techniques such as survey, organization visits, etc.
- xi. List of software and hardware that are required to develop the project
- xii. Summary of initial findings during SCSP4112. For instance, analysis of data collected from survey, or perhaps initial interface design of the proposed system
- xiii. Discussion on SCSP4235, SCSP4234 execution plan
- xiv. Conclusion of the presentation

1.4.7 Integrated Project Development - SCSP4235

SCSP 4235 carries five (5) credits and is done in the second semester of the final year.

This subject involve industry integrated project development.

1.4.7.2 Integrated Project Development - SCSP4235 System Demonstration

Students are required to regularly demonstrate their progress of project/system development to their industry and university coaches. System demonstration is compulsory and is evaluated as part of Integrated Project Development - SCSP4235 grade. Students are required to demonstrate their progress of project/system development for evaluation in week 10-12 of their final semester at the industry.

1.4.7.3 SCSP4235 Presentation

Once the project/system development has been completed, students need to presentation their project to the industry and university coaches and also examiners. Project/system presentation session is held between the Week 10 and Week 12 of the final semester. The presentation for **SCSP4235 – Integrated Project Development** is 40 minutes (5 minutes for slide presentation, 15 minutes for system demonstration, 10 minutes for the question and answer session and another 10 minutes for all industry coach, university coach and examiners to finalize the students' marks). Only include important points in the slide to make better use of the allocated time. The presentation should contain the following items:

- i. An introduction to introduce presenter, the project title, as well as the industry and university coaches
- ii. An overview of the overall presentation (i.e. structure of the presentation, outline)
- iii. Project background, aim, objectives, and scopes of the project (Chapter 1)
- iv. Summary of literature review and research/system development methodology (Chapter 2 and Chapter 3)
- v. Summary of Chapter 4
- vi. Summary of Chapter 5
- vii. Conclusion of the project (Chapter 6)

After the presentation, the students are required to demonstrate (demo) their project/system. The aim of the demontration is to evaluate the functionalities of the

prototype for system based project or to verify the findings of a research based project. Related questions will be asked by the examiners during the demo session.

1.4.8 Integrated Project Report - SCSP4234

SCSP 4234 carries four (4) credits and is done in the second semester of the final year.

This subject involve industry integrated project report.

1.4.8.1 SCSP4234 Final Report

As part of their progress, students are required to submit drafts of all chapters to their university coach for evaluation. Corrections must be done as required. It is hoped that the quality of the student's project report is improved by having the on-going report assessments. Three (3) copies of final reports have to be submitted to the industry coach, university coach and examiner following the submission dates in the FYPi schedule.

Each student is required to submit their final report (**SCSP4234**) for evaluation. Students must get their industry and university's coach approval before submitting the FYPi report to their university coach and examiner along with several important forms. The required forms are:

- i. FYPi2 Evaluation Form (**3 copies, IC, UC, Examiner**)
- ii. SCSP 4234 Evaluation Form (4 copies)
- iii. SCSP 4234 Report (**3 copies**)

1.4.8.3 SCSP4234 Report Correction

Students are required to do correction based on the comments given by the examiners. The comments are available on feedback forms provided to examiner during presentation. Students are urged to discuss all comments with their industry and university coaches and take appropriate actions. Corrections made to the report must be endorsed by university coach and examiner.

1.4.8.4 Thesis Submission

The final hard-bound thesis should be prepared after all the corrections based on comments by university coach and examiner are done. Please ensure that the endorsement forms are completed and submitted. Students must prepare at least **four (3) copies** of hard-bound thesis (1 each for industry coach, university coach, and PSZ library) and 4 sets of DVD/CDs. The DVD/CDs must contain the following:

- i. Thesis document (format: doc, text etc)
- ii. Thesis document (format: pdf)
- iii. Abstract (format: pdf)

1.5 The Committee

The FYPi Committee (JKPSM-SC) handles the day-to-day running of FYPi and is responsible to ensure smooth operation throughout the length of FYPi. However, FYPi have our own committee member that are listed in the FYP website (<https://engineering.utm.my/computing/psm/committee-member/>) and these are the go-to person for any questions or problems relating to FYPi.

PROJECT CATEGORIES

2.1 Introduction

Generally, students are given chances to choose type of FYPi that they want to perform. Example of project types are:

1. System Development
 - a. System Development
 - b. Dashboard
2. Data Engineering
3. Research

2.2 System Development

This type of project is based on developing an application, software or embedded systems. The undertaken project must include programming elements with appropriate users's complexity and meets FYPi scope. This type of project gives the students an opportunity to conduct exercise as a project developer in the area of such as information system and dashboard.

The projects must be determined and agreed upon by both university coach and industry coach. The complexity of system should comprise of at least two modules (sub-system). The project must involve following elements:

- Industry problems and needs
- Database design
- Manipulation of data

Examples of applications that have been developed in this area are web based application, smart building, RFID-based project, sensor, PDA-based application, mobile phone application including SMS, .NET application and TINI based systems.

2.2 Data Engineering

This type of project involve on the whole process of data processing. Students must be able to process the elements that move data from one system to another, possibly transforming the data along the way. The project must involve following elements such as:

- Data pipeline
- Data warehouse

- Extract, Transform, Load (ETL)

2.3 Research

This type of project is based on a research application that includes data analysis, comparative studies or enhancement of techniques or algorithms. FYPi research project aims to train student on techniques to solve industrial problem using computing technology. Student should be trained to identify/understand problems, set objectives, design methodology, analyse results and conduct technical writing.

Similar to project based, programming elements must be included in the research project. This type of project aims to groom the students with research skills in the area such as data engineering, system development, data analysis, data science, data modelling. It is suitable for students who are interested in Research and Development (R&D) careers such as academic professionals and researchers. Among the type of research project, that can be embark by students are as follows:

- Analytical models to support decisions in industry
- Data modelling
- Information architecture
- New theoretical model or framework based on data engineering
- Data driven business process design
- Data warehouse design
- Data visualization
- Business intelligent development
- Data Modelling using Artificial Intelligent
- Algorithm design and development
- System development to prove a new concept in solving industry problem

REPORT WRITING AND FORMAT

3.1 Introduction

Students undertaking FYPi courses must submit a written report at the end of the FYPi, according to the schedule prepared by the FYPi coordinator. The report is the result of the project work that has been conducted and will be assessed industry coach, university coach and examiner. University and industry coach and examiner will only award credit for good quality writing. Therefore students should produce clear and concise reports. Relevant notations, terminology and computer science knowledge should be used throughout the report.

This chapter outlines the thesis writing guideline for both courses. It serves as a main reference for students in conducting their projects. However, students must also refer to the UTM Thesis Guideline (Panduan Tesis UTM, <https://sps.utm.my/wp-content/uploads/2019/08/THESIS-GUIDELINES-070819.pdf>), in preparing their final report.

3.2 Report Structure

Basically a report structure will contain three important components:

- i. Preliminary pages
- ii. List of contents titles and subtitles, figures, tables, abbreviations and appendices
- iii. Report content

The preliminary pages for SCSP 4233 and SCSP 4234 reports are listed in Table 3.1.

Table 3.1: Preliminary pages of the report

SCSP 4233	SCSP 4234
Front Page Format (1coverPage) Acknowledgement Page Optional. (5DeclarationOriginality)	Front Page Format (1coverPage) Declaration of the Status of Thesis (2thesisStatusDeclaration) Thesis Status Validation Letter Included only if thesis status is confidential or limited access

<p>Written in one page to acknowledge gratitude to contributing persons/parties</p> <p>Abstract (7abstract) Bahasa Melayu English Language</p>	<p>Supervisor's Declaration (3supervisorDeclaration)</p> <p>Collaborative Agency Validation Included only if project has a formal collaboration with an outside agency. UTM Thesis Writing Guide – Appendix C2</p> <p>Title Page (4titlePage)</p> <p>Thesis Motivation Form UTM Thesis Writing Guide – Appendix E</p> <p>Admission/Declaration Page (5DeclarationOriginality)</p> <p>Dedication Page (6DedicationAcknowledgment) Optional. Must be simple, not more than one paragraph and does not include any numbers, charts or images.</p> <p>Acknowledgement Page (6DedicationAcknowledgment) Optional. Written in one page to acknowledge gratitude to contributing persons/parties</p> <p>Abstract (7abstract) Bahasa Melayu English Language</p>
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The listing component is tabulated in Table 3.2 and it is applicable for both FYPi1 and FYPi2 reports.

Table 3.2: List structure

Content Page	Page numbering format can be either unnumbered, small Roman or Arabic. Title and page number must be equivalent to the thesis text.
List of Tables Page	Includes title of all tables and the page number where the table can be found in the text.
List of Figures Page	Figures include diagrams, photographs, screen shots, graphs, charts, code snippets and etc.

	Includes title of all figures and the page number where the figure can be found in the text.
List of Abbreviations Page	Lists abbreviations used within the text. Listed in alphabetical order.
List of Terms Page	Lists terminologies used within the text. Listed in alphabetical order.
List of Appendices Page	Lists all appendices used within the text. Appendices are given names such as Appendix A, Appendix B and so on with specific titles. Listed in alphabetical order.

Project content is the main component of the report. The example structure is listed in Table 3.3.

Table 3.3: The example of project content structure

SCSP 4233	SCSP 4234
Chapter 1: Introduction	Chapter 1: Introduction
Chapter 2: Literature Review	Chapter 2: Literature Review
Chapter 3: Methodology	Chapter 3: Methodology
Chapter 4: Initial Results Example such as proposed System Design (System Development Based) / Experimental Setup (Research Based)/ Data Engineering (Extract Load Transform ELT)	Chapter 4: Analysis and design (System Development Based) / Experimental Setup (Research Based)/ ETL
	Chapter 5: Results, Testing and Discussion (System Development Based) / Results, Analysis and Discussion (Research Based)
Chapter 5: Conclusion	Chapter 6: Conclusion
References	References
Appendixes	Appendixes

The general guideline for thesis writing is as follows:

- i. Do not cut and paste information from original sources. Instead students must use their own words in restating statements from books or general/public information.
- ii. Write in a concise and clear manner that is easily understood. Refrain from long running sentences.
- iii. Use words and sentences that convey exact meanings; and refrain from ambiguous statements.
- iv. Every abbreviation must be written in its complete form in the abbreviation list. In the text, the first usage of the group of words to be abbreviated must be written clearly and in full, followed by the abbreviation in brackets as shown in

in	example	below.
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The Unified Modeling Method (UML) is used...
On subsequent usage, the abbreviation may be used on its own.
- v. Sections and sub-sections should be written in a logical sequence.
- vi. Ensure continuity of sentences, paragraphs, sections and the overall report.
- vii. Figures and tables are numbered in sequence following the chapters, not sections. As an example, for Chapter 3, figures should be numbered starting with Figure 3.1, followed by Figure 3.2, Figure 3.3 and so on. Tables for Chapter 3 will follow the same sequence, Table 3.1, Table 3.2, Table 3.3 and so on.
- viii. Main information and analysis are put in the body of the report, while supportive information and analysis are added as appendix.
- ix. The maximum number of pages for the report, excluding appendix, is 50 pages for SCSP 4233 and 100 pages for SCSP 4234. Permission must be granted by the departmental FYPI coordinator if this maximum is exceeded.

To construct the title of a project:

- i. Must mirror the content
- ii. Must reflect problem solution
- iii. Usage of technology name in title only needed if technology is novel

3.3 Reference Format

The project is such an essential component of the degree program and it is important that detection of any form of plagiarism in project work will be taken very seriously. Students will be faced with severe consequences for their degree if they are discovered to have copy the work of other researchers. To safeguard, all text taken from other articles must be cited and the information of the articles must be listed in the List of References.

References are detailed description of items from which information were obtained in preparing the thesis. Every data, information, quotation, figure, table or anything taken from another source must be cited in the report. Citation must be done within the report and also in the reference list at the end of the report. The references can be written either alphabetically (Harvard System) or numerically (Number System). References shall come from sources such as journals, articles and books. References from internet (i.e. citations from websites) are not encouraged.

3.3.1 Harvard System

The references cited in the text should be indicated using the last name of the author and the year of publication. Examples are as follow:

- i. If the name of an author is written as part of a sentence, the year published should be written in parentheses. If there are two authors for a cited reference, both names should be written.
“Preneel (2003) noted that the process of replacing the old algorithms with new ones is time consuming and cumbersome.”
“Lenstra and Verheul (2001) proposed a model that formulates a set of assumptions as a guideline for selecting adequate key size for practical security.”
- ii. If the name of an author is not written as part of a sentence, both the name and year published should be written in parentheses.
“Small block size is also vulnerable as it is prone to dictionary attack (Canniere *et al.*, 2006).”
- iii. If there are more than three authors for a cited reference, use *et al.* after the name of the first author.
“Small block size is also vulnerable as it is prone to dictionary attack (Canniere *et al.*, 2006).”
- iv. If more than one reference materials by the same author in a same year are cited, use small letter alphabets (a, b, c, and so on) to distinguish them.
“Some of the basic principles widely used by many researchers are Lagrange-Euler (LE) equations (Uicker, 1965; Bejczy and Paul,1981), Newton-Euler (NE) equations (Luh *et al.*, 1980a) and d’Alembert (GD) equations (Lee *et al.*, 1983).”
“Luh *et al.* (1980b) presented an example of an acceleration control of robot arm/manipulator.”

All references cited should be listed in the List of References whereby it is listed alphabetically. If more than one published materials by the same author are cited,

these materials should be listed chronologically. For example, an article by Preneel published in 2001 should be listed before the one published in 2003.

Generally authors' names are listed using surname followed by their initials. The followings are examples of writing style according to the name of the author. If there are two or more authors, all the names should be written separated by commas:

i. Single and multiple authors

Yeung, M. and Mintzer, F. (1998). Invisible Watermarking for Image Verification. *Journal of Electronic Imaging*. Vol. 7, pp. 578-591.

Soderstrom, T., and Stoica, P. (1989). *System Identification*. United Kingdom: Prentice Hall International Ltd.

Luh, J. Y. S., Walker, M. W., and Paul, R. P. (1980b). Resolved-Acceleration Control of Mechanical Manipulators. *IEEE Trans. Automatic Control*. 25(3): 468-474.

ii. Corporate author/editor

Engineers Joint Council (1969). *Thesaurus of Engineering and Scientific Terms*. New York: Engineers Joint Council.

Students frequently refer to different types of publication materials in a thesis. Some of the style of writing details on common cited publication in the List of References should be as shown in Table 3.4.

Table 3.4: References format based on Harvard System

Resource	Format and Example
Book	Author (Year). <i>Title</i> . (Edition). Place published: Publisher. <i>Example:</i> Stallings, W. (2003). <i>Cryptography and Network Security: Principles and Practices</i> . (3 rd ed.). Upper Saddle River, New Jersey: Prentice Hall.
Article in a book	Author of the article (Year). <i>Title of the article</i> . In author or editor of the book. <i>Title of the book</i> . (page). Place published: Publisher. <i>Example:</i> Hussein, S. B., Jamaluddin, H., Mailah, M. and Zalzal, A. M. S. (2000). An Evolutionary Neural Network Controller for Intelligent Active Force Control. In Parmee, I. C. (Ed.) <i>Evolutionary Design and Manufacturing</i> (pp. 351 –362). London: Springer-Verlag.
Journal articles	Author (Year). Title of the article. <i>Title of the Journal</i> . Volume (Issue no.), page. <i>Example:</i> Lenstra, A.K. and Verheul E.R. (2001). Selecting Cryptographic Key Sizes. <i>Journal of Cryptology</i> . 14(4), 255-293.
Conference articles	Author (Year). Title of the article. <i>Name of the conference</i> . Date of the conference. Place, page. <i>Example:</i>

Resource	Format and Example
	Sheta, A. F. and De Jong, K. (1996). Parameter Estimation of Nonlinear Systems in Noisy Environments Using Genetic Algorithms. <i>Proceedings of the 1996 IEEE International Symposium on Intelligent Control</i> . 15-18 September. Dearborn, Michigan: IEEE, 360 - 365.
Thesis	Author (Year). <i>Title of the thesis</i> . Thesis award. Place published. <i>Example:</i> Rijmen, V. (1997). <i>Cryptanalysis and Design of Iterated Block Ciphers</i> . Ph.D. Thesis, Katholieke University Leuven, Belgium.
Legislations	Name of the country (year). <i>Title of the legislation</i> . Legislation number. <i>Example:</i> Malaysia (1983). <i>Perintah Monumen Lama dan Tapak Tanah Bersejarah</i> . P.U.(A)41 1983.
Standards	Name of the institution (Year). <i>Standard number</i> . Place published: Publisher <i>Example:</i> British Standards Institution (1990). <i>B.S. 764</i> . London: British Standards Institution.
Patent	Print format Author (Year). <i>Patent number</i> . Place published: Official source. <i>Example:</i> Smith, I. M. (1988). <i>U.S. Patent No. 123, 445</i> . Washington DC: U.S. Patent and Trademark Office. Electronic format Author (Year). <i>Patent number</i> . Retrieved on date, year, from URL address of the patent database. <i>Example:</i> Ulrich, K. (2001). <i>European Patent No. EP1162184</i> . Retrieved on March 7, 2002, from http://ep.espacenet.com/
Brochure	Name of organization (Year). <i>Title</i> [Brochure]. Place published: Publisher. <i>Example:</i> Research and Training Center (1993). <i>Guidelines for Reporting and Writing About People with Disabilities</i> . [Brochure]. Lawrence, KS: Macmillan
Measured drawings	Author (Year). <i>Title</i> . [Measured drawing]. Name of organization: Place published. <i>Example:</i>

Resource	Format and Example
	Salim Man (1989). <i>Pengisi Sekam ke Dalam Kontena Penyimpan: Pandangan Isometrik</i> . [Lukisan Teknik]. Universiti Teknologi Malaysia: Skudai.
Unpublished materials	Author (Year). <i>Title</i> . Unpublished note, Name of organization.
Newspaper article	<p><u>Print format</u> No author Title of article. (Year, date). <i>Name of newspaper</i>, page. <i>Example:</i> Gearing up to meet new challenges. (2000, February 22). <i>The Star</i>. p. 2.</p> <p><u>Author</u> Author. (Year, date). Title of article. <i>Name of newspaper</i>, page. <i>Example:</i> Izatun Shari (2000, April 18). K-economy: draft out in October. <i>New Straits Times</i>. p. 2-4.</p> <p><u>Electronic format</u> Author. (Year, date). Title of article. <i>Name of newspaper</i>, Retrieved date, year, from URL address of the newspaper. <i>Example:</i> Rosmawati Mion (2006, June 17). Sindiket judi haram tumpas. <i>Utusan Malaysia</i>. Retrieved June 19, 2006, from http://www.utusan.com.my</p>
Magazine	Author. (Year). Title of article. <i>Name of magazine</i> , Volume/Issue no., page <i>Example:</i> Smith, B. L. (1994). Biofeedback. <i>Science</i> , 62, 673 – 675.
CD-ROM	Author. (Year). Title of article. [CD-ROM]. <i>Title of Journal</i> , Volume, page, Publisher. <i>Example:</i> Ivry, R. B. (1995). Perception and production of temporal intervals across a range of durations. [CD-ROM]. <i>Journal of Experimental Psychology</i> , 21, 3-18. American Psychological Association.

3.3.3 References from

Internet

Although internet provides a large source of references, the information from internet are not permanent and up-dated periodically. Thus these are unreliable sources of reference. Internet should only be used to retrieve primary sources of reference. If necessary, only a minimal amount of internet references are allowed. Internet references should be written as follows:

Example:

Organization/author (year). Title of article. URL address. Available online day month, year.

ISO 17799 (2006). Establishing Information Classification Criteria. ISO 17799 Newsletter, Issue 9. <http://www.molemag.net/issue9.htm>. Available online 12 June, 2007.

EPIC (2005). Census and Privacy. <http://www.epic.org/privacy/cencus/>. Available Online February, 15, 2005.

3.4 Tools for Technical Writing

There are several tools available for preparing thesis and technical paper writing. Students are encouraged to use LaTeX + BibTeX (<http://code.google.com/p/utmthesis>) or Microsoft Word + EndNotes packages for preparing the thesis. Students can manage references easily by using these tools. It can generate the list of references automatically.

For students who will write their thesis in English, PSZ also provides a software called StyleWriter to proofread your thesis. For further information student may refer to UTM Thesis Manual (2007 edition) published by School of Postgraduate Studies. The manual can be downloaded from SPS website at <https://sps.utm.my/wp-content/uploads/2019/08/THESIS-GUIDELINES-070819.pdf>.

3.5 Tips

- i. Before starting to write the report, always plan its structure by creating a contents outline and get the supervisor to review the outline.
- ii. It is a good practice to consult with the supervisor every now and then as to get their feedback. This will aid in producing a good and relevant report.
- iii. It is not the task of the supervisor to be the editor or proof-reader and therefore do not anticipate that the supervisor will fully examine everything and comment in detail on the drafts.
- iv. Do not start writing on the last minute as it will only result with poor quality report for most of the tim

Example of Figure/Appendix

- ii. Uses a Gantt Chart (one Gantt Chart per project per page).
- iii. Organizational Chart
- iv. Sample of Interview
- v. Sample of Questionnaire
- vi. Activity Diagram
- vii. Use Case Diagram
- viii. Sequence Diagram
- ix. Collaboration Diagram
- x. Entity Relational Diagram
- xi. Database Design Diagram
- xii. Testing Cases
- xiii. User Manual

Appendix A



