Course Content

cademic Year	AY2022-23	**Semester**	1
Course Coordinator	A/P Wang Zhiwei		
Course Code	EN4914		
Course Title	Work Study Degree Final Year Project		
Pre-requisites	• Work Study Degree Programme student confirmed for Block 3 • Year 4 standing		
No of AUs	8		
Contact Hours	320 hours based on min. 8hrs/week for 20 weeks/semester x 2 semesters		
Proposal Date	15 February 2022		

A. Course Aims

The proposed 2-semester WSDeg Final Year Project under the NTU Work Study Degree Programme is offered as part of the programme requirements.

The main objective of the WSDeg project under the NTU Work Study Degree Programme is to enable application of knowledge and skills learned in the university to an authentic work environment. You will gain relevant exposures and develop practical industry experiences and skills to facilitate your career decision and future transition into your selected vocation. It aims to develop your professional competencies and enhance your employability and lifelong learning capabilities to support your career, life endeavours and readiness for future works.

Students are allocated at least 8 hours per week onsite with the organisation to work on their sponsored project, spread over 2 semesters. In practice, you may spend more time than this and may be allowed to use any free time slots to complete the project.

B. Intended Learning Outcomes (ILOs)

At the end of WSDeg FYP course, you (as a student) should be able to progressively:

Research WSDeg FYP (To be assessed by Faculty Supervisor for Grading Purposes)

1. Undertake research projects within a workplace setting independently and successfully within the given time and resources.

2. Apply appropriate research approaches and technical knowledge to determine, make sense and address the problem or issues faced by the stakeholders/sponsors.

3. Discuss and recommend sound solutions, responses and/or future directions based on the findings.

4. Write quality technical reports that communicate the significance of the problems, the application of technical knowledge and research methodology to reach the recommendations presented in the reports.

5. Deliver presentations that clearly communicate the research findings in the reports.

Work Performance (To be evaluated by Organisation Project Supervisor for Employability Testimonial Purpose)

I. Cognitive

1. Apply knowledge and relevant skills appropriately in the workplace.
2. Identify your own competency gaps at the internship workplace.
3. Evaluate and develop personal learning and development pathways towards bridging competency gaps identified in point (2) above.

4. Develop and apply strategies to solve problems effectively (involves critical thinking and creativity, generating questions, resourcing, application, and reiteration).
5. Evaluate resources and develop insights to make informed judgements and recommendations.

II. Context

6. Discuss the internship organisation's nature and context of business.
7. Reflect on the organisational culture at the internship organisation.
8. Appraise the significance and impact of the project/work/assignment undertaken at the internship organisation.
9. Describe the career pathways within the internship organisation as well as the broader industry.
10. Reflect on personal and professional development needs within the internship organisation as well as the broader industry and set strategic goals for advancing along an intended career path.
11. Apply time and task management strategies effectively.

III. Relationship

12. Apply effective written and oral communication skills in professional settings when communicating and connecting with relevant stakeholders.
13. Assimilate into the work environment (people, team, hierarchy) and function effectively.

IV. Affective/Moral

14. Tolerate ambiguity and handle anxiety.
15. Contribute proactively to the internship organisation.
16. Demonstrate responsibility, integrity and professionalism in the fulfilment of all workplace and internship requirements.
17. Demonstrate the persistence to learn, overcome and improve.

V. Technical

18. Use tools that enable and facilitate effective project/work/assignment undertaken at the internship organisation.
19. Execute projects by managing stakeholders, resources, budgets and resolving problems effectively
20. Manage stakeholder expectations to ensure continuous levels of engagement by identifying and addressing needs and resolving issues in accordance with procedures.
21. Analyse, prioritise and document different task requirements at various stages to ensure meeting of goals.
22. Design, redesign & develop plans and approaches to maximise the impact throughout the project process in alignment with goals.
23. Identify, analyse risks and develop risk management solutions to support the continuity of operations and services.
24. Use of design thinking methodologies and processes to solve specific challenges.
25. Identify and scope business requirements and priorities through rigorous information gathering and analysis as well as clarification of the solutions, initiatives and programmes to enable effective delivery.

C. Course Content

The WSDeg FYP is a work-integrated course with its educational content embedded within the work environment and assignments that students will undertake at the internship organisation. To this end, the internship job scope will be evaluated by the course instructor/coordinator using the following criteria:

1. It is relevant to the student's discipline of study.
2. It provides sufficient structure and rigour that will enable students to achieve the intended learning outcomes listed above.
3. It enhances the career prospects of the student.
4. The internship workplace is safe and conducive for student learning and development.
5. The internship workplace is equipped with the necessary tools and resources for the project work.
6. The internship organisation has standing policies to safeguard the welfare of the interns.
7. The internship organisation supervisor possesses the competencies, experience, and commitment to provide guidance to the students.
8. The internship organisation will use NTU's internship assessment scheme for students.
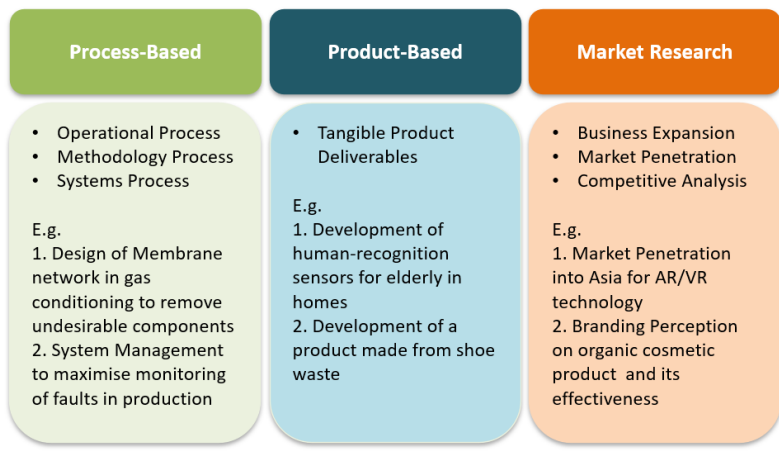
Parameters of WSDeg FYP

Parameters for Work Study Degree Application-Based Project

Specific and Defined Industry Issue or business goal	Clear Success Criteria for Business	Related to an Industry Job-Role
Investigative/Problem-Solving	Have scope for testing / development	Organisation Project Mentor

WSDeg FYP Project Types

Work Study Degree Application-Based Project Types

Process-Based	Product-Based	Market Research
• Operational Process • Methodology Process • Systems Process E.g. 1. Design of Membrane network in gas conditioning to remove undesirable components 2. System Management to maximise monitoring of faults in production	• Tangible Product Deliverables E.g. 1. Development of human-recognition sensors for elderly in homes 2. Development of a product made from shoe waste	• Business Expansion • Market Penetration • Competitive Analysis E.g. 1. Market Penetration into Asia for AR/VR technology 2. Branding Perception on organic cosmetic product and its effectiveness

D. Assessments

This is a graded course with the final outcome to be determined collectively by your Faculty Supervisor and Organisational Supervisor and Moderator. The assessments will be based on the intended learning outcomes (ILO) 1 to 5 in Section (B) which you should be familiarised as these ILOs will be your focus throughout the course.

WSDeg Project Assessment

During the course of the application research project, the supervisors through meetings and project milestone summary reports will closely monitor your progress. Your interim and final reports can be an extension to your project milestone summary which would also reflect your development in the graduate attributes highlighted in the assessment table below.

The interim and final reports are further elaborated below:

1) Interim Assessment

You are required to submit a short project plan/strategy report about 6 weeks from the start of the project. The Project Plan/Strategy should contain the main objectives of the project, its background, the student's proposed way of carrying out the project tasks, and a proposed weekly schedule in a chart form.

An interim assessment is conducted towards the end of the first semester of the project by the Faculty Supervisor. This consists of the project plan/strategy report and interim report. The interim report should highlight the progress made, tasks completed, results obtained, and potential problems identified. The report should be 5 to 10 A4 pages. Your Interim Report will require evidence of endorsement by your Organisation Supervisor before submission to your Faculty Supervisor. Before submitting it to the Faculty Supervisor, you have to submit the Interim Report to Turnitin service to check for plagiarism.

The Faculty Supervisor will then assess you on your progress and performance at the end of the first semester of the project.

2) Final Assessment.

The Final Assessment, which consists of Final Report, Demonstration (if applicable), Oral Presentation, is carried out at the end of the second semester of the project. To have an independent assessment, the School will appoint a Moderator for each project. Both the Faculty Supervisor and the Moderator will perform an independent evaluation. All documentation under Final Assessment will require your Organisation Supervisor's evidence of endorsement before submission to your Faculty Supervisor and Moderator.

i) Final Report
A formal, type-written final report in one-and-a-half spacing is required from each student. The main body of the report should normally contain 40 pages. If this guideline is not complied with, the student may be asked to resubmit the report. The student has to submit the draft report to Turnitin service to check for plagiarism. A copy of the detailed guidelines on the format of the report and other requirements for the project is attached in Appendix A.

ii) Project Demonstration
Immediately after submitting the final report, it is compulsory for the students to make arrangements for the assessors to view a demonstration of the projects. For projects which are research-oriented or exploratory in nature, for which project demonstration may not be possible, the assessors will interview the students to gauge how well they have understood their work during Oral Presentation.

iii) Oral Presentation
An oral presentation by each student is compulsory. The Supervisor(s) and the Moderator, including Organisation Supervisor (by invitation, optional), will attend and assess the presentation. The time for an oral presentation will be 25 minutes, consisting of 15 minutes of presentation and 10 minutes for the question/answer session. Questions will be asked to assess the student's understanding and knowledge of the project. Students who have valid reasons or official leave during the oral presentation period, must contact their Faculty Supervisor and Moderator well before the oral presentation.

Assessment Summary

Component	ILO	Related Programme LO or Graduate Critical Core Skills/ Attributes	Weighting	Assessor	Assessment Rubrics
Interim Assessment	1 to 4	Problem-Solving	20%	Faculty Supervisor	Please refer to Appendix 1 for detailed assessment rubrics.
Final Assessment					
(A) Final Report, Demonstration and Presentation	1 to 5	Research Communication	40%	Faculty Supervisor and Moderator	
(B) Approach during the Project Year	1 to 3	Self-Management Learning Agility Sense-Making	40% (20% - Faculty Supervisor; 20% - Organisation Supervisor)	Faculty Supervisor <u>and</u> Organisation Supervisor	

ORGANISATION EVALUATION

The Organisation Supervisor will also provide an <u>end-of-project performance evaluation</u> that will culminate to provide an industry testimonial and performance report which would focus on the intended learning outcomes (ILO) 6 to 29.

CONFIDENTIALITY IN REPORTS FOR SUBMISSION

All interim and final reports or presentation materials will need to be endorsed by the Organisation Supervisor prior to submission to NTU. At the end of each report, there must be an indication and signature by the Organisation Supervisor. Submissions without the organisation's endorsement will be deemed invalid. Please manage time for necessary endorsement required.

If there is sensitive/confidential information of the organisation involved, please discuss with the Organisation Supervisor in the company/institute (if any) on what can be included in the reports and exclude the information if necessary.

Please note that a copy of the WSDeg FYP final report may be submitted to the Library after the Oral Presentation, <u>subject to approval from the </u>Organisation Supervisor. Therefore, it is important for students to clear their reports with the Organisation Supervisor first before submitting to Turnitin.

E. Formative Feedback

Continuous feedback on progress and performance can be expected from both Faculty Supervisor and Organisation Supervisor.

You should maintain your project milestone summary and use it as evidence and artefact for discussions with your supervisors.

Faculty Supervisor will help you to achieve the learning academic requirements required for this course. He or she would provide formative feedback to you during the regular meetings with Organisation Supervisor and/or teammates. Formative feedback may be provided verbally and/or in writing over the 2 semesters.

F. Learning and Teaching Approach

Approach	Why does this approach support students in achieving the learning outcomes?
Research and Inquiry	Engaging in undergraduate research is a way to deepen your understanding of your discipline through a process of inquiry. It will encourage you to synthesise existing literature to critically inform a new problem, and to analyse and interpret results to draw appropriate conclusions and suggest meaningful recommendations. This will also promote self-regulated learning that can sustain lifelong learning and continuous improvement. This may involve literature review, problem solving methodologies, result analysis and deriving conclusions and formulating recommendations of future work.
Authentic Assessment	This course situates your FYP in the context of an authentic workplace environment, allowing you to apply your knowledge to a problem that is potentially relevant, significant in the real world. Furthermore, you will have to sharpen your oral and written communication skills in response to the diverse workplace colleagues and real-world stakeholders.
Experiential Learning	Informally, you will gain from this course a myriad of workplace experiences to help cultivate important professional behaviours and attitudes. Even though these are not formally assessed, you will gain formative feedback and perhaps even testimonies that can support your future work.

G. Course Policies and Student Responsibilities

As a student of the course, you are required to abide by both the University Code of Conduct and the Student Code of Conduct. The Codes provide information on the responsibilities of all NTU students, as well as examples of misconduct and details about how students can report suspected misconduct. The university also has the Student Mental Health Policy. The Policy states the University's commitment to providing a supportive environment for the holistic development of students, including the improvement of your mental health and wellbeing. These policies and codes concerning students can be found in the following link, https://www.ntu.edu.sg/life-at-ntu/student-life/student-conduct.

H. Professional and Academic Integrity

An internship concerns work in a professional setting. As with good academic work, good professional work depends on honesty and ethical behaviour. The quality of your work as a student relies on adhering to the principles of professional and academic integrity and to the NTU Honour Code, a set of values shared by the whole university community. Truth, Trust and Justice are at the core of NTU's shared values. Refer to this link for details, https://www.ntu.edu.sg/docs/default-source/tlpd-documents/academic-integrity-handbook_july-2017.pdf?sfvrsn=fc5a5b24_2.

As a student, it is important that you recognize your responsibilities in understanding and applying the principles of integrity in all the work you do as a student of NTU. Not knowing what is involved in maintaining integrity does not excuse professional and academic dishonesty. You need to actively equip yourself with strategies to avoid all forms of professional and academic dishonesty, including and not limited to, plagiarism, fraud, collusion and cheating. If you are uncertain of the definitions of any of these terms, you should go to the academic integrity website for more information. Consult your faculty supervisor if you need any clarification about the requirements of professional and academic integrity in the course.

I. Course Instructors

School FYP Coordinator	Office Location	Phone	Email
A/P Wang Zhiwei	N1 01C 75	67905281	wangzhiwei@ntu.edu.sg

J. Assessment Timeline

Your WSDeg FYP schedule over 2 semesters is as follows:

Semester / Week	Assessment	Course ILO
Semester 1 Week 13	Interim Report & Assessment	1 to 5
Semester 2 Week 13	Final Report & Project Demonstration (if applicable)	1 to 5
Semester 2 Week 17	Oral Presentation and Final Assessment	1 to 5

APPENDIX A - GUIDELINES ON THE FORMAT OF THE REPORT AND OTHER REQUIREMENTS

INTERIM REPORT

A WSDeg FYP interim report is a report on the current progress of the final year project. Its main purpose is to document what has been achieved so far and the things that need to be done later on.

Note that the WSDeg FYP interim report should be 5-10 (A4) pages.

Suggested format

1. Introduction

- Provide some background information on the project, the purpose (why it is carried out), the scope of the project and the objectives of the project to help readers understand your project better.
- Include the timeline for the completion of the project (your project plan/strategy).
- State the purpose of the interim report.

2. Work Conducted

- Highlight the work that you have done so far.
- Highlight your achievement and the effort put in.
- Discuss potential problems encountered and the things that hampered the progress of the project.

3. Future Work

- Describe the work that is in progress and the work that needs to be done.
- Highlight changes made to the original requirements of the project.

4. Conclusion

- Comment on the progress of the project.
- Do an honest assessment.

FINAL REPORT

1. The main body of the report (excluding charts, diagrams, appendices, tables, references, etc.) should normally contain 40 pages. You may have to resubmit a condensed version of your report if you exceed this limit.

2. Your report should meet these typing and layout requirements:

Component	Assessor
Page	White A4 size bond paper of at least 80g /m^2.
Text	Times New Roman, font size 12
Margins	35mm margin on the left hand side and 30mm on the top, bottom and right hand sides of each page.
Typing	The same font and pitch for the whole report except when highlighting important matters.
Spacing	One-and-a-half spacing.

3. To maintain consistency, all students are required to follow the same format for preparing final reports. The contents of the report should be in this order:

   a) Cover Page

b) Table of Contents
c) Abstract *(not more than one page)*
d) Acknowledgements to give recognition of any advisory or financial assistance received in the course of the work on which the report is based *(optional)*
e) Acronyms *(optional)*
f) Symbols *(optional)*
g) List of Figures
h) List of Tables
i) Main chapters (Chapter 1, Chapter 2.........)
j) ** Discussion/Conclusion
k) References
l) Appendix *(optional)*

** Include, as many details as possible, the following topics (outcomes) and how you
- Use the techniques, skills, and modern engineering tools necessary for engineering practice with appropriate considerations for public health and safety, cultural, societal, and environmental constraints;
- Understand the impact of engineering solutions in a societal context and to be able to respond effectively to the needs for sustainable development;
- Function effectively within multi-disciplinary teams and understand the fundamental precepts of effective project management.

4. The Standard International System of Units (SI) should be used.

5. Each reference, be it from a journal, textbook or conference proceedings, should be listed consistently, as in the example below:
a) Chu, J., 2016. Innovation in soil improvement methods. *Geotechnical Engineering*, 47(4), pp. 24-34.
b) Lim, S.-Y., 1997. Equilibrium clear-water scour around an abutment. *Journal of Hydraulic Engineering*, 123(3), pp. 237-243.
c) Sturm, T.W., 2020. *Open Channel Hydraulics*. McGraw-Hill Int. Edition, 2nd Edition.
d) Wang, X., Wong, Y.D., Chen, T., Yuen, K.F., 2021. Adoption of shopper-facing technologies under social distancing: A conceptualisation and an interplay between task-technology fit and technology trust. *Computers in Human Behavior*, 124, Article number 106900

6. The WSDeg Final Year Project Report is an important component in the assessment of the final year project. It is written for these main readers: the supervisor(s) and/or the examiner for the project. The examiner is an independent party appointed by the school to assess the project. Very often, the project report is the main instrument the examiner uses to judge the project. He/she may not be aware of the many hours the students may have spent on the project. The credit given to the students will be based mainly on their understanding of concepts and knowledge shown in each report. So a poorly or carelessly written report, presented after months of hard work by each student, may not be well received by an examiner.

In a project report, one generally looks for the following:
a) A clear idea of the scope, objectives and background of the project.
b) Analysis of all factors in the project, noting dependency of constraints. A clear and concise presentation of any theory required must be made.
c) Use of references which gives evidence of the students having read about the related subject. A list of references alone is insufficient. Any work, not done by the students, but included in the report, must be duly referenced. It is to be noted that plagiarism is a serious violation.
d) Results, discussions and suggestions for further work to assess the understanding of technical concepts and the perception of the value of the work done. Results must be appropriately presented with tables, graphs, charts, etc., wherever possible and must be linked to the objectives of the project. Interpretation and discussion of results must be put into the context of the work.
e) A logical organisation of the report to allow readers to grasp the contents readily. It is not always necessary that the information be organised chronologically. The students should put effort into thinking of the best way to present the information for the convenience of their readers. There must be a logical sequence of chapters, links between chapters, and sequence and links within chapters.
f) A good standard of written English, proper format and layout of the report.

7. For more information on project report writing, it is suggested that students refer to the following:

   Dorothy Cheung, Phooi-Ching Lai, John S. T. Cheung, "What Every Engineering Student Should Know About Project Report Writing," 2nd Edition, Longman Singapore, 1992

8. You need to submit a softcopy (a pdf file) of the final report to the supervisor(s) and examiner unless the supervisor(s) or the examiner requests the student to submit the final report in hardcopy (double sided, ring bound) at least 3 days in advance.

9. After your oral presentation, if the main supervisor requests, the student needs to submit a softcopy (a pdf file) or hardcopy (double sided, ring bound or hard-cover bound) of the final report or the revised final report to the main supervisor, depending on him/her.

10. For hard-cover bound, the binding should be in dark blue with gold lettering. The use of NTU logo is recommended.

APPENDIX 1: ASSESSMENT CRITERIA FOR WSDEG FYP

(I) INTERIM REPORT ASSESSMENT (20%)

Components	ILO	Fail standard (0-4)	Pass standard (5-7)	High standard (8-10)
Project Plan/Strategy (5%)	1, 2	Unable to identify research plan to address problem. Proposal is vague, even after supervisor's feedback.	Able to **identify** research problem and propose **reasonable** research plan with guidelines and procedures to address problem, with **help** from supervisor if needed.	Able to **analyse** research problem clearly and propose **appropriate** research plan with guidelines and procedures to address problem, with **minimal supervision**.
Interim Report (15%)	1, 2	Unable to complete the interim report on time, even after supervisor's feedback. Unable to implement research plan to address problem. Issues, decisions to be made as well as corrective actions to monitor progress against goals are absent or vague.	Able to complete the interim report on time. Able to implement research plan to address problem, **identifying** issues, decisions to be made as well as corrective actions to monitor **progress** against goals.	Able to complete the interim report punctually. Able to implement research plan to address problem, involving **stakeholders** in **reviewing** issues, decisions to be made as well as corrective actions to monitor **effectiveness** of approach against goals.

(II) FINAL ASSESSMENT (80%)

(A) Final Report & Presentation (40%)

Components	ILO	Fail standard (0-4)	Pass standard (5-7)	High standard (8-10)
Organisational, Structure Flow & Citing Reference (5%)	4	Many typos and grammatical errors with poorly constructed sentences. Layout of report is not logical and report is not properly formatted. Few and not up to date references are listed. Lack of citing in literature review of report.	Some typos and grammatical errors. Layout and order of report is acceptable and reasonable logical and report is properly formatted. Adequate references are listed and cited in the report.	No typos or errors of any kind. Properly constructed sentences. Layout and order of report is good and logical. The chapters are well-organised and report is properly formatted. Relevant and valid references are listed and cited in the literature review and throughout the report.
Introduction, Interpretation, discuss, review and compare with relevant key concepts and theories with conclusions (20%)	1,2,3	Review demonstrates inability to **approach** a research study adequately. No or **irrelevant** background information is provided, and analysis of problems and findings demonstrate **weak or misunderstanding** of key concepts and theories. Conclusions and recommendations are **absent or simplistic**, even after supervisor's feedback.	Review demonstrates ability to **conduct** a comprehensive research study. **Relevant** background information is provided, and analysis of problems and findings demonstrate **reasonable understanding** of key concepts and theories. Conclusions and recommendations are **linked** to analysis.	Review demonstrates ability to **design** a research strategy to meet identified needs. **Relevant and appropriate** background information are provided, and analysis of problems and findings demonstrate **in-depth understanding** of key concepts and theories. Conclusions and recommendations demonstrate **critical review** of relevance and usefulness of analysis and findings.

| Demonstration & Oral Presentation (Content, Slide Design, Presentation Sequence, Depth in explanation) (15%) | 5 | Unable to convey intent of presentation. Ideas are presented using insufficient contents with confusing flow or slide design. Explanations demonstrate weak understanding. When engaging audience, unable to respond appropriately to inquiries. | Able to convey intent of presentation. Ideas are presented clearly using adequate content with suitable slide design. Explanations are concise, demonstrating reasonable depth of understanding. When engaging audience, able to respond appropriately to inquiries and seek clarification when needed. | Able to clarify priorities of presentation. Ideas are presented in a logical flow, using effectively curated content highlighting major outcomes. Explanations are persuasive, demonstrating in-depth understanding. When engaging audience, able to adapt responses to audience's needs and encourage interactivity. |

(B) Approach during the Project Year (40%) *

Components	ILO	Fail standard (0-4)	Pass standard (5 to 7)	High standard (8-10)
Initiative & Responsibility (10%)	1	Demonstrate little or no awareness of one's actions and relies heavily on supervisor for direction to fulfil goals and scope of project. Takes little responsibility to identify issues and make decisions, even after supervisor's feedback. Little or no updates to supervisor.	Demonstrate awareness of one's actions and able to monitor and take action to fulfil goals and scope of project. Able to take responsibility to identify priorities, issues and make decisions. Update supervisor adequately.	Demonstrate awareness of one's actions and personal effectiveness. Able to monitor and develop strategies to regulate one's action to fulfil goals and scope of project and build personal brand. Able to take responsibility to resolve issues and make effective decisions. Update supervisor regularly.
Development & Progress (15%)	2,3	Unable to consider factors to analyse information and data adequately. No or inappropriate application of research methods and techniques, with major errors. Unable to present relevant results and discussion.	Able to consider some factors to analyse information and data adequately. Apply appropriate research methods and techniques in a structured manner to identify relationships and linkages that suggest inferences and impact. Able to present relevant results and discussion.	Able to consider sufficient factors to analyse information and data comprehensively. Apply appropriate research methods and techniques in a systematic and meticulous manner to uncover patterns, opportunities and impact. Able to identify potential limitations which may impact conclusions and recommend improvements to research methods.
Achievement & Conclusion (15%)	2,3	Poor ability and not independent. Unable to extend ideas or expand on suggestions, even after supervisor's feedback. No effort or contribution to project. Lack of achievement.	Shows ability in carrying out the research project independently. Able to partially extend ideas and expand on suggestions with adequate understanding which translate to some contribution to new understanding of the problem or issue. The proposed recommendation, solution and/or future work is of some potential use to the stakeholder/sponsor.	Demonstrates ability to learn new technical knowledge and/or research approaches independently. Able to extend ideas and expand on suggestions with good understanding which translate to new significant understanding of the problem or issue. The proposed recommendation, solution or future work has potentially high impact for the stakeholder/sponsor.

* The assessment of the approach can be done in consultation between both faculty supervisor and organisation supervisor

APPENDIX 2: ASSESSMENT RUBRICS FOR ASSESSMENT OF PROJECT WORK IN THE ORGANISATION (APWO)

Criteria for the assessment of student performance in the internship organisation by the organisation supervisor:

ILOs	Focus	CCS	Criteria
Work Organisation Performance Management			
1	Knowledge and Skills	Transdisciplinary Thinking	Able to apply knowledge and skills (whether prior or newly learned) appropriately in the workplace and/or projects/tasks.
4	Problem-solving	Problem Solving	Able to solve problems systematically and effectively.
5	Resourcefulness	Sense Making Decision Making	Able to source for relevant information to make informed judgement, decisions and/or recommendations.
11	Time and Task Management	Self- Management	Able to plan, organise, manage and complete assignments effectively and in a timely manner.
12	Written and Oral Communication	Communication	Able to communicate effectively and appropriately in writing and verbally.
13	Team Work	Collaboration	Able to function effectively with other colleagues/stakeholders in the work environment.
14	Adaptability	Adaptability	Able to function effectively under ambiguity and/or change.
15	Initiative	Problem Solving Sense Making	Able to remain consistently pro-active towards contributing to the work and/or organisation.
16	Responsibility	Developing People	Consistently demonstrates commitment, responsibility, integrity, professionalism and ethical behaviour at the workplace.
17	Persistence to Learn and Improve	Learning Agility	Consistently demonstrates persistence and grit to overcome challenges, to learn and improve continuously at the workplace.
18	Fluency with Tools	Digital Fluency	Able to use tools, whether software or hardware tools, (and learn new ones where necessary) proficiently to accomplish tasks and assignments.
Project Work Management			
24	Project Management	Decision Making	Able to execute projects by managing stakeholders, resources, budgets and resolving problems effectively
25	Stakeholder Management	Collaboration Building inclusivity Influence	Able to manage stakeholder expectations to ensure continuous levels of engagement by identifying and addressing needs and resolving issues in accordance with organisational procedures
26	Requirements Management	Decision Making	Able to prioritise document and analyse different task requirements at various project stages to ensure meeting of project goals
27	Design and Optimization	Problem Solving	Able to design, redesign & develop plans and approaches to maximise the impact throughout the project process in alignment with business goals.
28	Risk Management	Problem Solving Decision Making	Able to identify, analyse, develop risk management solutions to support the continuity of project for business operations and services.
29	Adopt Design Thinking	Creative Thinking	Demonstrates design thinking methodologies and processes to solve specific challenges for the project.
30	Business Need Analysis	Sense Making	Able to identify and scope business requirements and priorities through rigorous information gathering and analysis as well as clarification of the solutions, initiatives and programmes to enable effective delivery.

Please see detailed rubrics for APWO in Appendix 3.

APPENDIX 3: DETAILED RUBRICS FOR APWO

No	Criteria	Description	Unsatisfactory	Functional	Proficient	Advanced	Score
Work Performance Management							
			1	2	3	4	
1	Knowledge and Skills	Able to apply knowledge and skills (whether prior or newly learned) appropriately in the workplace and/or projects/tasks.	Fails to apply knowledge and/or skills as necessary most of the time. Consistently exhibits difficulties in performing work tasks/ assignments. Lacks basic job knowledge and/or skills.	Work reflects adequate application of knowledge and/or skills. Possesses sufficient knowledge of the work to get it done.	Thorough application of knowledge and/or skills for work assignments as necessary and appropriate. Uses opportunities to expand knowledge and/or skills. Shares knowledge and/or skills with colleagues	Exceptional application and augmentation of knowledge and/or skills. Introduces new knowledge and/or skills into the work contexts. Willingly guides/teaches colleagues and shares knowledge. Seeks/applies innovative and relevant techniques.	
2	Problem-solving	Able to solve problems systematically and effectively.	Fails to demonstrate ability to solve problems effectively. Requires more than routine supervision to address problems/issues.	Solves mostly routine problems (or at least able to contribute towards their resolution) systematically and effectively.	Identifies and addresses existing and potential complex problems (and/or contribute significantly to their resolution) systematically and effectively. Demonstrates consideration towards scalability and/or sustainability of solutions as a matter of addressing potential problems.	Demonstrates ability to analyse complex problem issues (especially team ones) systematically, able to apply creative/alternative ways (e.g. from other fields, etc.) to resolve issues effectively. Demonstrates consideration towards scalability and/or sustainability of solutions to address potential problems. Promotes improvements.	
3	Resourcefulness	Able to source for relevant information to make informed judgement, decisions and/or recommendations.	Fails to identify and obtain reliable resources for the purpose of work. Generally dependent on others for resources.	Identifies and acquires resources necessary for a given purpose, sometimes independently.	Identifies, qualifies and acquires resources necessary for a given purpose, oftentimes independently.	Creative in approach to identify, qualify, and acquire all necessary resources (or their alternatives) for a given purpose, oftentimes independently.	
4	Time and Task Management	Able to plan, organise, manage and complete assignments effectively and in a timely manner.	Poor time and task management abilities resulting in timelines mostly not met. Requires frequent reminders.	Completes assignments and able to meet timelines under routine supervision. May miss some non-crucial deadlines.	Completes assignments and able to meet timelines under moderate supervision. Able to plan and organise ahead and clarify and manage expectations of supervisor and/or colleagues.	Completes assignments effectively under minimal supervision and within timelines. Sees the overall picture (and goals) and plans and organises effort, resources and time highly effectively, often times in	

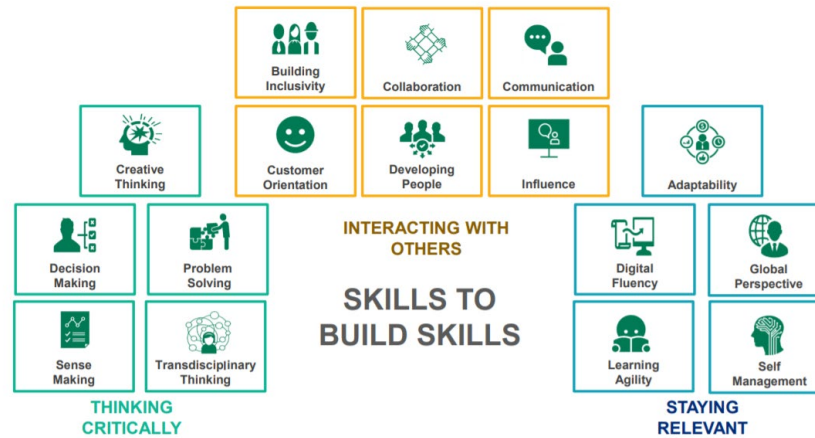| #	Competency					
					close collaboration with supervisor, colleagues and/or stakeholders.	
5	Written and Oral Communication	Able to communicate effectively and appropriately in writing and verbally (including listening).	Poor verbal and/or written communication and listening skills accompanied by a lack of self-awareness of impact on others.	Regularly communicates ideas and relates clearly to others. Able to listen to ideas of others and regularly respond to them in appropriate manners.	Communicates and explains ideas clearly and concisely, getting the message across effectively and in a structured, sensitive manner. Actively listens to others and responds appropriately, reflecting a personal and clear understanding of the viewpoint expressed.	Communicates in a highly convincing and/or persuasive manner. Presents messages using excellent structure, organisation and flow. Balances listening and responding. Synthesizes what has been heard, and responds and evaluates or elaborates on ideas, offering alternative perspectives.
6	Teamwork	Able to function effectively with other colleagues/stakeholders in the work environment.	Unable to function properly with others to achieve work objectives. A lack of respect and regard frequently noted.	Works well with colleagues most of the time with only limited occurrences of communication breakdown or failure to collaborate.	Contributes to the organisation/assignments in valuable ways through active and sustained collaboration with colleagues. Deals with conflict, frustration appropriately.	Contributes in valuable ways to the work objectives not just through and with colleagues, but also helps to enhance the team dynamics. Demonstrates high degree of trust, respect, and collaboration. Promotes and maintains a harmonious/ productive work environment.
7	Adaptability	Able to function effectively under ambiguity and/or change.	Not prepared for uncertainty. Remained inflexible where need for change is clear. Demonstrates resistance to change.	Accepts changes and makes adjustments but often only under instructions.	Accepts changes readily but intelligently and adapts to surrounding circumstances. Adjusts work/routine to meet the needs of change (or cater to ambiguity) when required without need to be told.	Demonstrates ability to cope effectively with change and/or ambiguity. Implements clear coping/adaptation strategies. Provides support to others and improves team/work dynamics to cope with change.
8	Initiative	Able to remain consistently pro-active towards contributing to the work and/or organisation.	Always needing to be instructed and/or motivated. Does not exhibit keenness towards contributing or excellence. Rarely suggests improvements. Requires frequent reminders and supervision.	Suggests or assists in developing solutions to issues and/or improvements.	Suggests innovations to improve operations or streamline procedures. Develops them with moderate supervision.	Consistently proactive in proposing solutions/innovations to problems, and/or highlighting and discussing potential issues. Conduct analysis beyond expectation to identify ways to improve current practice and carries them

#	Competency	Description					
						through with minimal supervision.	
9	Responsibility	Consistently demonstrates commitment, responsibility, integrity, professionalism and ethical behaviour at the workplace.	Demonstrates irresponsible, unprofessional, or unethical behaviours.	Demonstrates acceptable levels of commitment, responsibility, integrity, professionalism, and ethical behaviour.	Demonstrates high levels of commitment, responsibility, integrity, professionalism, and ethical behaviour. Exhibits humility, learns from mistakes and course-corrects promptly.	Consistently demonstrates high levels of commitment, responsibility, integrity, professionalism, and ethical behaviour. Actively reflects such values and principles and encourages others to do likewise. Exhibits humility, learns from mistakes and course-corrects promptly. Role model.	
10	Persistence to Learn and Improve	Consistently demonstrates persistence and grit to overcome challenges, to learn and improve continuously at the workplace.	Gives up easily and/or frequently. Stops the pursuit of an objective at the slightest obstacles.	Diligent and sustains interest enough to get job done (satisficing).	Demonstrates effort in overcoming challenges and/or setbacks to achieve a goal. Focused and not easily discouraged.	Demonstrates exceptional effort in overcoming challenges. Encourages others to remain focused and to overcome. Consistently making effort in learning and improving.	
11	Fluency with Tools	Able to use tools, whether software or hardware tools, (and learn new ones where necessary) proficiently to accomplish tasks and assignments.	Unable to function properly with the tools even under basic expectations.	Perfunctory skills with the required tools. Not familiar with advanced features or functions.	Demonstrates flair with the tools required for work and fluent with the advanced functions and/or features.	Demonstrates exceptional skills with the required tools which contributes significantly to the work assignment. Helps colleagues with these tools or actively guides/coaches them.	
Project Work Management							
12	Project Management	Able to execute projects by managing stakeholders, resources, budgets and resolving problems effectively	Unable to manage projects effectively or efficiently. Frequent lapses in managing the various parts/components of project(s). Manages components in silos and does not see overall project picture. Did not demonstrate ability in planning, monitoring, controlling, or communicating.	Perfunctory project management skills. Able to plan, monitor, control, in order to manage project within set parameters but often under prompting from supervisor or colleague.	Demonstrates highly productive project management skills with little need for guidance and supervision. Well capable of planning, monitoring, controlling, to ensure project completes within specifications and timeline. Shows a clear appreciation of the project objectives along with the constituent components.	Demonstrates exceptional project management skills under minimal guidance and supervision. Highly capable of planning, monitoring, controlling, to ensure project completes well within specifications and timeline. Shows a clear and keen appreciation of the project objectives and remained flexible towards achieving them.	
13	Stakeholder Management	Able to manage stakeholder expectations to ensure continuous levels of engagement by identifying	Unable to manage stakeholder management skills even with guided supervision.	Demonstrates satisfactory stakeholder management skills with guided supervision. Able to	Demonstrates good stakeholder management skills with some supervision. Most of the	Demonstrates excellent stakeholder management skills under minimal guidance and supervision.	

		and addressing needs and resolving issues in accordance with organisational procedures		identify, communicate and able to address needs and resolving issues of stakeholders in accordance with accordance with organisation goals in consultation with supervisors	time, able to accurately identify, communicate and able to address needs and resolving issues of stakeholders in accordance with accordance with organisation goals	Highly capable of identifying, communicating to and addressing needs and resolving issues of stakeholders in accordance with accordance with organisation goals independently	
14	Requirements Management	Able to prioritise, document and analyse different task requirements at various project stages to ensure meeting of project goals	Unable to break down, identify key tasks components in the project, organise and organisation for each project stage even with supervision	Demonstrates satisfactory requirement management skills. Require help to to break down, organise and analyse various necessary task components in each project stage based on its importance to the project	Demonstrates good requirement management skills. Able to break down, organise and analyse various necessary task components in each project stage based on its importance to the project with guided supervision	Demonstrates excellent requirement management skills. Able to break down, organise and analyse various necessary task components in each project stage based on its importance to the project with minimal supervision	
15	Design and Optimization	Able to design, redesign & develop plans and approaches to maximise the impact throughout the project process in alignment with business goals.	Unable to design and develop plans and suggest approaches to maximise project processes.	Show clarity in the development of plans and able to apply approaches to maximise the impact of the project processes with supervision	Show clarity in the development of plans and able to apply approaches to maximise the impact of the project processes with minimal help	Show excellent clarity in the development of plans and apply thoughtful approaches to maximise the impact of the project processes independently	
16	Risk Management	Able to identify, analyse, develop risk management solutions to support the continuity of project for business operations and services.	Unable to identify risk factors project tasks and develop solutions to ensure continuity of project for business operations and services with support.	Able to identify risk factors project tasks and develop solutions to ensure continuity of project for business operations and services with support	Able to identify most risk factors project tasks and adequately develop solutions to ensure continuity of project for business operations and services	Able to identify all risk factors project tasks and develop effective solutions to ensure continuity of project for business operations and services	
17	Adopt Design Thinking	Demonstrates design thinking methodologies and processes to solve specific challenges for the project.	Little knowledge of design thinking and haphazard in approaches of design thinking towards solving the challenge at hand.	Demonstrate satisfactory understanding of design thinking methodologies to identify challenges, engage stakeholders to accurately understand the root of the issue, ideate solutions that is able to solve specific challenges effectively but require guidance to work through the process.	Demonstrate good understanding of design thinking methodologies to identify challenges is required to solve, engage stakeholders to accurately understand the root of the issue, ideate solutions that is able to solve specific challenges effectively but lacking in application of some areas of the designing thinking process.	Demonstrate full understanding & use of design thinking methodologies to identify challenges is required to solve, engage stakeholders to accurately understand the root of the issue, ideate solutions that is able to solve specific challenges effectively and reiterate the process of refining the solution.	
18	Business Need Analysis	Able to identify and scope business requirements and priorities through rigorous	Lack in skills in gathering information to support identification of business	Demonstrate satisfactory ability to gather information effectively to	Demonstrate excellent ability to gather information effectively to	Demonstrate strong ability to gather information effectively to support	

information gathering and analysis as well as clarification of the solutions, initiatives and programmes to enable effective delivery.	requirement and not to able scope the requirements.	support identification of business requirement and able scope the requirements and prioritise them only with help. Demonstrate some understanding of the approaches, solutions and initiatives to drive the delivery of solutions.	support identification of business requirements. Effectively scope the requirements and prioritise them with minimal supervision. Demonstrate understanding of the approaches, solutions and initiatives to drive the delivery of solutions	identification of business requirements. Effectively scope the requirements and prioritise them with minimal supervision. Demonstrate understanding of the approaches, solutions and initiatives to drive the delivery of solutions

Ref:

Critical Core Skills (CCS)