Submission Format

Please append your answers to the end of this brief. Include ALL pages of this brief in your submission.

Do not submit separate documents.

You should submit: -

A short word processed report of approximately 2500 words. (Plus Gantt chart or equivalent)

Structurally, you should submit a report with the following sections: -

Cover page - This should feature your name and assignment title – perhaps a nice graphic, if you like (no page number on this sheet).

Contents page - Lists each section in the document and the page number where that section begins (these pages are numbered i, ii, iii etc).

Introduction - An introduction states the purpose and goals of your report. A few sentences will suffice here (this is always section 1, and numbered page 1).

Sections - sections 2, 3 ------- etc. This is the main body of the report.

Bibliography - A **bibliography** lists all the sources you used when researching your assignment but you have not referenced.

References - List of all the sources that you have referred to in your text, using either the Harvard or Vancouver referencing system, should be listed fully here. ***Do not use Wikipedia as a source.***

Appendices - If required.

Note: Use appropriate schematic for block diagrams and sketches.

Relevant Learning Outcomes and Assessment Criteria

Pass		Merit		Distinction	
LO1	***Formulate and plan a project that will provide a solution to an identified engineering problem.***			**LO1**	
P1	Select an appropriate engineering-based project, giving reasons for the selection.	**M1**	Undertake a feasibility study to justify project selection.	**D1**	Illustrate the effect of legislation and ethics in developing the project plan.
P2	Create a project plan for the engineering project.				

Unit Learning Outcomes

LO1 Formulate and plan a project that will provide a solution to an identified engineering problem.

Assignment Brief and Guidance

Scenario

You have recently been appointed as Assistant Engineering Project Manager within a global manufacturing company "Tourat Industries" whose core business lies in the manufacture and provision of high-quality engineering products and services.

The company brand is facing significant competition and aims to consolidate its position and improve its place in the global market, with an increased emphasis on "Efficiency" across all their products and services. Your line manager is the Senior Project Manager for Engineering Development and you have been seconded to his team to provide project engineering support.

To test and improve your competency, you have been instructed to formulate and plan an engineering project of your choice, using your own experience and technical knowledge.

Your line manager has requested that your project addresses the core theme of Efficiency, as highlighted in item 1 below.

You have also been requested to provide evidence of collaboration with other company disciplines and team members.

Your line manager has advised that you are to deliver a professional engineering project, therefore your assignment will need to address a range of project topics in addition to engineering design. To support your professional development your project will need to convey environment and ethical factors relevant to your project and the company's business activities.

You should also provide some evidence of original thought and innovation along with entrepreneurial skills, applicable to your work.

In addition to the above your project should address the following key areas:

1. *Efficiency*
   Define what this means and provide evidence of research and engineering techniques that can be implemented to improve product or service performance in relation to your project.
2. *Forecasting and Project Planning Methods.*
   Define the techniques which you have considered and used within your project.
   (A sufficiently detailed Gantt chart along with any other appropriate methods can be included within the submission format).
3. *Project Risks and Hazards.*
   Define those which you have encountered and are relevant to your project and discuss the practical methods and techniques that you have used to mitigate such risks.
4. *Engineering Tolerances and Factors of Safety*
   Explain where these have been considered and applied within your project.
5. *Examples of Relevant and Current Legislation*
   Explain those which are relevant to your industry and your project.

Task

Your assignment will require you to complete the following:

- Select an appropriate engineering-based project and formulate and develop a professional project plan.
- This will be in the form of a comprehensive report in which you will consider several engineering-based options, appropriate for your own level of experience.
- You may carry out a feasibility study to help choose and to justify your final project selection from these options, being sure to acknowledge the core theme of safety throughout.
- You may use a project plan template or any from your previous experiences, however your plan should be clear and concise in its format.
- (Be sure to include a front title sheet and contents page with page numbers).
- You are strongly encouraged to demonstrate your own competency and professionalism.
- Your report should address all the previously listed factors where these are appropriate and you should include a discussion on how your project has been influenced by relevant legislation and any important ethical factors, both within your specific industry and in engineering in general.

Important notes:

Guidance on the set theme can be found in the 'Guidance for Students' document in the appendix to this assignment brief.

Recommended Resources

Type of Resource	Resource Titles	Links
Books	Energy Efficiency and Management for Engineers (MECHANICAL ENGINEERING) Hardcover – 17 Nov. 2019 Authors: Mehmet Kanoglu and Yunus A. Cengel Dr.	ISBN-10: 1260459098 ISBN-13: 978-1260459098 Publisher: McGraw Hill
Books	First Fuel : India's Energy Efficiency Journey and a Radical Vision for Sustainability Hardcover – 23 July 2021 Author: Padu Padmanabhan	ISBN-10: 9390742234 ISBN-13: 978-9390742233 Publisher: Pan Macmillan Publishing India Pvt. Ltd.
Books	Designer's Guide to Energy Efficient Electrical Installations Author: The IET	ISBN-13: 978-1-78561-181-0 ISBN-10: 178561181X Publisher: The IET
Books	Energy Efficiency Concepts and Calculations Authors: Daniel Martinez, Ben Ebenhack and Travis Wagner	ISBN: 9780128121115 Publisher: Elsevier
Books	The Digital Transformation of Supply Chain Management Author: Michela Pellicelli	ISBN: 9780323855327 Publisher: Elsevier
Books	IoT for Smart Operations in the Oil and Gas Industry Author: Mohsen Amini Salehi	ISBN: 9780323911511 Publisher: Elsevier
Books	System Efficiency by Renewable Electricity: Strategies for Efficient Energy Supply until 2050 Author: Prof. Dr. Günther Brauner (2022)	Softcover ISBN 978-3-658-35137-3 eBook ISBN 978-3-658-35138-0 Publisher: Springer
Books	Product Lifecycle Management. Green and Blue Technologies to Support Smart and Sustainable Organizations Editors: Osiris Canciglieri Junior, Frédéric, Noël, Louis Rivest, Abdelaziz Bouras.	eBook ISBN: 978-3-030-94399-8 Publisher: 18th IFIP WG 5.1 International Conference, PLM 2021, Curitiba, Brazil, July 11–14, 2021, Revised Selected Papers, Part II

Books	Women in Mechanical Engineering Energy and the Environment Editors: Margaret Bailey, Laura Shackelford	Publisher: Springer Cham Series ISSN 2509-6427 Series E-ISSN 2509-6435

Useful resources for underlying principles, examples of articles for the theme:

Type of Resource	**Resource Titles**	**Links**
Web	Energy efficiency must be an industrial strategy priority	https://www.raeng.org.uk/policy/policy-themes/industrial- strategy/energy
Web	Why doing more with less won't cost the earth – it'll save it	https://www.theiet.org/impact- society/sectors/design-and- manufacturing/design-and- manufacturing-blog-posts/why- doing-more-with-less-wont-cost-the-earth-it-ll-save-it/
Web	Energy technologies for net zero	https://www.theiet.org/impact- society/factfiles/energy- factfiles/energy-generation-and- policy/energy-technologies-for-net-zero/
Web	Efficient engineering of comprehensive projects in energy automation	https://www.copadata.com/en/industries/energy- infrastructure/energy- insights/efficient-engineering-energy/
Web	Digitalisation, sustainable industrialisation and digital rebound – Asking the right questions for a strategic research agenda	https://www.sciencedirect.com/science/article/pii/S22146296210038 7X
Web	Connecting data driving productivity and innovation	https://www.raeng.org.uk/publications/reports/connecting-data- driving-productivity
Web	Case study 12: Barts Sustainability Strategy - Achieving energy efficiency and improved patient experience	http://reports.raeng.org.uk/engineering-better-care/case-study-12- barts-sustainability-strategy/
Web	Additive Manufacturing - Moving Towards Zero Waste Manufacturing The Additive Manufacturing Sustainability Issue	https://www.raeng.org.uk/publications/other/chris-tuck
Web	Energy Efficiency	https://www.theiet.org/media/4096/sub1082.pdf

Additional materials
Neil G. Siegel (2019) Engineering Project Management. 1st edition: Wiley
Peter F Cranston (2019) The Project Engineer's Toolkit. Cranston Engineering Ltd.

APPENDIX…

Guidance for Students

You should read this information before starting on your project. You should refer to these instructions as you complete work for this unit.

- You must complete the project in order to complete your work for this unit.
- Your centre will set a project brief based on the topic and theme released by Pearson in the first week of March of every year.
- Read the brief and think about what the project brief is asking.
- Research what the project brief is asking. How can you approach the problem, opportunity, hypothesis and requirements being posed?
- Apply a range of secondary research sources to plan/scope and support the project and its findings. Secondary research sources may include textbooks, journal articles, newspapers and magazine articles (not factual accounts).
- Develop your project plan based on the deliverables of the project, the constraints of the project and the assumptions made.
- Conduct your project according to your stated project plan and meet with your tutor to receive a sign-off at each stage of the project process.
- Primary research sources may include original first-hand accounts, legal and historical documents, results of experiments and research data collection. Apply both qualitative and quantitative research methods to evaluate data collected from primary research.
- Keep notes of your progress throughout the project. It is important to keep a record of your work, which must be used to record the development of your ideas and your progress through the project. For example, a logbook could be used and include:
    - A record of what you did, when and what you were thinking.
    - A record of where things went wrong and what you did to overcome any unexpected results.
- You will be asked to reflect on the success of your project and your own performance in a personal performance review at the end of the project. This is a written reflection of around 500 words.