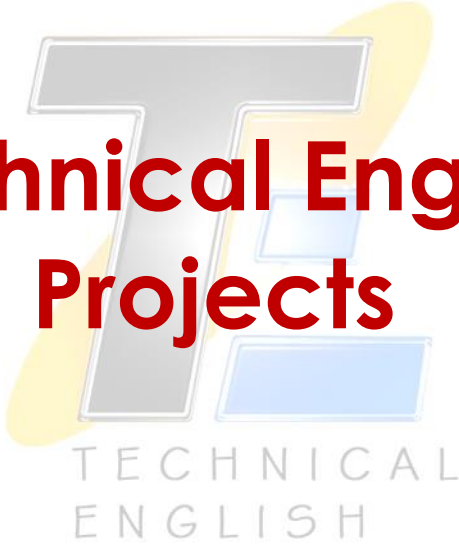


San Carlos University of Guatemala
Engineering School
Technical Language Department



Technical English 4 Projects

First Semester 2020

General Specifications

The projects will be done **individually** or in **pairs** at most.

The date to submit the report in digital version (Word and PDF) and oral presentation (a YouTube link with a video) is February 2nd until midnight (one day before the exam). The digital report and YouTube link will be sent to the following mail:

ingles@ing.usac.edu.gt

In the subject of the message of the mail students must include the following phrase: "Proficiency project, Technical English #", instead of the last symbol, place the number of course you are taking the exam about. In the body of the message place the names and ID's of all the member or members included in the project.

On the other hand, the written version of the report will be turned in during the exam (February 3rd) in a **letter size yellow folder** with fastener and a cover page identifying at least: name or names of the members, ID numbers (of the university), date, affiliation and the phrase "Proficiency project, Technical English #".

The following rubric must be included on the cover page:

Presentation	/ 15
Introduction	/ 15
Objectives	/ 15
State-of-the-art (Theory)	/ 10
Conclusions	/ 15
Annexes	/ 5
References	
Oral Presentation	/ 25

You will choose ONLY ONE PROJECT according to your career (or the closest one) or your partner's career (in case you did it in pairs).

Civil Engineering

Topic: Safety and Health Programs

Project Name: OSHA standards in construction projects

Objective: To get the notions of the standards that must be followed in order to preserve the integrity of employees by means of safety and health programs.

General Description: This project consists in visiting the Engineering Research Center (*Centro de Investigaciones de Ingeniería*) in order to identify the way in which that place puts into practice the fundamentals of the OSHA standards.

Procedure

The students will have to visit the Engineering Research Center which is located in the annexed parking lot of our school. The purpose is to interview the authorities and find out how they keep their safety and health cautions and identify how much it is adapted to the OSHA standards.

In that laboratory several types of essays are made, so one of those has to be chosen and besides describing the process inherent, the students have to profoundly analyze every single work stations in order to determine what characteristics of Safety and Health are utilized and how much they are adapted to the OSHA standards.

Structure of the report

The students will present their work in the following way:

- A written report. The minimum aspects to be covered are:
 1. Cover Page
 2. Index
 3. Introduction
 4. Objectives (one general and at least three specific)
 5. Theoretical and Practical Content (including pictures and quoting if necessary)
 6. Conclusions
 7. Annexes

8. Bibliography or electronic references

- A video of the group members describing COMPLETELY in English the features that they found during the research, shooting the video in the Center facilities, at least one part of the recording.

Vocabulary

- | | | |
|---------------------|--------------------|-------------------------|
| 1. Absorption | 11. Dermal | 21. Noise |
| 2. Accident | 12. Ergonomics | 22. Occupational Safety |
| 3. Area sampling | 13. Flammable | 23. Radiation |
| 4. Biological agent | 14. First Aid | 24. Risk |
| 5. Breathing zone | 15. Glare | 25. Safety |
| 6. Carcinogen | 16. Hazard | |
| 7. Certified Member | 17. Health | |
| 8. Chemical | 18. Hypersensitive | |
| 9. Contaminant | 19. Incident | |
| 10. Corrosive | 20. Inhalation | |

Industrial Engineering

Topic: Control Charts

Project Name: Statistical Process Control Charts

Objective: To understand the way in which one of the Control Charts is helpful in the different industries, describing the necessary steps to be done in order to use them.

General Description: This project consists in choosing any type of product in an enterprise or small business in order to apply a statistical analysis using one of the types of control charts that are available.

Procedure

The students have to research about the different types of control charts and they must include examples and theory of the investigation they made. Besides that, they have to choose one specific product of any type of industry in order to apply the theory and practice of one of the different types of control charts. The method of sampling can be used for this purpose or any another one considered to be applicable to the chosen product and the research that was made.

Structure of the report

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- A video of the group members describing COMPLETELY in English the type of Control Chart that was selected, as well as the way in which the theory was put into practice with the chosen product.

Vocabulary

- | | | |
|--------------------------|------------------------|------------------------------|
| 1. Average | 11. Median | 21. Variables |
| 2. Confidence Interval | 12. Mode | 22. P Control Charts |
| 3. Continual improvement | 13. Moving range | 23. NP Control Charts |
| 4. Control chart | 14. Nonconformity | 24. X-bar & R Control Charts |
| 5. Control limit | 15. P Control Charts | 25. X-bar & S Control Charts |
| 6. Convenience sampling | 16. Population | |
| 7. C - Control Chart | 17. Range | |
| 8. Correlation | 18. Standard Deviation | |
| 9. Individual | 19. Stratification | |
| 10. Mean | 20. Trends | |

Science and Systems Engineering

Topic: Business Administration

Project Name: E-business proposal

Objective: To have the necessary knowledge concerning the structure of an E-business.

General Description: This project consists in proposing the different components of an E-business applied to a specific industry.

Procedure

The students have to investigate the different aspects that have to be considered in order to offer an E-business (hosting, suite, domain name, payment and charge method, etc.)

The study body has to choose one type of industry where E-business is ideally applied. The previous choice will be evaluated by the professor and afterwards approved or rejected (in the last case, another proposal will be presented by the students), depending on how applicable it is.

Additionally, a template of the project has to be included as an example of a hypothetical E-business. It is important to keep in mind that E-business IS DIFFERENT than E-commerce.

Structure of the report

The students will present their work in the following way:

- A written report. The minimum aspects to be covered are:
 1. Cover Page
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 5. Theoretical and Practical Content (including pictures and quoting if necessary)
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 7. Annexes
 8. Bibliography or electronic references

- A video of the group members describing COMPLETELY in English the components that were taken in consideration as part of an E-business, as well as the description of the sequence in which the E-commerce works.

Vocabulary

- | | | |
|--|----------------------------|------------------------------------|
| 1. Alias | 11. Domain name | 21. Search Engine Optimization |
| 2. Applet | 12. Encryption | 22. Server |
| 3. Application Program Interface (API) | 13. Ethernet | 23. TCP/IP |
| 4. Authentication | 14. File transfer protocol | 24. Uniform Resource Locator (URL) |
| 5. B2B | 15. Firewall | 25. Virtual Private Network (VPN) |
| 6. Bandwidth | 16. Gateway | |
| 7. Browser | 17. Host | |
| 8. C2B | 18. IP Number | |
| 9. Catalog | 19. Local Area Network | |
| 10. Cookie | 20. Login | |

Chemical/Environmental Engineering

Topic: ISO 9000 Quality Management

Project Name: ISO 9000 Quality Management in Chemistry Labs

Objective: To determine the level of adherence of the different chemistry laboratories in Engineering School to the ISO 9000 Quality Management regulations.

General Description: This project consists in researching the level of adaptation of the different Chemistry laboratories of Engineering School to the standards of the ISO 9000 Quality Managements norms, so as to report that level and propose an improvement in the area.

Procedure

The students have to visit the different chemistry laboratories in Engineering School, covering the different areas such as: basic chemistry (*química básica*), physical chemistry (*fisicoquímica*) and unit operations (*operaciones unitarias*), in order to determine the level of adaptation of those places to the ISO 9000 Quality Management norms.

All the research has to be expressed through data collection concerning the subject previously mentioned. Regardless of the level of adaptation encountered, there will be a report that gathers all the interviews, sequences, and activities that were implied in the process.

In case of finding an absence of almost null adaptation of the norms, the purpose will be to elaborate a proposal of aspects to be improved by the different laboratory authorities so that the attainment of an adequate level becomes easier.

Structure of the report

The students will present their work in the following way:

- A written report. The minimum aspects to be covered are:
 1. Cover Page
 2. Index
 3. Introduction

4. Objectives (one general and at least three specific)
 5. Theoretical and Practical Content (including pictures and quoting if necessary)
 6. Conclusions
 7. Annexes
 8. Bibliography or electronic references
- A video of the group members describing COMPLETELY in English the data collection and the recommendations regarding the ISO 9000 Quality Management regulations inside the mentioned laboratories.

Vocabulary

- | | | |
|--------------------------|----------------------------|------------------|
| 1. Audit | 11. Monitoring | 21. Supplier |
| 2. Audit program | 12. Output | 22. System |
| 3. Complaint | 13. Outsource | 23. Traceability |
| 4. Conformity | 14. Performance | 24. Validation |
| 5. Continual improvement | 15. Policy | 25. Verification |
| 6. Customer satisfaction | 16. Provider | |
| 7. Effectiveness | 17. Quality management | |
| 8. Feedback | 18. Regulatory requirement | |
| 9. Innovation | 19. Risk | |
| 10. Measurement | 20. Service | |

Electrical/Electronic Engineering

Topic: Non-classical Management Tools

Project Name: Non-classical Management tools in the Electrical/Electronic industry

Objective: To choose one specific electrical or electronic type of business as if the students were the owners, in order to apply non-classical management tools knowledge.

General Description: This project consists in choosing one type of specific electrical or electronic business in order to identify and theoretically justify in which cases applying non-classical management tools will ease and favor the chosen business.

Procedure

Students have to research among the different types of electrical/electronic industries depending on their careers, and pick one of them in order to:

1. Identify what functions of the enterprise can be developed in a better way utilizing outsourcing. Students must justify the reasons why they would utilize outsourcing instead of the own administration.
2. Choose one or more successful and international enterprises that can be used as a benchmarking adequate reference, and justify why and how the chosen enterprise can adapt and reach the ideal circumstances of the big reference.
3. Considering the enterprise's purposes, describe in which cases strategic alliances are going to be beneficial for the enterprise you chose. You should analyze the following aspects: strategy development, partner assessment, contract negotiation, alliance operation and alliance termination.
4. Research other types of non-classical tools and justify in which cases they would be advantageous for electrical/electronic specific functions such as: classifying components, connecting devices, etc. (*Suggestions: empowerment, coaching, JIT, outplacement, etc.*)

Structure of the report

The students will present their work in the following way:

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 4. Objectives (one general and at least three specific)
 5. Theoretical and Practical Content (including pictures and quoting if necessary)
 6. Conclusions
 7. Annexes
 8. Bibliography or electronic references
- A video of the group members describing COMPLETELY in English the functions of the enterprise they chose, as well as the structured way in which they determined the convenience of hypothetically adopting the non-classical tools as described in the procedure.

Vocabulary

- | | | |
|--------------------------|---------------------------|-------------------|
| 1. Benchmarker | 11. File sharing | 21. Performance |
| 2. Benchmarkee | 12. Flowchart | 22. Quality |
| 3. Code of conduct | 13. Globalization | 23. Reengineering |
| 4. Competitive | 14. Groupware | 24. Stakeholder |
| 5. Core competency | 15. Implementation | 25. Survey |
| 6. Economic Productivity | 16. Internal benchmarking | |
| 7. Effectiveness | 17. Key business process | |
| 8. Efficiency | 18. Leadership | |
| 9. Enabler | 19. Metrics | |
| 10. Entitlement | 20. Partner | |

Mechanical Engineering

Topic: Flowcharts

Project Name: Manufacturing processes flowcharts

Objective: To apply flowcharts in different manufacturing processes.

General Description: This project consists in choosing at least three different manufacturing processes in order to describe them verbally and afterwards proposing flowcharts for them.

Procedure

The students must review about the different manufacturing processes that they have studied (involving different machines), and then choosing at least three of them applied to specific types of products which are produced in industries.

Likewise, students have to verbally describe the three (or more) processes in a logical sequence, first stating the final product where the processes are applied.

Finally, and the most important part is to elaborate the respective flowcharts of all the processes clearly describing the actions and decisions that must be made in order to assure the correct manufacture or assembly of the final product.

Structure of the report

The students will present their work in the following way:

- A written report. The minimum aspects to be covered are:
 1. Cover Page
 2. Index
 3. Introduction
 4. Objectives (one general and at least three specific)
 5. Theoretical and Practical Content (including pictures and quoting if necessary)
 6. Conclusions
 7. Annexes

8. Bibliography or electronic references

- A video of the group members describing COMPLETELY in English the final products of the selected processes, a summary of the processes and the description of the elaborated flowcharts.

Vocabulary

1. Process	11. Off-page connector	21. Card
2. Predefined process	12. Storage	22. Punched tape
3. Alternate process	13. Extract	23. Stored data
4. Delay	14. Or (logical symbol)	24. Magnetic Disk (Database)
5. Preparation	15. Summing junction	25. Internal storage
6. Manual operation	16. Data (Input/Output)	
7. Flow line	17. Document	
8. Terminator	18. Multi-document	
9. Decision	19. Display	
10. Inspection	20. Manual input	

Math and Physics Bachelor Degrees

Topic: Marketing plan

Project Name: Individual job market promotion

Objective: To write a marketing plan with the purpose of strengthening the reputation of the career.

General Description: This project consists in elaborating a marketing plan with the purpose of showing the strengths and advantages of hiring professionals of these careers.

Procedure

The students have to elaborate a structured marketing plan of their careers. They have to respect and comply with the stages of a marketing plan shown in the booklet, which in summary are:

1. Situation Analysis and Marketing Audit
2. Set marketing objectives
3. Stage three: Describe your target market
4. Marketing tactics
5. Marketing controls

Additionally, since an individual can be classified as a small business, students have to cover and describe all the seven aspects outlined in the booklet.

Structure of the report

The students will present their work in the following way:

- A written report. The minimum aspects to be covered are:
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 6. Conclusions
 7. Annexes

8. Bibliography or electronic references

- A video of the group members describing COMPLETELY in English the marketing plan of themselves, making a convincing oral presentation in order to be considered as potential employees or transcendental consultants

Vocabulary

- | | | |
|--------------------------|------------------------------|--------------------------|
| 1. Advertising | 11. Distribution Channel | 21. Product mix |
| 2. Business marketing | 12. Diversification strategy | 22. Promotion |
| 3. Business plan | 13. Ideation | 23. Right brain learning |
| 4. Business strategy | 14. Indirect marketing | 24. Sales Forecast |
| 5. Client | 15. Kinesthetic learning | 25. Segmentation |
| 6. Competitive advantage | 16. Left brain learning | |
| 7. Consumer | 17. Market segmentation | |
| 8. Consumerism | 18. Marketing communication | |
| 9. Database marketing | 19. Online consultancy | |
| 10. Direct competition | 20. Positioning | |