School: *Science & Technology*
Department: *Computer & Information Technology*
Unit Name: *Research Methods and Technical Writing*
Unit Code: CSC325
Credit factor: 3
Estimated time: *6 hrs per week*
Prerequisite: *Digital literacy*
Purpose of the unit*:* To help the student develop the knowledge and technical skills necessary to research, design, develop, evaluate computer systems and effectively communicate results obtained from experimental or technical work. The course covers the fundamental aspects of research involved in writing a technical document and developing technical writing skills.

Unit Description:			
Unit-level Intended learning outcomes	**Assessment**	**Learning activities and approaches**	**Evaluation**
Upon successful completion of this unit, students will be able to:	***These outcomes will be assessed by a multiplicity of the following assessments procedures:***	***Teaching Methodologies and Instructional Materials***	***Evaluations procedures and weights***
At the end of the course, students will be able to: - 1. Explain the various elements of a research proposal; 2. Differentiate research methods, research methodologies, and research design. 3. Plan and budget for various project activities; 4. Write a technical document for software;	i) Weekly formative assessments (guided discussion forum) ii) Weekly learning activities (online and offline activities) iii) Work collaboratively in groups to complete assigned tasks. iv) Summative assessment (project technical document)	i) Synchronous online interactions (Video/teleconference, live chats, student presentations…) ii) Asynchronous interactions (Discussion forum, student presentations, and interactive questions and answers) iii) Asynchronous interaction with course content.	i) Assignments : 10% ii) Mid-term : 30% iii) Project: Technical document 30% iv) Final Exam: QA: 30%

Unit content [Indicative content]
1. Writing a Technical Research Paper • Define a technical writer • Structure of a Technical Research Paper • Style of writing Technical Research Paper 2. The fundamentals of technical writing. • Define technical writing. • Discuss the characteristics of a good technical document • Differentiate technical writing from other writings. • Explain the technical document life cycle 3. Technical Documentation Deliverables • Explain what type of information or content goes into a technical document.

- Discuss the three types of knowledge required for technical writing

4. The Technical Writing Process
   - Explain the technical writing process
   - Develop a greater understanding of collaborative writing.
   - Write for multiple audiences
5. The use of Visuals in Technical Documents
   - Identify criteria for creating effective and efficient visuals
   - Define the meaning of a term by placing it in a certain classification and then differentiating it from all the other terms in the same classification
   - Explain a term using various types of extensions
6. Mechanism Description
   - Describe mechanisms precisely and accurately e.g. size, shape, color, finish, texture, and material.
   - Properly define terms using classification and differentiation techniques.
   - Use extensions e.g. figures, diagrams, or photographs
7. The structure of a technical report.
   - Explain the different sections of a technical report
   - Discuss the criteria for reviewing a technical report

8. Writing the Technical Report
   - Background of study
   - Problem statement
   - Research Goal & Objectives
   - Scope of study
   - Significance of study
9. Research methodology
   - Research design
   - Sampling
   - Data collection
   - Data analysis
   - System Designs
10. Ethics in Research

References

Core resources for the Unit

1. Adjeo, J. K. (2018, January 28). Research Methods. OER Commons. Retrieved April 22, 2020, from http://oer.avu.org/handle/123456789/490
2. Etter, Andrew. Modern Technical Writing An Introduction to Software Documentation
3. Kumar, Ranjit. Research Methodology: A step-by-step guide for beginners

Resources for further reading

1. Saunders-Smit, G. (2016, February 15). Research Methodologies. OER Commons. Retrieved April 22, 2020, from https://ocw.tudelft.nl/courses/research-methodologies/3.
2. Brinkman, W. (2016, March 03). Empirical Research Design. OpenCourseWare. Retrieved April 22, 2020, from https://ocw.tudelft.nl/courses/empirical-research-methods/ *[…]*
3. Markel, U. M. (2015). Technical communication. United States: Bedford/Saint Martin's.

4. Riordan, D. G. (2013). Technical report writing today (10th ed.). Boston, MA: Heinle & Heinle Publishers Inc., U.S.
5. Eisenberg, A. Effective Technical Communication, 2nd ed. McGraw-Hill, 1992.
6. Rizvi, A. M. (2005). Effective technical communication 1st edition. New Delhi: McGraw Hill Higher Education.
7. Alred, G. J., Brusaw, C. T., & Oliu, W. E. (2015). Handbook of technical writing. Boston: Bedford/St. Martins.