

**Core Curriculum  
Course Proposal Cover Sheet**

Department : Engineering Technology  
College COST  
Department Head George Mollick

Course Prefix & Number ENGR 203 and MET 203

Course Title Engineering Economy

Course Description:

Principles of economics equivalence; time value of money, analysis of single and multiple investments; comparison of alternatives; capital recovery and tax implications; certainty; uncertainty; risk analysis; public sector analysis; and break-even concepts.

**Checklist:**

Course Proposal Cover Sheet

Foundational Component Area Justification Form

Student Learning Outcome Alignment Form

# **SOCIAL and BEHAVIORAL SCIENCE**

## **FOUNDATIONAL COMPONENT AREA JUSTIFICATION FORM**

Rationale: Please provide a rationale for the course which explains how the course being proposed fits into this component based on the component's description. For your convenience, the overall description and rationale for this component are included below.

Social and Behavioral Science (from THECB Chapter 4: 4.28)

Courses in this category focus on developing ideas and expressing them clearly, considering the effect of the message, fostering understanding, and building the skills needed to communicate persuasively

Courses involve the command of oral, aural, written, and visual literacy skills that enable people to exchange messages appropriate to the subject, occasion, and audience

The following four Core Objectives must be addressed in each course approved to fulfill this category requirement: Critical Thinking Skills, Communication Skills, Empirical and Quantitative Skills and Social Responsibility.

- Critical Thinking Skills: to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information;
- Communication Skills: to include effective development, interpretation and expression of ideas through written, oral and visual communication;
- Empirical and Quantitative Skills - to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
- Social Responsibility: to include intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities

Students in Engineering Economy will break down complex issues using existing data, and social, and ethical constraints to provide a transparent process on how they arrived at solutions. Students will use both written and oral communications skills to present findings of case studies. Working with these case studies, homework problems and exams, students will analyze datasets presented to determine:

- Depreciation of assets /Present worth
- Present value of capital
- Rate of return
- Risk
- Impact of inflation

- Comparing rates of return and associated risks

Students will describe ethical decision making focusing on the ethics and the Professional code of conduct by the National Society of Professional Engineers. While much of class focuses on determining the costs of products, projects, and services, there is an ethical dimension when examining these issues. Students will be required to show how they would proceed through a decision making process starting with a clear definition of the problems and goals through assembling and constructing relevant data and analysis models to generate alternatives and then evaluate them with known risks.

**STUDENT LEARNING OUTCOME ALIGNMENT FORM**  
**Social and Behavioral Science**

**Course Prefix/Number: ENGR 203/MET 203**

**Course Title: Engineering Economy**

**Core Objective: Critical Thinking** CT1: Students will evaluate evidence in analysis, interpretation or arguments

Course SLO(s): Students will synthesize varied components of information to form a rational conclusion.

Learning Activities: Students will use case studies to focus on capital equipment options and payback period expenses.

Means of Assessment: 70% of students will achieve a “meets expectations” level using a course rubric, in a written report evaluated using a course rubric.

**Core Objective: Critical Thinking** CT2: Students will synthesize varied components of information to form a rational conclusion.

Course SLO(s): Student will analyze national and international labor rates

Learning Activities: Students will participate in class doing analytical problems, guided practice, and group presentations. Students will provide a written report with their analysis of the case study.

Means of Assessment: 70% of students will achieve a “meets expectations” level using a course rubric, evaluating the written report with their analysis of the case study.

**Core Objective: Communication** C1: Students will express ideas in written, visual or oral forms to a range of diverse audiences in multiple settings.

Course SLO(s): Students will present recommendations from an economic analysis case study to the class. Students will provide a written report with their analysis of the case study.

Learning Activities: Students will use case studies to focus on national and international labor rates and depreciation. Students will provide a written report with their analysis of the case study.

Means of Assessment: 70% of students will achieve a “meets expectations” level using a course rubric, evaluating the written report with their analysis of the case study.

**Core Objective: Empirical and Quantitative Skills** EQS1: Students will gather, interpret or use numerical data/observable facts to arrive at an informed conclusion.

Course SLO(s): Students will do simple engineering economic analysis.

Learning Activities: Students will use Excel to build mathematical models to evaluate capital equipment options and payback period expenses in a case study.

Means of Assessment: 70% of students will achieve a “meets expectations” level as evaluated by a course rubric that evaluates the accuracy of the Excel model and the output .

**Core Objective: Social Responsibility** SR1: Students will demonstrate an understanding of different cultural perspectives.

Course SLO(s): Students will apply professional ethics in Engineering Economic decision making.

Learning Activities: Students will use case studies to focus on national and international labor rates and depreciation. Students will provide a written report with their analysis of the key ethical questions presented in the case study.

Means of Assessment: 70% of students achieve a “meets expectations” level as evaluated by a course rubric measuring the identification of an ethical dilemma and an ethical response.

As department head, I will ensure that all faculty that teach this course are aware of the requirements that these core objectives and learning strategies be incorporated into the above referenced course. This action is taken so that Tarleton State University will be in compliance with Texas Higher Education Coordinating Board foundational component area and core objective requirements for the General Education Core Curriculum.

Signature\_\_\_\_\_

We, the undersigned faculty, support the proposed changes to this course and agree to incorporate them into our section of the above referenced course. This action is taken so that Tarleton State University will be in compliance with Texas Higher Education Coordinating Board foundational component area and core objective requirements for the General Education Core Curriculum. *(Signed document should be kept in department office, listing names below on the electronic document implies acceptance)*