



NATIONAL UNIVERSITY OF ENGINEERING
COLLEGE OF INDUSTRIAL AND SYSTEMS ENGINEERING

INDUSTRIAL ENGINEERING PROGRAM

GP535 – INDUSTRIAL ENGINEERING PROJECT I

I. GENERAL INFORMATION

CODE	: GP535 – Industrial Engineering Project I
SEMESTER	: 9
CREDITS	: 02
HOURS PER WEEK	: 04 (Theory – Practice)
PREREQUISITES	: GP314 – Marketing GP404 – Production Planning and Control
CONDITION	: Mandatory

II. COURSE DESCRIPTION

It is a subject of a practical nature and its purpose is for students to analyze and apply the methodology of the scientific research process for the development of their thesis project, showing commitment to their professional career.

The main themes of the units are: Scientific Research. Investigation methodology. Interpretation and Communication of Research Results.

III. COURSE OUTCOMES

At the end of the course the students will:

- Analyze the Scientific Research Methodology, to develop their research work.
- Plan the Research, considering the Schedule and the Research Budget
- Identify the problems of research in Industrial Engineering, of the space horizon where he will develop his thesis and delimits.
- Analyze the solution alternatives to the problem identified in the organization.
- Use the best Methodological Design, to apply it in their research work.
- Apply methodologies of industrial engineering and scientific research methodology, in developing its Applied Engineering Project, for the preparation of their professional thesis.
- Explain the procedures related to Interpretation and Communication of results.
- Technically evaluate the results and make an economic-financial analysis of the implementation of the proposed solution.

IV. LEARNING UNITS

FIRST PART: SCIENTIFIC RESEARCH

- Introduction to scientific research. Review of the science concept. General fundamentals of scientific research. Features. Types of research, examples. Forms of investigation. Stages of scientific research. Structure of the Thesis Plan. Practical aspects: Prepare an evaluation table of possible topics for your research.
- The research problem. Significance. Delimitation of the investigation. Concepts of research Problems. Statement of the research problem according to the chosen theme. Research Problem Formulation. Elements of a research problem. Variables definition. Identification of specific problems.
- Development of Workshop No. 01: Formulation of the Research Problem. Goals. Hypothesis. Consistency Matrix Main and specific objectives and hypotheses.
- Development of the Theoretical Framework. Find information in primary and secondary sources, for the preparation of your Thesis Advance.
- Methodology to be developed in its independent variable, for research. Consistency Matrix Development of Workshop No. 02. Review and presentation of the Second Advance of the Thesis Plan.

SECOND PART: RESEARCH METHODOLOGY

- Research Methodological Design. Application of Methodological Design. Research level. Follow-up to the elaboration of the Thesis Plan. Exposition and review of the Thesis Plan. Consistency Matrix until identification of variables and indicators. Final Thesis Plan and the Research Thesis. Structure of the Applied Research Thesis.
- Review of the justification and importance of the thesis. Design and development of instruments to apply to the sample. Reagents. Explanation of Consistency Matrix up to reagents. Examples
- Advancement of thesis up to Cap. IV: "Methodological development of the contribution". Solution. Consistency Matrix Review up to alternative answers.

THIRD UNIT: DATA PROCESSING, INTERPRETATION AND COMMUNICATION OF RESULTS

- Data treatment. Preparation of tables for survey registration. Interpret the Results of the Research. Economic financial analysis
- Communication of Research Results. Conclusions and recommendations. Final presentation. Presentation of a model at the Projects fair.

V. LABORATORIES AND PRACTICAL EXPERIENCES

- Workshop 1: Choice of Research Theme
- Workshop 2: Research Problem Formulation
- Workshop 3: Thesis Plan
- Workshop 4: Research Thesis

VI. METHODOLOGY

The course will be held predominantly with expositions, transmission of knowledge and experiences, as a complementary method the Workshops will be held in which the Group Dynamics and Discussion of the progress of the Thesis Plan will be applied.

The following guidelines will be followed:

- The teacher will use the exposition method to transmit their knowledge and experience.
- The theoretical aspect includes individual or group processes that include exposure and casuistry.
- Invitation to theses and graduates, to present their thesis.
- Interactive processes incorporate dialogue, group discussion and advice.

The methodology is based on a strong participation of students, through rigorous research, teamwork and foundation of the conclusions obtained. Multimedia support and computational tools will be available.

VII. EVALUATION FORMULA

The learning will be evaluated through the "D" system.

- 04 Qualified Practices.
- 02 Monographic Works: Thesis Plan and Thesis

VIII. BIBLIOGRAPHY

- AVILA ACOSTA R.B. (1997). Introduction to Research Methodology. The professional thesis. Lima Peru. RA Studies and Editions
- CABALLERO ROMERO, Alejandro. (2000). Cientific investigation methodology. 1st Edition Lima. Udegraf
- CAMPOS ARENAS A, MEZA C. AND MURO B. (2000). Manual for the structuring of the university thesis. 2nd Edition Lima. Feminine University of the Sacred Heart.
- Hernández, Sampieri, H. Hernández Collado, Baptista Lucio P. (1998). Investigation methodology. Mc. Graw Hill Interamericana de México S.A.
- LUNA CASTILLO, Antonio. (1996). Thesis methodology. 1st Edition Mexico. Threshing
- MUCH GALINDO, Lourdes AND ANGELES, Ernesto. (2002). Methods and techniques of investigation. Threshing
- ZORRILLA Arena, Santiago & Torres Xammar, Miguel. (1992). Guide to elaborate a thesis. McGraw-Hill Interamerican of Mexico.