



NATIONAL UNIVERSITY OF ENGINEERING

COLLEGE OF CIVIL ENGINEERING

CIVIL ENGINEERING PROGRAM

CO721 – MANAGEMENT INTEGRATED IN CONSTRUCTION

I. GENERAL INFORMATION

CODE	: CO721 – Management Integrated in Construction
SEMESTER	: 7
CREDITS	: 03
HOURS PER WEEK	: 06 (Workshop)
PREREQUISITES	: CO621; CO622
CONDITION	: Mandatory

II. COURSE DESCRIPTION

The course prepares the student in the application of the concepts, methods and techniques for the management of the Integrated of an infrastructure project, in the stage of the elaboration of the management plan to be implemented in the construction stage, as well as in the formulation of the company's management manual. The concepts of using statistical tools for quality management and process approach will also be presented. Taking into account the national standard and the international standard ISO 9001 2015, 14001-2015, ISO 45001-2018, G30, G50 RNE, SST LAW.

III. COURSE OUTCOMES

At the end of the course the student will:

- Understand and use the statistical tools of quality control, collect and classify the data and interpret its results to present its improvements.
- Understand and use the process approach, developing the process map, identifying the process components and formulating the process characterization.
- Recognize the requirements of ISO 9001-2015, ISO 14001-2015, ISO 45001 2018, G30, G50 RNE, SST Law.
- Formulate or adapt the Integrated Management Manual of a Construction Organization.
- Formulate an Integrated Management Plan for a specific construction project.

IV. LEARNING UNITS

1. STATISTICAL QUALITY CONTROL TOOLS / 4 hours

Deming philosophy, statistical tools, cause-effect diagram, flow chart, Pareto chart, trend line, histograms, control charts, scatter diagrams.

2. PROCESS FOCUS / 12 hours

Basic concepts / Process maps / Components of a process / Classes of processes / Characterization / Alignment of the process.

3. ISO 9001-2015, ISO 14001-2015, ISO 45001-2018 / 8 hours

Quality management systems: fundamentals and vocabulary, requirements, guidelines for performance improvement / Guidelines on quality, safety and environmental management system audits / Requirements of ISO 9001: 2015, ISO 14001-2015, ISO 45001-2018.

4. INTEGRATED MANAGEMENT PLAN / 24 hours

Premises: Conceptual basis, objectives, goals, scope and identification of the project processes / Documentary structure of the management plan / Quality, safety and environmental management procedures: document control, record control, equipment control, treatment of nonconforming product, corrective and preventive actions, purchasing management, supplier evaluation / Traceability.

5. INTEGRATED MANAGEMENT MANUAL / 12 hours

Organizational structure / Policies, objectives: quality, safety and environmental goals / Description of the management system: planning, implementation and operations, verification and corrective actions, management review.

V. LABORATORIES AND PRACTICAL EXPERIENCES

Step work: Integrated Management Manual and Integrated Management Plan of a work.

VI. METHODOLOGY

The course is developed in sessions of theory, practice. In the theory sessions the teacher presents the concepts, theorems and applications. In the practical sessions various problems are solved and their solution is analyzed. At the end of the course, the student must prepare and present a work or project of an Integrated Management Manual and an Integrated Management Plan for a work. In all sessions the active participation of the student is promoted.

VII. EVALUATION FORMULA

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

- Classroom practices (P): Weight
- Integrated work, 2 phases (W): Weight 1, each
- Average of Practices (P) / Monographic Work (P5): Weight 1.

$$FA = \frac{P + W1 + W2}{3}$$

VIII. BIBLIOGRAPHY

- ISO 9001 (2015), ISO 1400 (2015), ISO 45001 (2018)
- G-30 Construction quality, G-050: RNE construction safety
- Delgado Fernández, José Luis. (2007) Integrated Management Plan for the Construction of a housing building - FIC UNI Thesis.
- Kaoro Ishikawa (1995). How to Operate QC Circles Activity. Ed. JUSE – Tokyo.
- Kune, Hitoshi (2002) Basic statistical tools for quality improvement. Ed. Norma.