COURSES CATALOGUE

University of the Philippines NATIONAL ENGINEERING CENTER



As of 20 January 2023



Table of Contents

Data Science and Analutics Certification Proaram.	1
Module A: Introduction to Data Science and Analytics.	2
Module B: Data Warehousing	2
Module C: Prescriptive Analytics	3
Module D: Predictive Analytics	3
Module E: Prescriptive Analytics	4
Module F: Time Series Analysis	4
Module G: R for Data Science and Analytics	5
Module H: Python for Data Science and Analytics	5

Operational and Process Excellence Program.	10 10
Root Cause Analysis and the 8 Disciplines of Corrective Action Methodology	10
Materials and Inventory Management	12
Professional Certificate in Construction Management	13
Course 1: Project Management in the Construction Industry	14
Course 2: Construction Project Supervision	
Course 3: Construction Materials and Process Quality Contro	16
Course 4: Construction Project Cost Estimating and Analysis	16
Course 5: Construction Project Scheduling and Analysis	17
Course 6: Construction Contract Management	17
Course 7: Environment, Safety and Health in Construction	18
Professional Certificate in Facilities Management	
Encilities Management Carical	10

Project Management.....



Rationale

With the advent of globalization and advancements in technology, industries leveraged the use of information to aid their day-to-day business processes. These industries were able to collect and store vast amounts of transactional data; however, extracting and learning useful knowledge from these stored data has been proved to be extremely difficult.

The concept of big data analytics emerged as the de-facto concept in analyzing huge amounts of data that is created in a fast-paced environment. With analytics, companies can discern not only what their customers would want but also how much they're willing to pay and what keeps them loyal. Companies would look beyond compensation costs to calculate its workforce's exact contribution. Additionally, companies would not just track existing inventories; they would also predict and prevent future inventory problems. Other potential benefits of big data analytics include: (1) better-targeted social-influencer marketing, (2) customer segmentation, (3) understanding customer behavior, (4) more accurate business insights, (5) better planning and forecasting; and (6) identification of root causes.

To this date, the concept of big data analytics has not been totally received here in the Philippines. Making analytics part of a company's overarching competitive strategy, and pushing it down to decision-makers at every level, would provide a definite competitive advantage.

Program Objectives

The following points summarize the objectives of the training:

- By the end of this program, the participant should have a solid understanding of the fundamentals, concepts, business and technical architecture and best practices related to Data Analytics
- The participant should take away a broad understanding of the tools, underlying data management, techniques, industry applications and future directions of data analytics and data mining.
- The participant should be able to apply the right Analytics tool to different industry problems and interpret results correctly.
- The participant would be able to use modern data analytics software and implement an end-to-end data analytics project in their own respective field.

Target Participants and Minimum Background

This program will benefit, IT managers, data systems modelers, database administrators, data architects, CIOs, educators and others who need to take and analyze massive amounts of data from different sources to produce dashboards, generate summary reports and glean hidden information or patterns needed for managerial decision support. This program will also be advantageous for those who collect lots of data in order to analyze trends and systems.

Methodology and Certification

This program is composed of eight (8) modules that consist of lectures and hands-on exercises on the concepts and applications of data analytics. A participant that completes the first five modules and passes the certification exam will be certified as a Data Science and Analytics Associate while completing the first seven (7) modules and passing the professional certification exam will be certified as a Certified Data Science and Analytics Professional.

Course Investment Php 13,000.00 per participant and per module

Certification Examination Fees Php 7,000.00 Associate Php 10,000.00 Professional



MODULE A: INTRODUCTION TO DATA SCIENCE AND ANALYTICS

Course Description

This course provides an introduction to data science and analytics which starts from the identification of data analytics problems to finding and implementing solutions to these problems. An introduction to the design of dimensional models and data warehouses is also included. Visualization techniques are also discussed. This course also gives an overview of the various data analytics models for classification, regression, time series, association, clustering, text mining and optimization problems.

Prerequisite Concepts: None

Course Outline

I. Introduction to Data Science and Analytics II. Case Study: Data Analytics Project Identification III. Introduction to Descriptive Analytics IV. Case Study: Data Analysis using R V. Visualization VI. Case Study: Graphics Design VII. Introduction to Predictive Analytics: Classification VIII. Case Study: Classification Analysis using R IX. Introduction to Predictive Analytics: Regression and Time Series Analysis X. Case Study: Regression Analysis XI. Predictive Analytics: Modern Tools and Unsupervised Learning XII. Case Study: Text Mining XIII. Prescriptive Analytics XIV. Case Study: Linear Programming

MODULE B: DATA WAREHOUSING

Course Description

This course teaches students to combine information from different sources and merge them into a single data warehouse for decision making. This course provides both introductory concepts and techniques for developing effective dimensional models to answer business questions. Learn how to design dimensional models for extensibility, employ a proven dimensional design process, apply the process to representative situations, and understand a variety of advanced dimensional modeling techniques. Furthermore, a data warehouse will be developed through hands-on exercises.

2

Prerequisite Concepts: None

Course Outline

I. Introduction to Databases II. Case Study: Database Design III. Introduction to Data Warehousing IV. Case Study: Project Management for Data Warehousing V. Dimensional Modeling VI. Designing Fact Tables **VII.** Designing Dimension Tables VIII. Case Study: Dimension Modeling IX. ETL: Extraction, Transformation and Loading X. Case Study: ETL Planning XI. Transformation and Loading Methodologies XII. Case Study: ETL Using R

MODULE C: DESCRIPTIVE ANALYTICS

Course Description

This course aims to provide tools for processing raw data into formats that can facilitate drawing of summarizing statistics. The statistics drawn, can accurately and adequately describe historical information gathered which can be easily interpreted. Visualization techniques complemented and or generated from spreadsheet data processing shall be presented to facilitate ease of data interpretation. All tools and techniques presented in the course shall enable the participants to learn how to properly interpret past behaviors from recorded data, and understand how to they may influence outcomes in the future.

Prerequisite Concepts: None

Course Outline

I. Introduction to Descriptive Analytics II. Descriptive Statistics III. Data Preprocessing with R IV. R dplyr Package V. Case Study: Data Preprocessing VI. Visualization VII. Case Study: Visualization VIII. R Graphics IX. Deploying R Dashboards X. Case Study: Dashboard Generation

MODULE D: PREDICTIVE ANALYTICS

Course Description

This course surveys the different algorithms for data science specifically: classification, regression, feature selection, association, and clustering algorithms for business analytics. Learn to utilize a data warehouse and the various data science algorithms to aid in business decisions. Learn concepts such as problem types, data structure requirements, over and under fitting, and how to evaluate a business analytics model. Advantages and disadvantages of methods are also discussed.

Prerequisite Concepts: College Level Statistics

Course Outline

- I. Introduction to Predictive Analytics
- II. Classification Methodologies
- III. Case Study: Classification Using R
- IV. Regression Methodologies
- V. Case Study: Regression Analysis Using R
- VI. Unsupervised Learning
- VII. Case Study: Social Media Sentiment Analysis Using R



MODULE E: PRESCRIPTIVE ANALYTICS

Course Description

This course introduces designing a business analytics system with optimization algorithms. Concepts include data gathering and analysis, model formulation and designing what-if decision support systems that incorporates optimization and Monte Carlo simulation algorithms.

Prerequisite Concepts: College Level Algebra

Course Outline

I. Introduction to Prescriptive Analytics II. Introduction to Mathematical Modelling III. Case Study: LP Formulation IV. Integer Programming Problems V. Case Study: IP Formulation VI. Solving Prescriptive Analytics Problems in R VII. Case Study: LP Solvers VIII. Stochastic Operations Research IX. Case Study: Simulation Modelling

MODULE F: TIME SERIES ANALYSIS

Course Description

This course provides a basic overview of time series analysis and forecasting methodologies. An overview of smoothing and decomposition models will be discussed. Furthermore, forecasting algorithms will be analyzed using performance metrics.

Prerequisite Concepts: College Level Descriptive and Inferential Statistics

Course Outline

- I. Introduction to Forecasting
- II. Demand Forecasting Techniques
- III. Accuracy of Forecasts
- IV. Monitoring of Forecasts
- V. Forecasting with R
- VI. Case Study: Forecasting, Measuring Forecast Accuracy, and Monitoring Forecasts

VII. Introduction to Time Series Data Mining VIII. Case Study: Forecasting and Decomposition



MODULE G: R FOR DATA SCIENCE AND ANALYTICS

Course Description

R is the top choice tools for Data Analysts and Data Scientists. In a survey by KDNuggets in 2015, R is used by 46.9% of the surveyed business analytics professionals. Both are open source languages, have a wide community support system and lots of prewritten scripts for any Analytics task.

This training gives an overview of how to use R and R Studio to extract, manipulate and present massive data for management decision-making. At the end of the training, the participant would be confident enough to produce any type of Data Analytics Analysis with R. Training is composed of lectures, hands-on exercises and real world data case studies.

Prerequisite Concepts: None

Course Outline

I. Introduction to R II. Data Types and Vectors III. Case Study: R Vector Scripting IV. Data Frames and Data Processing V. Case Study: Dataset Processing VI. Basic R Programming VII. Case Study: Functions VIII. Visualization in R IX. Case Study: Dashboard Design

MODULE H: PYTHON FOR DATA SCIENCE AND ANALYTICS

Course Description

This course will be your guide to learning how to use the power of Python programming to analyze data, create beautiful visualizations, and utilize powerful predictive analytics algorithms.

This training gives an overview of how to use Python to extract, manipulate and present massive data for management decision-making. At the end of the training, the participant would be confident enough to produce any type of Business/Data Analytics with Python.

Course Outline I. Introduction to Python Programming

II. Case Study: Python Programming III. Python Pandas and Data Processing IV. Case Study: Python Pandas V. Python Graphics/Visualization VI. Case Study: Visualization VII. Python Statements VIII. Case Study: Python Statements IX. GUI Programming X. Deploying Python Apps XI. Case Study 5: Dash Visualization



Course Summary

Learners will understand and value the concept of continuous improvement, processes and procedures and their impact to overall organizational performance.

Course Objectives

At the end of the course, participants will be able to propose a process improvement project using the lean six sigma principles.

Course Requirements

The participant will earn a Green Belt certification upon

- Passing an examination
- Completion of a Green Belt project; and
- Other requirements to be announced during sessions

Note: A Yellow Belt or any related certificate is not a pre-requisite

Target Participants

- With at least a Bachelor's Degree
- Anyone who leads or is part of a team solving improvement projects
- Anyone who wants to build his/her competency in the areas of continuous and process improvement and waste reduction

Interested participants shall be required to submit an accomplished application form and undergo an interview before final acceptance to the course.

Course Investment

Php 40,000.00 per participant



Course Outline

I. Define I – Project Initiation

- Introduction to Lean Six Sigma (LSS): What is Lean Six Sigma?
- The Principles of Lean
- Forms of Waste
- LSS Success Stories
- The Lean Six Sigma Framework
- The DMAIC Process
- Organizing for Success
- Identifying Critical Success Factors
- **Balanced Scorecard**
- Project Initiation and Selection
- Project Charter
- Project Planning and Tracking

II. Define II - Leadership and Listening to the Voice of the Customer

- Leadership Thinking and Characteristics
- Leading and Developing Effective Team
- Leading and Managing Change
- Critical Success Factors for Change Management
- Stakeholder Analysis
- The Voice of the Customer
- Understanding Customer Requirements
- Undertaking Customer Surveys (Sampling Frame, Structuring Survey Questions, Margin of Error, Confidence Level)

III. Define III - Understanding Voice of the Customer and Process Mapping

- Affinity Diagram
- CTQC Tree Diagram
- Voice of the Customer as Specifications
- Quality Function Deployment
- Drawing a Process Picture
- Process Thinking
- Value and Value Stream Leverage
- Process Mapping Overview and SIPOC
- Value-Added Flow Charts and Other Relevant Charts
- Takt Time
- IV. Measure I Measurements and Basic Statistics
 - Measurements
 - Discrete and Continuous Measurements
 - Basic Statistical Terms
 - Descriptive and Inferential Statistics
 - Graphical Summaries (Pareto Chart, Histogram and Other Charts)
 - Understanding Variation and Quantifying Process Variability
 - Measuring Central Tendency
 - The Normal Distribution
 - Introduction to the Use of Minitab



V. Measure II - Measurement System Analysis

- Introduction to Measurement System Analysis
- Collecting Data
- Developing a Sampling Plan
- Measurement as a Process
- Cause and Effect Matrix
- The Analysis of Measurement Systems
- Variable MSA Gauge R and R
- MSA-Graphing
- Attribute Measurement System Analysis
- Calibration of Measurement Systems
- Determining Baseline Performance
- Throughput and Rolled Throughput Yield
- Calculating the Sigma Level
- VI. Measurement III Charting Process Behavior
 - Introduction to Charting Process Behavior
 - Trend Chart
 - Statistical Process Control (SPC)
 - Rational Subgrouping and SPC Chart Selection (Individual and Moving Range Chart, Attribute Control Chart, X-bar and R Chart)
 - Process Capability
 - The Sigma Level Revisited

VII. Analyze I - Identifying Root Cause and Hypothesis Testing

- Introduction to Analyze Phase
- Finding the Root Cause
- Cause and Effect Diagram and Alternative
- 5-Why, 1-How, Box Plots, Scatter Plots
- A Combination of 5-Why, Pareto and Trend Charts
- Correlation and Regression Analysis (Multiple and Binary Logistic Regression)
- Factors in Determining Sample Size
- Estimating Population Mean
- Introduction to Hypothesis Testing
- Confidence Intervals

VIII. Analyze II – Hypothesis Testing

- Treatment Comparisons Control Charts
- Comparing One Mean to a Standard t-test Comparing Two Means t-test
- Comparing Multiple Means ANOVA/F-test
- Confidence Intervals Least Significant Difference
- Comparing One Proportion to a Standard
- Comparing Two Proportions to a Standard
- Comparing Two Proportions Z-test
- Comparing Multiple Proportions Chi Square
- Comparing One Variance to a Standard Chi-Square
- Comparing Two Variances F-test
- Parametric vs. Non-Parametric Test



IX. Analyze III – Design of Experiments (DOE)

- Introduction to Design of Experiments History, Components, Principles, Purpose, Process and Guidelines
- Examples of Successful Use of DOE
- Selecting the Right Design
- Single Factor Experiments and Blocking (Fixed-Effects, Random Effects, Randomized Complete Block Design, Latin Square Designs)
- DOE with Several Factors
- Two-Level Factorial
- General Factorial
- DOE Power and Sample Size

X. Improve

- Introduction to Improve Phase
- Design for Six Sigma (DFSS)
- Benchmarking and Brainstorming
- Failure Mode and Effects Analysis
- Error-Proofing
- Prioritizing and Selecting a Solution
- Continuous Flow, Quick Changeover and Cellular Processing Toolsets
- Balancing Capacity with Demand
- The Theory of Constraints
- Pull Scheduling
- Push Systems
- Core Process Pull
- Kaizen Tools
- Corrective Action Matrix
- Piloting a Solution
- System Dynamics Toolset

XI. Control

- Introduction to Control Phase
- Control Charts Revisited
- The Process Control Plan
- 5-S Approach, Visual Control
- Work Standardization
- More on FMEA
- CHECK Process
- Total Productive Maintenance (Objectives and Benefits, Metrics, Core Elements, Maintenance Activities)
- Best Practices and Lessons Learned
- Workshop Exercises
- Ending the Project
- The Lean Six Sigma Journey
- Control Tollgate Project Completion



OPERATIONAL AND PROCESS EXCELLENCE PROGRAM

OPERATIONAL AND PROCESS EXCELLENCE

Introduction

Operational and process excellence is a mindset that embraces certain principles and tools to create sustainable improvement within an organization. It is achieved when every member of an organization can see the flow of value to the customer. Seeing it, however, isn't enough – they should actively try to improve both the value, as well as its delivery. Ultimately, operational excellence is not just about reducing costs or increasing productivity in the workplace. It's about creating the company culture that will allow an organization to produce valuable products and services and achieve long-term sustainable growth. Operational excellence is a journey that involves applying the right tools to the right processes. When this happens successfully, the ideal work culture is created where members of the organization are provided for in a way that enables them to stay empowered and motivated.

Target Participants

Junior, middle, or senior-level engineer and/or manager who wants to help their organization achieve its goals through process management and excellence.

Objectives

At the end of the training, the participant will be equipped with the knowledge, skills and behavioral competencies required to support an operational excellence program and contribute significantly to the bottom line of your organization.

Course Content

I. Introduction to Operational Excellence II. Strategic Management III. Effective Performance Management IV. Process Excellence V. High Performing Teams VI. Change Management

Course Investment Php 20,500.00 per participant



OPERATIONAL AND PROCESS EXCELLENCE PROGRAM

ROOT CAUSE ANALYSIS and the 8 DISCIPLINES OF CORRECTIVE ACTION METHODOLOGY

Introduction

Root cause analysis (RCA) is used to solve problems by identifying the root cause or causes of events to reduce or eliminate the possible recurrence of the problem. If the root cause, whether it is a single cause or multiple causes, is found addressed, future occurrences of the same problem can be prevented.

Objectives

At the end of the training, the participant will be able to:

- understand the importance of and the approaches to validate a root cause
- use a systematic approach to analyze a problem, determine the root cause and identify an appropriate solution

Target Participants

Managers and supervisors who need to have a basic understanding of root cause analysis and its application

Course Content

I. Introduction to Problem Solving II. Root Cause Analysis Methodology III. The 8D of Corrective Action IV. Appropriate Use of Qualitative Tools V. Appropriate Use of Quantitative Statistical Tools VI. Corrective Action Strategies VII. Effect of Human Factors on RCA VIII. Management and Organizational Issues Affecting Projects IX. Cross Functional Team Building

Course Investment Php 13,000.00 per participant



OPERATIONAL AND PROCESS EXCELLENCE PROGRAM

MATERIALS AND INVENTORY MANAGEMENT

Introduction

Spawned by commodity shortages, competition, rises in material costs and the no-nonsense view of scaling down large inventories, service organizations and manufacturing companies recognize the value of Materials and Inventory Management (MIM). Most recently, the non-profit sector (government agencies, hospitals, and universities) has begun to realize the significance of MIM. This training is an introductory course suitable for supervisory or staff level personnel involved with activities related to materials flow optimization.

Objectives

To introduce the participants to a step-by-step approach to understand the requirements for the design and implementation of a smooth materials flow and control system.

Target Participants

Inventory controllers/managers, managers in the manufacturing process, warehouse supervisors, stock controllers and all personnel working in material management control and distribution.

Course Content

I. Materials Management II. Linkages to Materials Management III. Inventory Management IV. Materials Requirement Planning V. Just-In-Time VI. Purchasing VII. Warehouse and Physical Distribution

Course Investment Php 13,000.00 per participant



Construction continues to be a rapidly growing industry as our country entered the era of globalization, economic integration and sustaining infrastructure development. Construction projects are becoming bigger and much more complex with increasing stakeholder requirements and involvement of both domestic and international partners.

Construction management now demands an awareness, knowledge and specialization in more intricate and state-of-the art construction technologies, construction processes, project management skills, tools and techniques, and practical business know-how, in order to build and complete successful construction projects, and to eventually become more competitive and effective catalysts of social change.

The UP National Engineering Center thus recognizes the need to develop and offer Professional Certificate in Construction Management or PCCM:

• to equip engineers, architects, construction managers, construction executives and business owners, and personnel

with related work experiences with the basic project management skills, knowledge, tools and techniques necessary for initiating, planning, executing, monitoring, controlling and closing of construction projects, and business knowledge needed to run an effective construction company.

Course Investment

Php 13,000.00 per participant and per course

Methodology

The program consists of lectures, open fora, and workshops.

Certification

There are 2 types of certificates that PCCM awards namely Certificate of Completion and Professional Certificate in Construction Management.

1. Certificate of Completion This is given to participants who have successfully passed all the requirements per course.

2. Professional Certificate in Construction Management

This is awarded to participants who have completed PCCM Courses 1-7 and passed the Professional Certification Examination. This certificate is a credential which can become the project management standard for the Philippine construction industry.

Recipients of the Professional Certificates shall be included in the Professionals' Directory of the UP NEC, which will regularly be made available to industry.



COURSE 1: PROJECT MANAGEMENT IN THE CONSTRUCTION INDUSTRY

This 3-day course aims to provide breadth and depth to the modern concepts of project management for managers for construction project owners, managers for design teams and construction business owners. Based on extensive hands-on experience in the Philippine construction industry, on the principles in the Project Management Body of Knowledge (PMBOK) of the Project Management Institute, the following knowledge areas for study are:

- Fundamentals of Project Management
- Overview of Construction Project Management
- Construction Project Scope Management
- Construction Project Schedule Management
- Construction Project Cost Management
- hat we also at a Constant stick Durie at Confet
- Introduction to Construction Project Safety
- Introduction to Construction Project Quality Management
- Construction Project Execution and Control
- Construction Project Consultancy Services

The course consists of lectures, periods for open-forum to engage the participants through critical thinking in discussions on relevant issues in construction project management, and workshops.



COURSE 2: CONSTRUCTION PROJECT SUPERVISION

This 3-day course aims to build the basic competencies necessary for young engineers to become effective construction project supervisors, with a solid foundation and complete awareness of the significance of project safety. Based on extensive hands-on experience in the Philippine construction industry, the following knowledge areas for study are:

- Construction Supervision
 - Role
 - Required Skills
- Principles of Leadership
 - Approaches
 - Functions
 - Power Bases
- Communications and Human Relations
 - Basic Principles
 - Barriers
 - Techniques
- Planning and Organizing
 - Short Interval Production Schedule
 - Resource Planning
 - Budgeting and Cost Control
- Problem-Solving and Decision-Making
 - Identification
 - Prioritization
 - Analysis
 - Solution Formulation
- Work Study Method
 - Method Study
 - Work Measurement
- Introduction to Construction Project Safety
 - Terminologies
 - Legal Framework
 - Site Safety Standards
 - Excavation Safety
 - Fall and Ladder Safety
 - Scaffold Safety
 - Fire SafetyElectrical Safety
 - Personal Protective Equipment

The course consists of lectures, periods for open-forum to engage the participants through critical thinking in discussions on relevant issues in construction project supervision, and workshops.



COURSE 3: CONSTRUCTION MATERIALS AND PROCESS QUALITY CONTROL

This 3-day course aims to provide a comprehensive understanding of the physical characteristics and behavior of construction materials as well as the methods and processes of construction of the built environment. Offered along with an orientation visit to the Materials Testing Laboratory of the Institute of Civil Engineering, the course also includes an introduction to quality management and development of the competency of construction quality planning. The following knowledge areas for study are:

- Cement
- Concrete
- Steel
- Aggregates
- Asphalt
- Introduction to Construction Project Quality Management
- Construction Quality Planning

The course consists of lectures, periods for open-forum to engage the participants through critical thinking in discussions on relevant issues in construction materials, processes and construction quality, and workshops.

A certificate of completion will be awarded to participants who can successfully pass all requirements.

COURSE 4: CONSTRUCTION PROJECT COST ESTIMATING AND ANALYSIS

This 3-day course aims to provide promising construction supervisors with the knowledge, skills, tools and techniques to develop construction cost estimates, and its essential relationships with other project objectives, in order to ultimately satisfy stakeholder requirements. Based on extensive hands-on experience in the Philippine construction industry and on the principles in the Project Management Body of Knowledge (PMBOK) of the Project Management Institute, the following knowledge areas for study are:

- Fundamentals of Project Management
- Overview of Construction Project Management
- Introduction to Construction Project Scope Management
- Construction Project Cost Estimating
- Construction Project Cost Management
- Introduction to Construction Project Schedule Management

The course consists of lectures, periods for open-forum to engage the participants through critical thinking in discussions on relevant issues in construction project cost estimating and analysis, and workshops.



COURSE 5: CONSTRUCTION PROJECT SCHEDULING AND ANALYSIS

This 3-day course aims to provide promising construction supervisors with the knowledge, skills, tools and techniques to develop construction project plans and schedules, and its essential relationships with other project objectives, in order to ultimately satisfy stakeholder requirements. Based on extensive hands-on experience in the Philippine construction industry and on the principles in the Project Management Body of Knowledge (PMBOK) of the Project Management Institute, the following knowledge areas for study are:

- Fundamentals of Project Management
- Overview of Construction Project Management
- Introduction to Construction Project Scope Management
- Construction Project Planning and Scheduling
 Construction Project Schedule Management

The course consists of lectures, periods for open-forum to engage the participants through critical thinking in discussions on relevant issues in construction project scheduling and analysis, and workshops.

A certificate of completion will be awarded to participants who can successfully pass all requirements.

COURSE 6: CONSTRUCTION CONTRACT MANAGEMENT

This 3-day course aims to provide promising construction project supervisors with the knowledge, skills, tools and techniques to become construction contract managers, or effective mediators of on-site project conflicts. Based on extensive hands-on experience in the Philippine construction industry, the following knowledge areas for study are:

- Fundamentals of Project Management
- Overview of Construction Project Management
- Construction Project Scope Management
- Fundamentals of Contracts
- Construction Project Contracts
- Contract Conflict Resolution

The course consists of lectures, periods for open-forum to engage the participants through critical thinking in discussions on relevant issues in construction contract management, and workshops in conflict resolution.



COURSE 7: ENVIRONMENT, SAFETY AND HEALTH IN CONSTRUCTION

The course description will be provided soon.



PROFESSIONAL CERTIFICATE IN FACILITIES MANAGEMENT

Course Objectives

- To create awareness on and provide practical approaches to best-known practices in facilities management in a building environment
- To address fundamental principles but only to the point necessary for the understanding of facilities management from a holistic life cycle perspective
- To provide the essential knowledge and skills required to carry out efficient and effective facility management
- To develop and implement energy management and indoor air quality management
- To be able to use facility management tools for operation and maintenance planning and management

Target Participants

Practicing facilities managers, property and building administrators, engineers, architects, project managers, project coordinators and project supervisors.

Minimum Background

• At least supervisory level or with at least 2 years working experience in a related field

Course Outline

The program consists of 10 modules grouped into 3 lecture series. A Certificate of Completion will be given to participants after completing each Lecture Series. A Professional Certificate in Facilities Management will be given to participants who have completed the full program.

FACILITIES MANAGEMENT SERIES I

Module 1. Introduction and Strategic Facilities Management Module 2. FM vs. Engineering Maintenance Management Module 3. Asset Management Principles & Applications

FACILITIES MANAGEMENT SERIES II

Module 4. Building Conservation & Refurbishment Module 5. IT Applications and New Technologies in FM Module 6. Energy Management in Built Environment and Effective Implementation of Energy Conservation Measures Module 7. Indoor Air Quality Fundamentals Module 8. Fire Safety Management of Built Environment - Liabilities & Strategies

FACILITIES MANAGEMENT SERIES III

Module 9. Facilities Solutions & Management Competence - Mechanical Systems in Buildings Module 10. Facilities Solutions & Management Competence - Electrical Systems in Buildings

Course Investment Php 13,000.00 per participant and per series



PROJECT MANAGEMENT

Rationale

Projects are how organizations restructure processes to improve their productivity. As middle management positions are reduced, project managers fill the gap. The trend towards outsourcing, project-based contracts and leaner organizations has highlighted the growing need for Project Management. It's now used virtually in all industries such as telecommunications, banking and finance, government as well as in education. Expertise in project management is a source of security, prosperity and power to these survivors.

Hence, the UP National Engineering Center deemed it necessary to design a training program that will educate will-be and current project managers on their future endeavors and activities.

Upon completion of this course, the participants are expected to:

Identify the key elements of the project management framework and the phases in the project life cycle
 Understand importance of top management commitment to a project's success
 Describe the project selection process and prepare a good Project Plan

4. Construct Work Breakdown Structures and use Gantt Charts for schedule planning and tracking

5. Understand and use critical path analysis

6. Describe several techniques for shortening project schedules

7. Describe the resource planning, cost estimating, cost budgeting and cost control processes

8. Describe what is involved in quality planning, quality assurance and quality control in projects

9. Identify project teams and roles of each person

10. Identify common sources of risk and strategies for reducing them

11. Perform project control with earned value analysis

12. Identify project closure processes and output

Target Participants

The course is designed for people new to projects and for experienced project leaders who need to reassess or strengthen their methods.

Methodologies

A combination of lecture-discussion, problem solving exercises, case studies and workshop presentation will be used to facilitate exchange of knowledge between participants and lecturers.

Course Outline

I. The Fundamentals of Project Management

a. Introduction to Project Management

b. Strategic Alignment of Projects

II. Project Initiation and Definitions

a. Project Initiation

b. Scope Definition

c. Project Leadership

d. Project Teams

III. Project Planning

a. Resource Planning and Cost Estimation

b. Project Scheduling and Resource Management

c. Project Risk and Risk Management

IV. Project Execution and Control

a. Cost Budgeting and Control

b. Project Monitoring and Tracking

c. Quality Assurance and Control

V. Project Close

a. Project Audit

b. Project Closure

Course Investment Php 13,000.00 per participant



ADMINISTRATIVE STAFF PROGRAM TOWARDS INSTITUTIONAL RESILIENCY AND EXCELLENCE (ASPIRE)

Rationale

Different organizations are challenged to continuously review and improve their systems and operations to meet the growing demands of quality products and services. And in the advent of technology, organizations are even more pressured to provide efficient delivery of services and to value customer's satisfaction and experience. In addition, organizations are asked to establish mechanisms to protect its system and information from undesirable circumstances.

A Quality Management System provides a strategic framework for knitting together inputs, outputs, outcomes, processes and other elements of product creation and service delivery. It provides a holistic approach on how organizations should operate both from internal and external perspectives. The Philippine Quality Award (PQA) is an integrated approach for performance management that sets the standard of excellence to help Philippine organizations achieve world-class performance. It provides an internationally comparable framework and criteria for assessing organizational performance. It is a template for competitiveness based on the principles of Total Quality Management.

Objectives

The Administrative Staff Program towards Institutional Resiliency and Excellence (ASPIRE) is a training program designed to equip participants with the necessary knowledge, mindset and skills in developing and implementing a Quality Management System that will help their organizations attain improved and efficient operations, a sustained culture of innovation, customer-driven delivery of services, and empowered human resources.

By the end of the program, participants must be able to:

- Appreciate and understand the strategic added value of a Quality Management System in achieving institutional resiliency and excellence,
- Appreciate and understand the Philippine Quality Award (PQA) and its different criteria and drive the application for PQA,
- Appreciate and experience the tasks and responsibilities of an assessor through a PQA case study,
- Solve process-related problems systematically and innovatively and establish a customer-driven culture through flowcharting and customer feedbacks, and
- Develop an effective change engagement improvement plan through the conduct of consultations and dialogues.

Target Participants

Administrative Staff and Research, Extension, and Professional Staff (REPS) of the University of the Philippines

Methodologies

A variety of methodologies will be used such as, but not limited to, online lecture/presentation, questions and answers, small and large group discussions, practical sessions, role plays and simulations, etc. to give participants substantial body of information.

Participants will work on a Case Study and Initial and Improved Process Flows that will demonstrate problem analysis and generate proposed system improvements that are applicable to their workplace.

Comprehensive course notes will also be provided to participants.

Course Outline

I. Overview and Objectives of ASPIRE II. Quality Management System: An Introduction III. Process Flow Charts IV. Philippine Quality Award Framework and Criteria V. Process Analysis VI. The Journey of UP NEC towards PQA VII. Customer Feedback VIII. Completed Staff Work IX. Consultation and Dialogue

Course Investment Php 500,000.00 per batch of 50 participants





University of the Philippines NATIONAL ENGINEERING CENTER Professional Engineering Training Division

Room 204 Juinio Hall, National Engineering Center, cor. Agoncillo Street and Osmena Ave., University of the Philippines, Diliman, Quezon City 1101 (02) 8981-8500 local 3004, 3005, 3048 (02) 8929-1710 nec.training@up.edu.ph

> https://nec.up.edu.ph facebook.com/UPNECTraining twitter.com/UP_NEC