BES 03A – Engineering Management

BES 03A – Engineering Management
First Edition, 2022

Learning Module Development Team

Assigned Chapter	Title	Author
Chapter 7:	Motivating	*Dionisio M. Martin Jr.*
Chapter 8:	Leading	
Chapter 9:	Controlling	
Chapter 10:	Managing Production and Service Operations	
Chapter 11:	Managing the Marketing Function	
Chapter 12:	Managing the Finance Function	

Evaluators:

(First Name, Middle Initial, Last Name), Position
(First Name, Middle Initial, Last Name), Position
(First Name, Middle Initial, Last Name), Position

Course Overview

Introduction

Engineering Management is a three-unit basic engineering science course, which discusses the principles of management in the field of engineering on how to prepare students to become successful engineer manager through decision-making, planning, organizing, staffing, communicating, leading, and controlling an organization as well as in managing production and service operations, marketing and finance functions.

This course of study is also intended to discuss the different cases covering the different engineering principles and functions. The engineering students would learn the process in dealing some problems in relation to the chosen field.

Course General Objectives

At the end of the semester, 85% of the students have attained 90% level of understanding for being aware in the computer engineering, locally and globally.

1. Understand the basic concepts of engineering management.
2. Apply the principles of engineering management to analyze case studies.
3. Understand the different management strategies/techniques and model and the issues involving in management.

Course Details:

- *Course Code:* BES 03A
- *Course Title:* Engineering Management
- *No. of Units: 3-unit lecture*
- *Classification: Lecture-based*
- *Pre-requisite / Co-Requisite: None*
- *Semester and Academic Year: 2nd Semester, AY 2021-2022*
- *Schedule: BSCpE 2A – Tuesday and Thursday, 7:30AM-9:00 AM)*
- *Name of Faculty: Dionisio M. Martin Jr.*
- *Contact Details*
    Email: dmmartinjr@yahoo.com
    Mobile Number: 0939-906-0585
    FB Account: Dionisio Martin Jr.
- *Consultation*
    Day: MWF
    Time: 2:00-3:00PM

Learning Management System

The University LMS will be used for asynchronous learning and assessment. The link and class

code for LMS will be provided at the start of class through the class' official Facebook Group.

- ***Edmodo***
- ***Google Classroom***
- ***University LMS***

Assessment with Rubrics

Students will be assessed in a regular basis thru quizzes, assignments, individual/group outputs using synchronous and/or asynchronous modalities or submission of SLM exercises. Rubrics are also provided for evaluation of individual/group outputs.

Major examinations will be given as scheduled. The scope and coverage of the examination will be based on the lessons/topics as plotted in the course syllabus.

Module Overview

Introduction

discusses the principles of management in the field of engineering on how to prepare students to become successful engineer manager through decision-making, planning, organizing, staffing, communicating, leading, and controlling an organization as well as in managing in different engineering functions.

Case studies are also included in every chapter to understand more the lesson have been learned through analyzing and application in different dilemma experienced in engineering management.

Topics also included the management function in production and service operations, marketing and finance functions are also given emphasis in this module.

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Leading

Introduction

What makes a leader effective? Some people probably reply that effective leaders have certain desirable traits or qualities such as charisma, foresight, persuasiveness, and intensity. Although research has not yielded a set of traits possessed by effective leaders, it does seem clear that leaders play a critical role in helping groups, organizations, or societies achieve their goals.

Successful firms regard the leadership skill requirement as a high priority concern. Firms seriously involved in training their managers to become effective leaders.

Engineer managers, in whatever management level they happen to be, are not exempted from the problem of effective leadership. If this is really so, then they must be concerned with the management function of leading. Identifying effective leadership behaviors and techniques would presumably be able to learn and teach these behaviors and techniques thereby improving the personal and organizational effectiveness.

Specific Objectives

At the end of the lesson, the students should be able to:

- define leading as one important function of management.
- list the importance of leader and good leadership in an organization.
- define and explain the leadership process.
- adept the behavior of a good leadership skills in managing engineering projects.
- demonstrate the function of a good leader in a community.

Duration

Chapter 8:   Leading   = 3 hours
                                                                     (2-hours discussion;
                                                                     1-hour assessment)

Leading – is management function which involves influencing others to engage in the work behaviors necessary to reach organizational goal.

    – is the process of directing and influencing task-related activities of organization members.

Leadership – is the process of influencing and supporting others to work enthusiastically towards achieving objectives.

– is the process of directing and influencing members to perform the task-related activities of the group.

Power – the ability of exert influence; that is, the ability to change the attitudes or behavior of individuals or groups.

Influence – any actions or examples of behavior that cause a change in attitude or behavior of another person or group.

Formal authority – power rooted in the general understanding that specific individuals or groups have the right to exert influence within certain limits by virtue of their position within the organization.
>   – also called legitimate power.
>   – the right arises from formal position in an organization.

Sources How Leaders Influence Others
Bases of power are classified as follows:
   a. *legitimate power* – exits when a subordinate acknowledges that the influencer has a right or is lawfully entitled to exert influence – within a certain bound.
   b. *reward power* – is based on one person having the ability to reward another person for carrying out orders or meeting other requirements.
   c. *coercive power* – is the negative side of reward power, based on the influencer's ability to punish the subordinate.
   d. *referent power* – is based on the subordinate's desire to identify with or imitate the influencer.
   e. *expert power* – is based on the belief or understanding that the influencer has some relevant expertise or specific knowledge which the subordinate does not.

Characteristics of Successful Engineer Managers
   1. Effective managers are sensitive to the source of their power and are careful to keep their actions consistent with people's expectations.
   2. Good managers understand – at least intuitively – the five bases of power and recognize which to draw on in different situations and with different people.
   3. Effective managers recognize that all bases of power have merit in certain circumstances.
   4. Successful managers have career goals that will allow them to develop and use power.
   5. Effective managers temper power with maturity and self-control.
   6. Successful managers know that power is necessary to get things done.

Traits of Effective Leaders
   1. a high level of personal drive
   2. the desire to lead
   3. personal integrity
   4. self-confidence
   5. analytical ability or judgment
   6. knowledge of the company, industry or technology

7. charisma
8. creativity
9. flexibility

Leadership Skills
1. *Technical skills* – skills a leader must possess to enable him to understand and make decisions about work processes, activities and technology. And leaders have specialized knowledge needed to perform a job.
2. *Human skills* – refers to the ability of leader to dealt with people, both inside and outside the organization.
3. *Conceptual skills* – refers to the ability to think in abstract terms, to see how parts fit together to form the whole.

Behavioral Approaches to Leadership Styles
1. according to the ways leaders approach people to motivate them
   a. *positive leadership* – emphasizes rewards that may be economic (like an increase in salary) and non-economic (like a membership in a committee).
   b. *negative leadership* – emphasizes punishment and may take the form of reprimand, suspension, or dismissal.
2. according to the way the leader uses power
   a. *autocratic* – make decision themselves, without consulting subordinates.
   b. *participative* – openly invites subordinates to participate or share in decisions, policy-making and operation methods.
   c. *free-rein* – also called as laissez-faire, set objectives and allow employees or subordinates relative freedom to do whatever it takes to accomplish these objectives.
3. according to the leader's orientation towards task and people
   a. employee orientation
   b. task orientation

Contingency Approach – is an effort to determine through research with managerial practices and techniques are appropriate in specific situations and these are:

1. *Fiedler's Contingency Model*
   According to Fred Fiedler that leadership is effective when leader's style is appropriate to the situation. Factors are:
   a. the relations between leaders and followers
   b. the structure of the task
   c. the power inherent in the leader's position
   When situation does not fit the leaders, the following are need to considered:
   a. change the leader's trait or behaviors
   b. select leaders who have traits or behaviors fitting the situation
   c. move leaders around in the organization until they are in positions that fit them
   d. change the situation
2. *Hersey and Blanchard's Situational Leadership Model*

According to Hersey and Blanchard that the most important factor affecting the selection of a leader's style is the development (maturity) level of subordinate.

Maturity has two components:
   a. job skills and knowledge
   b. psychological maturity

Leadership style for various maturity levels of subordinates:
   a. *directing* – is for people who lack competence but lack commitment.
   b. *coaching* – is for people who have some competence but lack commitment.
   c. *supporting* – is for people who have competence but lack of confidence or motivation.
   d. *delegating* – is for people who have both competence and commitment.

3. *Path-Goal Model of Leadership*

According to Robert J. House and Terence R. Mitchell that leadership can be made effective when influences subordinate's perceptions towards their work goals, personal goals and path to goal attainment.

Effective leaders enhance subordinate by:
   a. clarifying the subordinate's perception of work goals
   b. linking meaningful rewards with goal attainment
   c. explained how goals and desired rewards can be achieved

Leadership style may be used:
   a. *directing* – is for people who focuses on clear task assignments, standards of successful performance, and work schedules.
   b. *supporting* – is for people who are treated equal in a friendly manner while striving to improve their well-being.
   c. *participating* – is for people who are consulted to seek suggestions and considers those suggestions when making decisions.
   d. *achievement-oriented* – is for people setting challenging goals, emphasize excellence and seek continuous improvement while maintaining a high degree of confidence that subordinates will meet difficult challenges in a responsible manner.

4. *Vroom's Decision Making Model*

According to Vroom's model, proper leadership style focusing on the appropriate degrees of delegation of decision-making authority.

Leadership style may be used:
   a. autocratic
   b. consultative
   c. *group-directed* – leader shares the problem with subordinates as a group. Let the group generate and evaluate alternative solutions, and then collectively decides.

References/Additional Resources/Readings

Medina, Roberto G. (2016). Engineering Management. Rex Book Store, Inc., Manila, Philippines.

Stoner, J.A. et.al. (1987). Management, 3rd Edition. Prentice-Hall, Inc.

Wheeler, Thomas F (1990). Computer and Engineering Management, McGraw-Hill.

Activity Sheet

Name: _____Course/Year/Section: _____ Score: _____

CASE STUDY 8: Leadership at the Top

The Executive Committee of the Board of Directors had made an exhaustive search to find the "right" person to become President of Metro Mortgage and Finance Company. None of the persons under consideration had the exact profile desired by the Executive Committee. As a last minute recommendation, the committee received the nomination of Grover Stable, a nephew of Warren Stable, the largest shareholder in the company. Warren Stable had recommended his nephew because, as he put it to the Executive Committee, "You're wasted three months and a lot of money coming up with nothing. Right under your nose is a bright, energetic young man with an MBA degree, five years' experience with the company, and motivation to spare. Grover's experience may be limited, but he has vision and toughness that will give the company great leadership for years to come."

The committee, embarrassed by their failure to find an acceptable candidate for the presidency, decided to recommend Grover Stable for President to the full Board of Directors. Upon receiving the nomination, the Board voted to appoint Grover Stable as President, effective immediately.

During the first week of Grover's tenure as President, he called a meeting of the management team and stated his personal philosophy of management:

> … effective immediately I shall solicit your support of my administration. I expect to maximize the development of each of you and organize this company to bring about extreme efficiency and new records in performance. Each of you will have an opportunity to comment on the standards of excellence that will be set for you, and each of you can demonstrate your loyalty to the organization by accepting my philosophy as a reflection of your own. It is nice for employee to act as individual thinkers, but when you're in management, you represent the company and much of your thinking is done by those above.

> Let's solidify our efforts and get behind my new administration will all our capabilities. The success of this company will depend upon my leadership ability and your willingness to execute top-management decisions.

Source: Adopted from Francis J. Bridges and James E. Chapman, Critical Incidents in Organizational Behavior and Administration (Englewood Cliffs, NJ: Prentice-Hall, 1977), p.157.

Questions:

1. Describe Warren Stable's concept of the "best" leadership style using the Managerial theory of leadership?

2. Describe Grover Stable's perception of the "best" leadership style using the "situational" theory of leadership.

3. What do you think of Grover Stable's leadership style in terms of appropriateness for Metro Mortgage and Finance Company?

Assignment

Name: _____Course/Year/Section: _____ Score: _____

Direction: Write your answer clear and concise.

1. Why leading is important to the engineer manager?

2. How do leaders influence others?

3. Why is it important for a leader to have "the desire to lead"? What happens if the said desire is not present?

4. How is positive leadership different from negative leadership?

5. When the situation does not fit the leader, what options do management have?

Assessment (Rubrics)

Each question will be graded based on these five (5) points rubrics.

LEVEL	DESCRIPTION
5 - Outstanding	Well written and very organized. Excellent grammar mechanics. Clear and concise statements. Excellent effort and presentation with detail. Demonstrates a thorough understanding of the topic.
4 - Good	Writes fairly clear. Good grammar mechanics. Good presentation and organization. Sufficient effort and detail.
3 - Fair	Minimal effort. Minimal grammar mechanics. Fair presentation. Few supporting details
2 - Poor	Somewhat unclear. Shows little effort. Poor grammar mechanics. Confusing and choppy, incomplete sentences. No organization of thoughts.
1 - Very Poor	Very poor grammar mechanics. Very unclear. Does not address topic. Limited attempt.

Learner's Feedback Form

Name of Student: _____
Program   : _____
Year Level   : _____   Section: _____
Faculty   : _____
Schedule   : _____

Learning Module   :   Number: _____ Title : _____

How do you feel about the topic or concept presented?
    ☐   I completely get it.   ☐   I'm struggling.
    ☐   I've almost got it.   ☐   I'm lost.

In what particular portion of this learning packet, you feel that you are struggling or lost?
_____
_____
_____

Did you raise your concern to you instructor?   ☐   Yes   ☐   No

      If Yes, what did he/she do to help you?
_____
_____
_____

      If No, state your reason?
_____
_____
_____

To further improve this learning packet, what part do you think should be enhanced?
_____
_____
_____

How do you want it to be enhanced?
_____
_____
_____

NOTE: This is an essential part of course module. This must be submitted to the subject teacher (within the 1ˢᵗ week of the class).