

Based on the Introduction to Engineering Management Course of After-class Impressions

Hang Zhai

School of Architectural Engineering, North China University of Science and Technology, China

Abstract: Project management is developed with the development of human society. Through the study of the introduction course of engineering management, I have a deeper understanding and understanding of engineering management, open my horizon and broaden my thinking. This paper mainly introduces the consolidation and expansion of the relevant knowledge of engineering management and the association with their own graduate thesis writing.

Keywords: Engineering management knowledge system, Industry requirements.

1. Introduction

The knowledge system of engineering management involves many leading cities, which is a comprehensive discipline [1]. It provides technology platform, economic platform, legal platform, information platform, and management platform (key points). These platforms can provide different functions, such as splitting elements (through technology platform), balancing the relationship between elements, and organizing and coordinating the relationship between elements (management platform). Engineering management is a discipline that realizes the expected goals of engineering through decision-making, planning, organization, command, coordination and control.

2. Overview of the Project Management

2.1. Definition of project management

In a narrow sense, this major cultivates compound senior management talents with the basic knowledge of management, economics and civil engineering technology, master the theories, methods and means of modern engineering management science, have the basic ability to engage in engineering project management, and can engage in project decision-making and whole-process management in the engineering field at home and abroad. Broadly speaking, similar projects such as "985" and "211" also include them within the scope of disciplines. Through the study of this course, I understand that engineering management is a subject with a strong disciplinary integration, which needs to learn knowledge in different fields.

2.2. Professional knowledge system of engineering management

(1) Technology — engineering project implementation of the basic guarantee, including engineering structure, engineering materials, engineering construction, construction engineering technology development trend, etc.

(2) Management — is related to the project implementation and benefits, and is the key, including the functions of planning, coordination, organization, control and supervision.

(3) Economic — is related to the goal or benefit of the project, including the cost performance of the project, the

economy and applicability of the whole life cycle, etc.

(4) Law — Protect the rights and interests of projects, including the Constitution, laws, administrative regulations, local regulations, administrative rules, international treaties, etc.

(5) The use of information — CAD, BIM and others brings the engineering to a new height.

2.3. Teaching system of engineering Management major

(1) Train objective

Project management professional training to meet the needs of socialist modernization construction, morality, intelligence and physique, master the civil engineering or other engineering technical knowledge, master the engineering management related to management [2], economic and legal basic knowledge, with high professional comprehensive quality and ability, professional ethics, innovative spirit and international vision, can in civil engineering or other engineering fields engaged in the whole process of engineering management of senior professionals.

(2) Colleges and universities should establish a subject system according to their own characteristics

Based on the characteristics of the school's subjects, such as our school's "medical and industrial combination"

华北理工大学文件

校字〔2019〕123号

华北理工大学 关于印发《“医工融合”工程建设方案 (试行)》的通知

各单位:

为深入贯彻《中国制造2025》《“健康中国2030”规划纲要》等文件精神,落实学校第一次党代会和二届四次教代会提出的任务要求,统筹推进“医工融合”工程,结合学校实际,特制订《“医工融合”工程建设方案(试行)》,现印发各单位,请遵照执行。

附:“医工融合”工程建设方案(试行)

华北理工大学
2019年12月17日

华北理工大学校长办公室 2019年12月17日印发



3. Development of Project Management Informatization

Informatization [3] of construction project management is the development trend in project management in the future. At the beginning of the heart century, human beings are entering the era of knowledge economy with information technology as the core, and information resources have become as important strategic resources as materials and energy. Information technology is combining with traditional industries with its incomparable advanced nature. The scale of construction projects at home and abroad is expanding, and construction projects increasingly need the control of the whole process, and project management will present the characteristics of informatization, integration and virtualization.

The establishment of the BIM building information model [4] is a revolution in the field of architecture. It subverts the traditional architectural design mode, engineering cost mode and construction mode. Its core is to provide a complete engineering information database consistent with the actual situation by establishing a virtual three-dimensional model of building engineering.

(1) The BIM building information model will be a powerful tool for project management. The BIM building information model is expressed by a three-dimensional stereo model, which covers all the information of the project, so that the construction personnel can first see what it looks like after completion, and then extract different information from the model according to the needs. For example, the construction drawings, water supply and drainage drawings, decoration drawings and other construction drawings, which is a process from concrete to concrete, it is intuitive, image, simplify the complex problems, is a qualitative improvement and leap.

(2) The BIM building information model is applicable to all stages of the project construction. It is applied to different areas of the whole life cycle of a project. From the planning of the project decision stage to the scheme demonstration, investors can use BIM to evaluate the layout, vision, lighting, safety, ergonomics, acoustics, color and specification of the scheme, and quickly analyze the problems that the design and construction may need to deal with. Through data comparison and simulation analysis, to find out the advantages and disadvantages of different solutions, so as to determine the scheme. The large amount of building information contained in the BIM can be successfully imported into the asset management system, greatly reducing the time and manpower input of the system initialization in data preparation.

4. Learning Planning

4.1. Talent requirements for engineering management industry

1. Organizational and leadership ability

① Establish organizational structure

② People or things and other management elements are mobilized, due to the rapid change of the elements, the corresponding operation mode, the relationship adjustment should also be fast. For the mobilization of elements, is the key research direction of the industry

③ Organizational leadership skills are also reflected in graduate papers. For example, the research elements of the paper change quickly, and the introduction of new elements is also a small innovation

2. Overall thinking ability

The overall idea in the dialectics of nature (here once again reflects the idea of discipline integration), similarly, the thesis writing also needs to have a clear foothold, plus a perfect overall description

3. Ethical responsibility

① Information unimpeded

② Conflicts over ethnic groups and religious beliefs

4. International vision, cross-cultural communication skills

① "Care for personality" effective conflict range (controllable)

② Research elements are classified into higher-level classification. Eg: substitute production tools into production relations

5. Knowledge updating ability

With the development of The Times and the change of technology, many common tools in the past are constantly updated and eliminated, such as the popular "PHS" in the past, now has long disappeared, our knowledge should also be updated with the development of The Times, project management also has the corresponding ability requirements for us.

6. Discussion and consultation on public policy

No matter what industry, to have a good development, closely closely with the policy, the research of industry policy is indispensable.

4.2. Combination point of subject and thesis

(1) The pros and cons of discipline integration

Subject integration gives us more starting point for the paper. The paper of engineering management can start from the traditional construction perspective, but also can start from the direction of management, so the topic selection has great freedom. But it also brings the corresponding audit aspect may exist problems. For example, the restrictions of graduation thesis on the industry field of paper publication may be blurred due to the high integration of disciplines, which may lead to different views in the audit. In class, the teacher also talked about the differences between the three disciplines of public service management, business management and engineering management lies in the difference of research methods, and the large fields are also highly integrated. If the traditional construction of project management is similar, the paper is less controversial, but the direction of choice will be slightly narrow, but there will be no limitation of the subject field. On the contrary, the choice of wide, the potential paper audit problems have to be considered.

(2) The research of the paper innovation point

①Forecast trend

Based on the current development situation of the industry, combined with the corresponding knowledge and theory, to make certain predictions of the future development trend of the industry. Of course, the subject answer of engineering management may not be limited to the major. The development ideas of many industries may come from other industries. For example, teachers mentioned the bank card password many times in class, which is the product of the combination of social discipline and mathematics discipline. Therefore, in the prediction of industry trends, it is also necessary to refer to the development status quo and development trend of other industries, so as to make a more objective prediction.

②With tools, introduce your own thinking

The mastery of knowledge needs to be verified through practice. Because only through experience can we feel empathy, in the study of engineering management, we can apply the knowledge points learned in class to our papers. In life, we use practice to test knowledge and use knowledge to guide practical work. In the paper, different chapters are carried out around a knowledge point, such as the idea of "subject integration", and the knowledge points of each subject are linked together, such as the general direction of the school "combination of medical and industry".

③Enterprise management promotion and expand the management object, the paper can also promote the paper management elements

Modern enterprise management in the development of management object, elements in the increase, from the past single technology management, to increase the management of time, the cost of fine management, the cooperative enterprise coordination management elements, management, corresponding to the increase of the corresponding management requirements. Our paper writing can also do such a reference, increase the fine management of all aspects of the paper, around an idea of the paper for the corresponding

promotion and improvement.

5. Tag

The above content is based on the content of the teacher in class, simple to do some induction, written is rough. The initial understanding of engineering management is that this discipline itself is a combination of technology and management, with both the knowledge reserve of engineering technology and the requirements of management. In one semester of engineering management courses, what impressed me most is the integration of disciplines, not only simple technology and management, but also the integration of different disciplines, such as social disciplines and management disciplines, and the integration of different fields, which made me have a deeper understanding and understanding of engineering management, open my horizon and broaden my thinking. I would like to express my sincere thanks to the teacher for his knowledge.

References

- [1] Song Yu's name. Exploration of engineering management teaching practice under the ideological and political concept — evaluation of Engineering Management Professional Business Training Course [J]. Scientific and Technology Management Research, 2022,42 (23): 253.
- [2] Wang Wenjing, Xu Nianyong. Exploration on the way of school-enterprise collaborative education of engineering management major under the threshold of industry-education integration [J]. Theoretical Research and Practice of Innovation and Entrepreneurship, 2022,5 (21): 106-108.
- [3] Xu Cheng, Gu Bin, Liu Yang, et al. Progress and thinking on the information construction of engineering management in China [J]. Building economy, 2022,43(S2):19-23.DOI:10.14181/j.cnki.1002-851x.2022S2019.
- [4] Fu Hongfei. The Application of Building Information Model (BIM) in Building Energy Simulation [J]. China Science and Technology Information, 2023, No.691 (02): 94-95 + 98.