

## CEMENT TECHNOLOGY

Credits	3 (2.2.5)			Course code	CI3099	
Periods	Total: 60	LT: 30	TH: 30	TN:	ĐA: x	BTL/TL:
Project, Internship, Dissertation	➤ <i>Take theory class and do project of cement technology at the same semester</i>					
Evaluation	BT:	TN:	KT: 20%	BTL/TL/ĐA: 30%	Thi: 50%	
Evaluation type	<ul style="list-style-type: none"> <li>- <i>Midterm exam: essay, 45 minutes</i></li> <li>- <i>Final exam: essay, 90 minutes</i></li> <li>- <i>Project: evaluation based on the result of a project defense</i></li> </ul>					
Prerequisite course						
Previous course	Construction Materials					CI2037
Co-requisite course						
Training field	Technology of Construction Materials					
Standard	Undergraduate					
Course grade	4					
Other notes	<i>Study theory for 10 weeks with 3 teaching periods per week, then do project for 5 weeks.</i>					

### Course Description

The subject aims at equipping the student with knowledge about calculation and design of production process of binders as well as investigation on creating the new binders.

### Study documents:

- [1] Giáo trình kỹ thuật sản xuất các chất kết dính, Bùi Văn Chén, ĐHBK Hà Nội, 1974
- [2] Chất kết dính vô cơ, Vũ Đình Đâu - Bùi Danh Đại, Nhà xuất bản xây dựng, Hà Nội, 2006.
- [3] La Chemie du Ciment Portland, R.H.Bouge, Pairs.
- [4] Tuyển tập tiêu chuẩn xây dựng, tập 8-10, Bộ xây dựng, nhà xuất bản Xây dựng, Hà Nội, 1997.

### Aims of course

- Apply fundamentalist and specialized engineering knowledge to analyze mixture proportions;
- Understand inorganic binders used for construction;
- Introduction of groups of materials and choose raw materials for producing portland cement;
- Describe steps of portland cement production process;
- Choose and design of types of cement production process;
- Use softwares to calculate mixture and Acad to arrange process of technology;
- Express role of an engineer and thinking of career.

### Course learning outcomes

STT	Course learning outcomes	CDIO
L.O.1	Apply fundamentalist and specialized engineering knowledge to analyze mixture proportions	1.1, 1.2 1.4, 2.1
	L.O.1.1 Understand chemical reactions (Dehydrate and hydration)	1.1.6
	L.O.1.2 Remind composition and structure of silicate materials	1.2.10
	L.O.1.3 Remind phase diagram	1.2.12
	L.O.1.4 Apply mathematical equations for calculation of mixture compositions	1.4.1
	L.O.1.5 Significance of mixture calculation	2.1.1
L.O.2	Understand inorganic binders used for construction	4.1 , 4.2, 4.5
	L.O.2.1 Understand fundamentalist properties of inorganic binders	4.1.2
	L.O.2.2 Understand role of inorganic binders in construction	4.1.3
	L.O.2.3 Introduction of inorganic binders in construction	4.1.6
	L.O.2.4 Classification of inorganic binders	4.2.4
	L.O.2.5 Production technology of non-hydraulic binders: building gypsum, magnesia cement, building lime.	4.4.1
	L.O.2.6 Ability to carry out tests of properties	4.5.5
L.O.3	Introduction of groups of materials and choose raw materials for producing portland cement	2.2 , 2.3, 2.4,4.1

STT	Course learning outcomes	CDIO
	L.O.3.1 Understand properties and engineering parameters of raw materials L.O.3.2 Introduction of raw materials used for producing portland cement L.O.3.3 Roles of raw materials used for producing portland cement L.O.3.4 Evaluation of major parameters used for calculation of mixture L.O.3.5 Calculate mixture proportions	2.2.2 2.3.1 2.3.2 2.4.4 4.4.1
L.O.4	Describe steps of portland cement production process L.O.4.1 Technology process of cement portland production L.O.4.2 Understand roles of steps of portland cement production process L.O.4.3 Models of arrangement of steps of cement production process	2.3, 4.3 2.3.2 2.3.3 4.3.1 4.3.2
L.O.5	Choose and design of types of technology process of cement production L.O.5.1 Choose equipment in each step of production L.O.5.2 Arrange equipment in steps of production suitably L.O.5.3 Design suitable process of production L.O.5.4 Calculate and arrange minor steps	4.4, 4.5 4.4.1 4.4.2 4.4.3 4.5.1 4.5.2
L.O.6	Use softwares to calculate mixture and Acad to arrange process of technology. L.O.6.1 Use software to design manufacturing equipment L.O.6.2 Use Acad to design manufacturing equipment and arrange process of production	1.4, 4.5 1.4.1 4.5.2 4.5.3
L.O.7	Express role of an engineer and thinking of career	3.1, 3.2, 4.1

STT	Course learning outcomes	CDIO
	L.O.7.1 Self introduction and think of career	3.1.1
	L.O.7.2 Establish groups and group activity	3.1.2
	L.O.7.3 Ability to report of design of technology process	3.2.1
		3.2.4
		4.1.1

### Learning strategies & Assessment scheme

Total score of course includes

- Project: 30%
- Midterm exam: 20%
- Final exam: 50%

#### Instructors

- Assoc. Prof.      Tran Van Mien
- D.Eng.            Bui Phuong Trinh
- M.Eng.            Huynh Thi Hanh
- M.Eng.            Nguyen Ngoc Thanh