MINISTRY OF EDUCATION AND TRAINING
**HO CHI MINH CITY OPEN UNIVERSITY**

# COURSE SPECIFICATION

## I. General information

1. Course title in Vietnamese: Nền Móng

   Course code: CENG5303

2. Course title in English: Foundation Design

3. Mode of delivery:

☐ FTF ☐ Online ☒ Blended

4. Language(s) for instruction:

☐ Vietnamese ☒ English ☐ Both

5. Knowledge/Skills:

☐ General ☒ Major

☐ Foundation ☐ Additional

☐ Discipline ☐ Graduation thesis

6. Credits

| Total | Theory | Practice | Self-study |
|---|---|---|---|
| 3 | 3 | 0 | 105 |

7. Administration of the course

a) Faculty/Division: Faculty of Civil Engineering

b) Academics: Dr. Vo Nguyen Phu Huan, Dr. Tran Thanh Danh, Assoc. Prof. Duong Hong Tham

c) Email: huan.vnp@ou.edu.vn, danh.tt@ou.edu.vn, tham.dh@ou.edu.vn

d) Room: Room 705, 35-37 Ho Hao Hon Street, Cô Giang Ward, District 1, HCM city

## II. Course overview

1. Course description:

This course belongs to limited speciality group. This is a very important course because students have to learn about these invisible structures under ground. These structures have a duty to bear all loading from above structures.

2. Môn học điều kiện/Requirements:

| No. | Requirements | Code |
|---|---|---|
| 1. | Pre-requisites:<br>No request | |
| 2. | Preceding courses:<br>Soil mechanics<br>Reinforced Concrete Structure 1 | <br>CENG5302<br>CENG6304 |
| | Co-courses:<br>No request | |

3. Course objectives

| Course objectives | Description | PLOs |
|---|---|---|
| CO1 | *Knowledge:*<br>- To provide the way to classify foundations and understand working principle of foundation and soil.<br>- To understand the way to choose loads from structures above and find the correctly input data.<br>- To solve these case study of foundation in these stages of construction. | PLO4 |
| CO2 | *Skill:*<br>- To have the skill that can asses the logical foundation alternate<br>- To solve these technical problems, give these the suitable solution and correctly assesment | PLO6 |
| CO3 | *Attitude:*<br>- Serious and careful in foundation design.<br>- To coordinate closely between theory, practice and experence in foundation design<br>- To have style of work | PLO9 |

4. Course learning outcomes (CLOs)

| Mục tiêu môn học/Course objectives | CĐR môn học (CLO) | Mô tả CĐR -Description |
|---|---|---|
| CO1 | CLO1.1 | Phát biểu được các số liệu đầu vào cần cho tính toán nền móng theo TTGHI và II.<br>Determine input datas and use them with in force standard in limit state I, II |
| | CLO1.2 | Liệt kê được trình tự tính toán nền móng<br>Present the procedure of the foundation with codes |

| Mục tiêu môn học/Course objectives | CĐR môn học (CLO) | Mô tả CĐR -Description |
|---|---|---|
| | CLO1.3 | Thiết kế các loại móng thông dụng<br>Design these basic foundation: pad foundation, strip foundation, pile foundation |
| CO2 | CLO2.1 | Áp dụng các phương pháp thống kê để tổng hợp, lựa chọn số liệu cần cho tính toán nền móng.<br>Use mathematical tools to determine the soil properties in the foundation |
| | CLO2.2 | Áp dụng các công thức để phân tích toàn diện Nền và móng.<br>Use and check these equation design |
| | CLO 2.3 | Sử dụng các phần mềm chuyên ngành liên quan bao gồm phần mềm tính và vẽ kỹ thuật<br>Use the speciality software |
| CO3 | CLO3.1 | Có thái độ cẩn thận và trách nhiệm, thái độ an toàn và tiết kiệm trong việc thiết kế tính toán nền móng.<br>Request: carefull, correctly and safety in foundation design |

Integration matrix between the Course learning outcomes and the Program learning outcomes

| **CLOs** | **PLO 1** | **PLO 2** | **PLO 3** | **PLO 4** | **PLO 5** | **PLO 6** | **PLO 7** | **PLO 8** | **PLO 9** |
|---|---|---|---|---|---|---|---|---|---|
| 1.1 | | | | 5 | | | | | |
| 1.2 | | | | 5 | | | | | |
| 1.3 | | | | 5 | | | | | |
| 2.1 | | | | | | 5 | | | |
| 2.2 | | | | | | 5 | | | |
| 2.3 | | | | | | 5 | | | |
| 3.1 | | | | | | | | | 5 |

5. Textbooks and materials

*a) Textbooks*

[1] Châu Ngọc Ẩn, (2014). *Nền móng*, NXB. ĐHQG-HCM. Mã sách trong thư viện: 48123

[2] Muni Budhu, (2011). *Soil mechanics and Foundation, 3rd edition,* NXB. Wiley&Son. Mã sách trong thư viện: 48855

*b) Other materials*

[3] Lê Anh Hoàng, (2012). Nền và Móng, NXB. Xây Dựng, Mã sách trong thư viện: 40173

[4] Das, B, (2016). Principles of foundation engineering. NXB. PWS Engineering. Mã sách trong thư viện: 49511

*c) Software*

[5] AutoCAD; SAP2000; SAFE

6. Student assessment

| Type of assessment | Assessment methods | Assemment time | CLOs | Weight % |
|---|---|---|---|---|
| (1) | (2) | (3) | (4) | |
| A1. Mid-term assessment | A.1.1 To check these stability, intensity and deformation condition of pad foundation with eccentric loads | After finshing chapter 2 | CLO1.1<br>CLO1.2<br>CLO1.3<br>CLO2.1 | 50% |
| A2. End-of-course assessment | A.2.1 All of chapters | End of term | CLO1.1-CLO1.3<br>CLO2.1-CLO2.3,<br>CLO3.1 | 50% |
| Total | | | | 100% |

## 7. Teaching schedule:

| Week Section | Content | CLOs | Teaching and learning | | | | | | | | | | Student assessment | Textbooks and materials |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Self-study | | FTF | | | | Online (if any) | | | | | |
| | | | | | Theory | | Practice | | Theory | | Practice | | | |
| | | | Activity | Hour | Activity | Periods | Activity | Periods | Activity | Periods | Activity | Periods | | |
| (1) | (2) | (3) | (4) | | (5) | | (6) | | (7) | | (8) | | (9) | (10) |
| 1 | **Chapter 1:** Basic knowledge in foundation design<br>1.1. Concept, classify foundation<br>1.2. Featured foundations.<br>1.3. Soil gound conception | *CLO1.1; CLO1.2; CLO1.3; CLO2.1; CLO3.1* | Review knowledge and read books | 10 | Lecturer: Teach and give these examples in classroom | 5 | | | | | | | | [1], [2], [3] |
| 2 | **Chapter 1**: (cont.) Basic knowledge in foundation design<br>1.4. Loads and limit states<br>1.5. Soil of characteristics in foundation design | *CLO1.1; CLO1.2; CLO2.1; CLO3.1* | Review knowledge and read books | 10 | Lecturer: Teach and give these examples in classroom | 5 | | | | | | | | [1], [2], [3] |
| 3 | **Chapter 2**: Shallow foundation design<br>2.1. Pad foundation with axial loads | *CLO1.1; CLO1.2; CLO1.3; CLO2.1 - CLO2.3; CLO3.1* | Review knowledge and read books | 10 | Lecturer: Teach and give these examples about pad foundation (axial loads) | 5 | | | | | | | | [1], [2], [3] |
| 4 | **Chapter 2 (cont.)**: Shallow foundation design<br>2.1. Pad foundation with axial loads (cont.)<br>2.2. Pad foundation with eccentric loads | *CLO1.1; CLO1.2; CLO1.3; CLO2.1 - CLO2.3; CLO3.1* | Review knowledge and read books | 15 | Lecturer: Teach and give these examples about pad foundation (axial loads) | 5 | | | | | | | | [1], [2], [3] |
| 5 | **Chapter 2 (cont.)**: Shallow foundation design<br>2.2. Pad foundation with eccentric loads (cont.) | *CLO1.1; CLO1.2; CLO1.3; CLO2.1 - CLO2.3; CLO3.1* | Review knowledge and read books | 15 | | | | | Lecturer: Teach and give these examples about pad foundation (eccentric | 5 | | | | [1], [2], [3] |

| Week Section | Content | CLOs | Teaching and learning | | | | | | | | | | Student assessment | Textbooks and materials |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Self-study | | FTF | | | | Online (if any) | | | | | |
| | | | | | Theory | | Practice | | Theory | | Practice | | | |
| | | | Activity | Hour | Activity | Periods | Activity | Periods | Activity | Periods | Activity | Periods | | |
| (1) | (2) | (3) | (4) | | (5) | | (6) | | (7) | | (8) | | (9) | (10) |
| | | | | | | | | | loads) | | | | | |
| 6 | **Chapter 2 (cont.)**: Shallow foundation design<br>2.3. Strip foundation<br>2.4 Mat foundation | *CLO1.1; CLO1.2; CLO1.3; CLO2.1 - CLO2.3; CLO3.1* | Review knowledge and read books | 10 | | | | | Lecturer: Teach and give these examples about strip foundation | 5 | | | | [1], [2], [3] |
| 7 | **Chapter 3: Pile foundation**<br>Midterm assessment<br>3.1. Pressed pile foundation | *CLO1.1; CLO1.2; CLO1.3; CLO2.1 - CLO2.3; CLO3.1* | Review knowledge and read books | 15 | Lecturer: Teach and give these examples about pressed pile foundation | 5 | | | | | | | | [1], [2], [3] |
| 8 | **Chapter 3: Pile foundation (cont.)**<br>3.1. Pressed pile foundation (cont.) | *CLO1.1; CLO1.2; CLO1.3; CLO2.1 - CLO2.3; CLO3.1* | Review knowledge and read books | 10 | Lecturer: Teach and give these examples about pressed pile foundation | 5 | | | | | | | | [1], [2], [3] |
| 9 | **Chapter 3: Pile foundation (cont.)**<br>3.2. Bored pile foundation. | *CLO1.1; CLO1.2; CLO1.3; CLO2.1 - CLO2.3; CLO3.1* | Review knowledge and read books | 10 | Lecturer: Teach and give these examples about bored pile foundation | 5 | | | | | | | | [1], [2], [3] |
| Total | | | | 105 | | 35 | | | | 10 | | | | |

| Tuần/buổi học<br>Week<br>Section | Nội dung<br>Content | CĐR môn học<br>LOs | Hình thức dạy học<br>Teaching and learning methods | Hình thức đánh giá<br>Student assessment |
|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) |
| 1 | **Chapter 1:** Basic knowledge in foundation design<br>1.1. Concept, classify foundation<br>1.2. Featured foundations.<br>1.3. Soil gound conception | *CLO1.1; CLO1.2; CLO1.3; CLO2.1; CLO3.1* | **Lecturer:**<br>Teach in classroom<br>**Student:**<br>+ Class: listen and do the examples.<br>+ Home: review knowledge and read books and problems | Doing exercises, examples and homeworks<br>Submitted to LMS<br>Multiple choices in final test |
| 2 | **Chapter 1**: (cont.) Basic knowledge in foundation design<br>1.4. Loads and limit states<br>1.5. Soil of characteristics in foundation design | *CLO1.1; CLO1.2; CLO2.1; CLO3.1* | **Lecturer:**<br>Teach in classroom<br>**Student:**<br>+ Class: listen and do the examples.<br>+ Home: review knowledge and read books and problems | Doing exercises, examples and homeworks<br>Submitted to LMS<br>Multiple choices in final test |
| 3 | **Chapter 2**: Shallow foundation design<br>2.1. Pad foundation with axial loads | *CLO1.1; CLO1.2; CLO1.3; CLO2.1 - CLO2.3; CLO3.1* | **Lecturer:**<br>Teach in classroom<br>**Student:**<br>+ Class: listen and do the examples.<br>+ Home: review knowledge and read books and problems | Doing exercises, examples and homeworks<br>Submitted to LMS<br>Multiple choices in final test |
| 4 | **Chapter 2 (cont.)**: Shallow foundation design<br>2.1. Pad foundation with axial loads (cont.)<br>2.2. Pad foundation with eccentric loads | *CLO1.1; CLO1.2; CLO1.3; CLO2.1 - CLO2.3; CLO3.1* | **Lecturer:**<br>Teach in classroom<br>**Student:**<br>+ Class: listen and do the examples.<br>+ Home: review knowledge and read books and problems | Doing exercises, examples and homeworks<br>Submitted to LMS<br>Multiple choices in final test |
| 5 | **Chapter 2 (cont.)**: Shallow foundation design<br>2.2. Pad foundation with eccentric loads (cont.) | *CLO1.1; CLO1.2; CLO1.3; CLO2.1 - CLO2.3; CLO3.1* | **Lecturer:**<br>Teach in classroom<br>**Student:**<br>+ Class: listen and do the examples.<br>+ Home: review knowledge and read books and problems | Doing exercises, examples and homeworks<br>Submitted to LMS<br>Multiple choices in final test |
| 6 | **Chapter 2 (cont.)**: Shallow foundation design<br>2.3. Strip foundation<br>2.4 Mat foundation | *CLO1.1; CLO1.2; CLO1.3; CLO2.1 - CLO2.3; CLO3.1* | **Lecturer:**<br>Teach in classroom<br>**Student:**<br>+ Class: listen and do the examples.<br>+ Home: review knowledge and read books and problems | Doing exercises, examples and homeworks<br>Submitted to LMS<br>Multiple choices in final test |
| 7 | **Chapter 3: Pile foundation**<br>Midterm assessment<br>3.1. Pressed pile foundation | *CLO1.1; CLO1.2; CLO1.3; CLO2.1 - CLO2.3; CLO3.1* | **Lecturer:**<br>Teach in classroom<br>**Student:**<br>+ Class: listen and do the examples.<br>+ Home: review knowledge and read books and problems | Doing exercises, examples and homeworks<br>Submitted to LMS<br>Multiple choices in final test |

| Tuần/buổi học<br>Week<br>Section | Nội dung<br>Content | CĐR môn học<br>LOs | Hình thức dạy học<br>Teaching and learning methods | Hình thức đánh giá<br>Student assessment |
|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) |
| 8 | **Chapter 3: Pile foundation (cont.)**<br>3.1. Pressed pile foundation (cont.) | *CLO1.1; CLO1.2; CLO1.3; CLO2.1 - CLO2.3; CLO3.1* | **Lecturer:**<br>Teach in classroom<br>**Student:**<br>+ Class: listen and do the examples.<br>+ Home: review knowledge and read books and problems | Doing exercises, examples and homeworks<br>Submitted to LMS<br>Multiple choices in final test |
| 9 | **Chapter 3: Pile foundation (cont.)**<br>3.2. Bored pile foundation. | *CLO1.1; CLO1.2; CLO1.3; CLO2.1 - CLO2.3; CLO3.1* | **Lecturer:**<br>Teach in classroom<br>**Student:**<br>+ Class: listen and do the examples.<br>+ Home: review knowledge and read books and problems | Doing exercises, examples and homeworks<br>Submitted to LMS<br>Multiple choices in final test |

8. Course policy

- Attendance regulations: require students to be on time, students are not allowed to miss more than 2 lessons.
- Classroom rules: students need to follow the rules of the Open University of Ho Chi Minh City.