

CIVIL AND ENVIRONMENTAL ENGINEERING, POST- BACCALAUREATE CERTIFICATE (P.B.C.)

12 credits required

All Graduate Certificate in Engineering Programs consist of 4 courses/12 credits. All students are expected to complete a preliminary course plan for their intended degree program. Degree planning worksheets can be found here: <https://advancedengineering.umd.edu/degree-planning-sheets> (<https://advancedengineering.umd.edu/degree-planning-sheets/>)

Students must complete 12 credits in one of the certificate track options.

Environmental and Water Resources

| Course | Title | Credits |
|--|---|-----------|
| ENCE630 | Environmental and Water Resource Systems I | 3 |
| Select three additional approved courses | | 9 |
| ENCE688 | Advanced Topics in Civil Engineering (ENCE688C) | |
| ENCE688 | Advanced Topics in Civil Engineering (ENCE688O) | |
| ENCE688 | Advanced Topics in Civil Engineering (ENCE688B) | |
| ENCE688 | Advanced Topics in Civil Engineering (ENCE688T) | |
| ENCE688 | Advanced Topics in Civil Engineering (ENCE688Y) | |
| Total Credits | | 12 |

Geotechnical

| Course | Title | Credits |
|--|---|-----------|
| ENCE640 | Advanced Soil Mechanics | 3 |
| ENCE741 | Earth Retaining Structures | 3 |
| Select two additional approved courses | | 6 |
| ENCE641 | Advanced Foundations Systems | |
| ENCE688 | Advanced Topics in Civil Engineering (ENCE688P) | |
| ENCE688 | Advanced Topics in Civil Engineering (ENCE688T) | |
| ENCE743 | Soil Dynamics and Earthquake Engineering | |
| Total Credits | | 12 |

Structural

| Course | Title | Credits |
|---------------------------------------|-------------------------------------|-----------|
| ENCE611 | Finite Element Methods | 3 |
| ENCE710 | Steel Structures I | 3 |
| ENCE713 | Concrete Structures I | 3 |
| Select one additional approved course | | 3 |
| ENCE610 | Fundamentals of Structural Analysis | |
| ENCE613 | Structural Dynamics | |
| Total Credits | | 12 |

Transportation

| Course | Title | Credits |
|-------------------------------|--|-----------|
| Select four of the following: | | 12 |
| ENCE674 | Urban Transit Planning and Rail Transportation Engineering | |
| ENCE675 | Airport Planning and Design | |
| ENCE677 | OR Models for Transportation Systems Analysis | |
| ENCE681 | Freight Transportation Analysis | |
| ENCE688 | Advanced Topics in Civil Engineering | |
| Total Credits | | 12 |