

# CIVIL AND ENVIRONMENTAL ENGINEERING, DOCTOR OF PHILOSOPHY (PH.D.)

The requirements for the Ph.D. degree are also the same as those of the Graduate School. The student will work closely with an adviser to develop an approved program of study suited to his or her individual needs. Before admission to candidacy, the student must pass a qualifying examination, which is normally taken after the coursework is at least 75 percent completed. There is no language requirement for the Ph.D.

Doctoral students are required to complete 36 credits beyond the Bachelor's degree, which would include the credits earned in the completion of a Master's degree. A qualifying examination is required in order to advance to candidacy. A doctoral student who passes the qualifying exam is admitted to candidacy will automatically be registered for 6 credits of ENCE899. A minimum of 12 credits must be taken in ENCE899.

Course	Title	Credits
<b>Specialization Requirements (select one)</b>		<b>30</b>
<b>1. Environmental</b>		
ENCE650	Process Dynamics in Environmental Systems	
ENCE651	Chemistry of Natural Waters	
ENCE652	Microbiological Principles of Environmental Engineering	
<b>2. Civil Systems</b>		
ENSE621	Systems Concepts, Issues, and Processes	
	or ENSE622 Systems Requirements, Design and Trade-Off Analysis	
ENCE603	Management Science Applications in Engineering	
	or ENCE677 OR Models for Transportation Systems Analysis	
ENCE688	Advanced Topics in Civil Engineering (ENCE688A Sensing and Systems Control)	
<b>3. Geotechnical</b>		
All courses approved by advisor		
<b>4. Project Management</b>		
ENCE661	Project Cost Accounting and Finance	
ENCE662	Introduction to Project Management	
ENCE664	Legal Aspects of Engineering Design and Construction	
ENCE665	Management of Project Teams	
ENCE627	Project Risk Management	
<b>5. Structures</b>		
All courses approved by advisor		
<b>6. Transportation</b>		
All courses approved by advisor		
<b>7. Water Resources</b>		
ENCE431	Hydrologic Engineering	
ENCE630	Environmental and Water Resource Systems I	
<b>Dissertation Research Requirements</b>		<b>12</b>
ENCE899	Doctoral Dissertation Research	
<b>Total Credits</b>		<b>42</b>