

# Architectural Engineering (ARE) Elective list

Updated: March 7, 2022

## Professional Development Elective (PDE) Courses

*must take 6 courses (18 hours min.)*

*any mix from both columns is okay*

*transfer credit for these courses is generally not accepted*

### Structural courses

ARE 4200 Structural Analysis II (3)  
ARE 4250 Structural Steel Design (3)  
ARE 4260 Structural Concrete Design (3)  
ARE 4285/5285 Masonry Design (3)  
ARE 4295/5295 Structural Timber Design (3)  
CE 3600 Soil Mechanics I (4)  
CE 4265/5265 Prestressed Concrete Design (3)  
CE 4610/5610 Foundation Engineering (3)  
CE 4620 Soil and Rock Slope Engineering (3)  
CE 4630/5630 Ground Improvement, Reinforcement and Treatment (3)  
CE 5010 Advanced Mechanics of Materials (3)  
CE 5200 Advanced Structural Analysis (3)  
CE 5220 Structural Dynamics (3)  
CE 5255 Advanced Steel Design (3)  
CE 5270 Highway Bridge Engineering (3)

### Mechanical courses

ARE 3360 Fundamentals of Transport Phenomena (3)  
ARE 4330 Building Electrical Systems (3)  
ARE 4390 Building Safety & Fire Protection (3)  
ARE 4430 HVAC Systems Analysis and Design (3)  
ARE 4490 Modeling and Optimization of Energy Systems (3)  
ME 3040 Thermodynamics II (3)  
ME 3170 Machine Design (3)  
ME/ESE 4460 Solar and Geothermal Engineering (3)  
ME/ESE 4470 Wind and Ocean Energy Engineering (3)

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## MSTP Electives

*must take two (6 hours min.)*

*MSTP means Math/Science/Technical/Professional*

*MSTP courses can not be double-counted for any other degree requirement, including USP requirements*

### CAECM independent learning experiences

CE 4965 Undergraduate Research (3)  
CE 4970 WYDOT Design Squad Coop (3)  
CE 4975 Civil and Architectural Engineering Internship (3)

### CAECM courses

Any additional PDE Course from the list above (3)  
ARE 4050 Modern Engineering Practice (3)  
*usually offered Study Abroad*  
ARE 4920 Senior Architectural Engineering Problems (3)  
ARE 5600 Collaborative BIM Design (3)  
ARE 5700 Architectural Engineering Problems I (3)  
CE 2070 Engineering Surveying (3)  
CE 3300 Hydraulic Engineering (3)  
CE 3400 Introduction to Environmental Engineering (3)  
CE 3500 Transportation Engineering (3)  
CE 4920/5700 Carbon Capture and Storage (3)  
CE 4920/5700 Water for Energy (3)  
CM 2000 Introduction to Construction Management (3)  
CM 3100 Construction Scheduling (3)  
CM 3120 Construction Estimating (3)  
ES 3010 Culture and Engineering in Latin America (3)

### Technical/Professional courses

ENR 2000 Environment and Society (3)  
ENR 2300 Foundations of Sustainability (3)  
ENR 2330 Environmental Ethics (3)  
ENR 2345 Natural Resource Ethics (3)  
ENR 3000 Approaches to ENR Problem Solving (3)  
ENR 3900 Seminar in Environment and Natural Resources (1-3)  
ENR 4500 Risk Analysis (4)  
ENR 4600 Campus Sustainability (3)  
ENR 4900 ENR Policy in Practice (3)  
GIST XXXX Any GIST class  
LS XXXX Any LS class  
MGT 1040/2010 Legal Environment of Business (3)  
MGT 2030 Principle-Based Ethics (3)  
MGT 2100 Management and Organization (3)

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## MSTP Electives (cont.)

### Mathematics & Statistics courses

MATH 2250 Elementary Linear Algebra (3)  
MATH 2300 Discrete Structures (3)  
MATH 3340 Introduction to Scientific Computing (3)  
MATH 3500 Algebra I: Introduction to Rings and Proofs (3)  
MATH 4230 Introduction to Complex Analysis (3)  
MATH/STAT 4255 Mathematical Theory of Probability (3)  
MATH 4300 Introduction to Mathematical Modeling (3)  
MATH 4340 Numerical Methods... (3)  
MATH 4440 Introduction to Partial Differential Equations I (3)  
MATH 4500 Matrix Theory (3)  
MATH 5310 Computational Methods in Applied Sciences I (3)  
STAT 3050 Statistical Methods (3)  
STAT 4015 Regression Analysis (3)  
STAT 4025 Design and Analysis of Experiments I (3)  
STAT 4115 Time Series Analysis and Forecasting (3)  
STAT 4155 Fundamentals of Sampling (3)

### Science Electives

AECL 2010 Introduction to Soil Science (4)  
AECL 3030 Ecological Web: Ecology of Plant Protection (3)  
ASTR 2310 General Astronomy I (4)  
ATSC 2000 Introduction to Meteorology (3)  
ATSC 2100 Global Warming: The Science (3)  
ATSC 4320 The Ocean Environment (3)  
CHEM 1030 General Chemistry II (4)  
CHEM 1060 Advanced General Chemistry II (4)  
Plus all Chemistry courses that have CHEM 1020, 1030, 1050, or 1060 as a prerequisite.  
ENR 1200 Environment (4)

GEOL 1100/1110/1500/1600 (add'l beyond major req't) (4)  
GEOL 2000 Geochemical Cycles and the Earth System (4)  
GEOL 3600 Earth and Mineral Resources (4)  
GEOL 4113 Geological Remote Sensing (3)  
GEOL 4444 Geohydrology (3)  
Plus all Geology courses that have GEOL 1100 as a prerequisite.  
LIFE 1010 General Biology (4)  
Plus all Biology, Botany, and Zoology courses that have LIFE 1010 as a prerequisite.  
MOLB 2021 General Microbiology (4)  
Plus all Molecular Biology courses that have MOLB 2021 as a prerequisite.  
PHYS 1210 Engineering Physics I (4)  
PHYS 1220 Engineering Physics II (4)  
PHYS 2310 Physics III: Waves and Optics (3)  
Plus all Physics courses that have PHYS 1210 or 1310 as a prerequisite.  
SOIL 2010 Introduction to Soil Science (4)  
SOIL 3130 Environmental Quality (3)  
SOIL 4100 Soil Physics (4)  
SOIL 4130 Chemistry of the Soil Environment (4)