PROGRESSIVE DEGREE PROGRAM
COURSE PLAN TEMPLATE

USC SCHOOL	Viterbi School of Engineering
ACADEMIC DEPARTMENT	Mork Family Department
GRADUATE PROGRAM	Energy Engineering
POST CODE	2002
TERM EFFECTIVE DATE	Fall 2024

PROGRAM DESCRIPTION
A brief description of the graduate program.

This program is designed for students interested in the multidisciplinary field of energy transitions requiring the integration of physical principles with engineering analysis for a broad range of scientific activities related to developing processes (e.g., CO2 capture and utilization), new materials (e.g., photovoltaic cells), and energy storage capacity (e.g., H2 storage underground).

COMMON BACHELOR DEGREE PROGRAM PATHWAYS
A list of common bachelor's degrees that undergraduate students pursue in advance of pursuing a progressive degree option with this graduate program. Some programs are restricted to certain majors while others are open to all students.

Aerospace & Mechanical Engineering	
Chemical Engineering	
All other majors, please connect with PDP advisor/Mork Family Department academic advisor	

PREPARATORY UNDERGRADUATE COURSES
A list of courses at the undergraduate level that prepare students for the graduate program. Required coursework is listed first, followed by recommended courses. If not applicable, this section will be blank.

Dept. Prefix - Course #	**Course Title**	**Required or Recommended**	**Units**
CHE 330 (or AME 310)	Chemical Engineering Thermodynamics	Recommended	4
AME 310 (or CHE 330)	Engineering Thermodynamics	Recommended	4
CHE 120	Introduction to Chemical Engineering	Recommended	4
MASC 110	Materials Science	Recommended	4

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UNDERGRADUATE COURSES USED TO REDUCE GRADUATE LEVEL UNITS

A list of undergraduate level courses that may be used to reduce the number of graduate level units required for the graduate program. If there are none, that is specified instead.

Dept. Prefix - Course #	Course Title	Units
CHE 450 (Theme III)	Sustainable Energy	4
CHE 455 (Theme III)	Sustainable Materials	4
CHE 486 (Theme III)	Design of Environmentally Benign Process Plants	4
EE 443 (Elective)	Introduction to Power Systems	4

CORE GRADUATE PROGRAM REQUIREMENTS (# units required)

A list of all required graduate courses for the graduate program. None of these courses may be used toward satisfying undergraduate degree requirements.

If special exceptions for any of these courses are made by the academic department, the course # is marked with an asterisk (*) and the exception is explained in the "Department Notes" section at the end of this course plan template.

Dept. Prefix - Course #	Course Title	Units
CHE 510 (Core)	**Energy and Process Efficiency**	**4**
PTE 502 (Core)	**Applied Subsurface Characterization and Engineering**	**4**
MASC 516 (Core)	**Materials Science for Energy Transitions**	**4**
CHE 560 (Theme I)	**Advanced Separations for Energy and Environmental Applications**	**4**
MASC 570 (Theme I)	**Introduction to Photovoltaic Solar Energy Conversion**	**3**
MASC 583 (Theme I)	**Materials Selection**	**4**
PTE 512 (Theme I)	**Subsurface Carbon and Energy Storage**	**4**
MASC 515 (Theme II)	**Basic Machine Learning for Materials**	**4**
MASC 520 (Theme II)	**Mathematical Methods for Deep Learning**	**4**
PTE 586 (Theme II)	**Deep Learning for Energy Engineering**	**4**
CHE 586 (Theme II)	**Process Data Analytics and Machine Learning**	**4**
ENE 505 (Theme III)	**Energy and Environment**	**4**
MASC 564 (Theme III)	**Manufacturing Composites for Sustainability**	**4**
PTE 507 (Elective)	**Engineering and Economic Evaluation of Subsurface Reservoirs**	**3**

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PRE-APPROVED ELECTIVE COURSEWORK

Elective coursework is approved at the discretion of the academic department. Note the following details about the total number and units required of elective coursework.

4	**TOTAL ELECTIVE UNITS REQUIRED FOR THE TRADITIONAL GRADUATE DEGREE**
4	**TOTAL ELECTIVE UNITS REQUIRED FOR THE PROGRESSIVE GRADUATE DEGREE**

TOTAL UNIT COUNTS AND REQUIRED GRADUATE UNITS

28	**TOTAL UNITS REQUIRED FOR THE TRADITIONAL GRADUATE DEGREE**
8	**TOTAL GRADUATE UNITS THAT MAY BE WAIVED (IF ANY)**
20	**MINIMUM NUMBER OF GRADUATE UNITS THAT MUST BE AT THE 500 LEVEL OR ABOVE**

NOTES FROM THE DEPARTMENT

This section highlights any unique considerations, exceptions, or requirements for the graduate program. If a program has specific restrictions (courses, majors, etc.), they are detailed below.

Students must complete the following:

- Core: CHE 510, PTE 502, MASC 516 (all three)
- Theme I: Complete at least one
- Theme II: Complete at least one
- Theme III: Complete at least one
- Electives: Complete at least 1 from elective courses, or a Theme I, II, or III course not already taken

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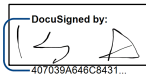
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Authorizing Dean's Name

11/19/2024 | 10:07:39 PM PST

Date Approved

Kelly Goulis — Senior Associate Dean

Authorizing Dean's Title

Last Revised 3/2/2021