

**PROGRESSIVE DEGREE PROGRAM
COURSE PLAN TEMPLATE**

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| USC SCHOOL | Viterbi School of Engineering |
| ACADEMIC DEPARTMENT | Daniel J. Epstein Department of Industrial & Systems Engineering |
| GRADUATE PROGRAM | Product Development Engineering – Systems Track |
| POST CODE | 1224 |
| TERM EFFECTIVE DATE | Spring 2021 |

PROGRAM DESCRIPTION

A brief description of the graduate program.

The MSPDE is a joint program with the Aerospace and Mechanical Engineering (AME) Department that prepares engineers to become leaders in engineering design and new product development. The MSPDE program offers two Areas of Specialization (AOS), namely Product Development Technology (PDT) and Product Development Systems (PDS). The PDT specialization will prepare students for a career as product development chief engineer, while the PDS specialization will prepare students as future product development project managers.

This plan is for the PDS (Product Development Systems) Specialization administered by the ISE Department.

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.

| | |
|----------------------------------|---------|
| Engineering | Science |
| Industrial & Systems Engineering | |

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 |
|------------------------------------|---|-------------------------|-------|
| AME-305, 408, 409, 410, or ISE-460 | Engineering Design, Engineering Economy | Required | |
| | Calculus I, Calculus II, Calculus III | Required | |
| | Linear Algebra | Required | |

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 |
|-------------------------|--------------|-------|
| | NONE | |

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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 |
|-----------------------------------|---|--------------|
| ISE-501 | Introduction to Data Management | 3 |
| ISE-545 | Predictive Analytics | 3 |
| | | |
| | Product Development Systems Specialization (PDS) | |
| ISE-515 | Engineering Project Management | 3 |
| ISE-544 | Leading & Managing Engineering Teams | 3 |
| | | |
| PDS Electives – Choose Two | | 6-8 |
| CE 576 | Invention & Technology Development | |
| DSCI 552 | Machine Learning for Data Science | |
| ISE 510 | Advanced Computational Design & Manufacturing | |
| ISE 511 | Mechatronic Systems Engineering | |
| ISE 514 | Advanced Production Planning & Scheduling | |
| ISE 525 | Design of Experiments | |
| ISE 527 | Quality Management for Engineers | |
| ISE 561 | Economic Analysis of Engineering Projects | |
| ISE 562 | Decision Analysis | |
| ISE 567 | Collaborative Engineering Principles & Practice | |
| ISE 580 | Performance Analysis with Simulation | |
| ISE 585 | Strategic Management of Technology | |
| ISE 610 | Advance Design of Experiments & Quality Engineering | |
| SAE 541 | Systems Engineering Theory & Practice | |
| SAE 549 | Systems Architecting | |

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.

| |
|---|
| 9 |
|---|

TOTAL ELECTIVE UNITS REQUIRED FOR THE TRADITIONAL GRADUATE DEGREE

| |
|---|
| 0 |
|---|

TOTAL ELECTIVE UNITS REQUIRED FOR THE PROGRESSIVE GRADUATE DEGREE

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TOTAL UNIT COUNTS AND REQUIRED GRADUATE UNITS

27

TOTAL UNITS REQUIRED FOR THE TRADITIONAL GRADUATE DEGREE

9

TOTAL GRADUATE UNITS THAT MAY BE WAIVED (IF ANY)

18-20

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.

N/A

Kelly Goulis

April 7, 2021

Authorizing Dean's Name

Date Approved

Senior Associate Dean, Viterbi School of Engineering

Authorizing Dean's Title