Professional Science Master's Programs

What is a Professional Science Master's Program?

Professional Science Master's (PSM) are innovative graduate degrees that combine advanced training in a STEM field while also developing professional skills valued by employers.

Programs must include the following components to be eligible for NPSMA affiliation:

- A majority of the course content in the natural sciences, technology, engineering, mathematics and/or computational sciences.
- A professional skills component that must be developed in consultation with leaders from industry, business, government, or non-profit organizations
- An experiential component that must include at least one capstone project, supervised collaboratively by faculty and employers, evaluated or graded by faculty and typically developed with an employer(s), which integrates the practical application of scientific and professional knowledge, behavior, and skills.

UND School of Graduate Studies PSM Structure

The PSM will be added as a transcriptable subplan option to the existing degree. The PSM option can be requested by submitting a program change request in Courseleaf.

The University of North Dakota School of Graduate Studies has developed the following structure for programs to follow if they plan to develop a PSM option in their program.

1. At least 50% of credits must be in the major discipline and up to 50% of credits consisting of PSM core coursework.
2. Final experiential component has two options. Both options must include written and oral communication elements. Program may also opt to allow students to complete both options.
   a. Option 1: A 3-6 credit internship option may be offered to meet the experiential component and will be offered at 40 hours of experience for one credit hour. Internships should not be mandatory unless the program is sure they are able to help all students find an experience.
   b. Option 2: A 2 credit Independent Study

Credit load

Programs may have 30 or 36 total credits required. The credit load should be as follows:

For programs with 30 credits:

- 15-18 credits in the major field
  - Up to 6 credits for the final experiential component
- 12-15 PSM core credits
  - A minimum of 6 credits from each category

For programs with 36 credits:

- 18-21 credits in the major field
  - Up to 6 credits for the final experiential component
- 15-18 PSM credits
  - A minimum of 6 credits from each category

Core Coursework Options

Code	Title	Credits
Quantitative/Analytic Skills Courses:		
EFR 513	Large Dataset Management and Analysis	3
EFR 515	Statistics I	3
EFR 516	Statistics II	3
EFR 518	Multivariate Analysis	3
EFR 535	Data Analytics and Visualization with R	3
GEOG 471 & 471L	Cartography and Visualization and Cartography and Visualization Laboratory	3
GEOG 474 & 474L	Introduction to Geographic Information Systems (GIS) and GIS Laboratory	3
GEOG 476	Selected Topics in Geographic Information Systems	3
GEOG 574	Advanced Techniques in Geographic Information Systems	3
ENE 530	Applied Engineering Business Analysis	3
ESSP 520	Earth Systems Modeling	3
ESSP 540	Advanced Topics in Geospatial Technologies	3
PSYC 540	Foundations of Behavioral Data Analytics	3
Professional Skills Courses:		
COMM 516	Principles of Professional Communication	3
COMM 524	International/Intercultural Communication for Professionals	3
COMM 527	Persuasion & Persuasive Communication	3
COMM 529	Science Communication	3
ENGL 408	Advanced Public and Professional Writing	3
ENGL 540	Science Writing	3
ENGR 554	Applied Project Management	3
ESSP 562	Environmental Economics, Policy and Management	3
ESSP 570	Communicating Environmental Information	3
CHEM 509	Graduate Seminar (Literature Review, Intro to Proposal Writing)	1
ENGL 599	Special Topic (Writing Science)	1-3
ENGR 554	Applied Project Management	3
ENE 533	Project Dynamics & Strategy Modeling	3