Prerequisite Course Requirements

Applicants must complete the following prerequisite courses prior to enrollment in the MS/PND program. Courses may be completed at USC or at another regionally accredited institution. Prerequisites must be equivalent to at least 3 undergraduate semester credits. If you have completed or plan on completing coursework at an institution other than USC, please verify transfer equivalency using the USC Registrar link on page 2.

Courses not available at your institution may be completed online. Approved online options are listed on page 2.

Prerequisite Course	USC Equivalent Course(s)	Status & Notes
Human Nutrition	HPEB 502 Applied Aspects of Human Nutrition (3 cr)	Required prerequisite
Food Science	No direct USC equivalent	Required prerequisite Must complete via approved online provider (see page 2)
Biology	BIOL 110 General Biology (4 cr) OR BIOL 120 Human Biology (3 cr)	Required prerequisite
Microbiology	BIOL 250 Microbiology (3 cr)	Required prerequisite Requires college-level biology and chemistry
Chemistry	CHEM 111 General Chemistry I + Lab (4 cr) OR CHEM 112 General Chemistry II + Lab (4 cr) OR CHEM 141 Principles of Chemistry I (4 cr) OR CHEM 142 Principles of Chemistry II (4 cr)	Required prerequisite
Organic Chemistry	CHEM 333 Organic Chemistry I (3 cr) OR CHEM 334 Organic Chemistry II (3 cr)	Required prerequisite
Biochemistry	CHEM 550/BIOL 541 Biochemistry (3 cr) OR CHEM 555 Biochemistry/Molecular Biology I (3 cr)	Required prerequisite CHEM 334 (Organic Chemistry II) required
Human Physiology	BIOL 240 Applied Human Physiology (3 cr) OR BIOL 242 Human Physiology (4 cr) OR EXSC 223 Anatomy & Physiology I (3 cr) OR EXSC 224 Anatomy & Physiology II (3 cr)	Required prerequisite
Exercise Physiology	EXSC 330 Exercise Physiology (3 cr)	Required prerequisite Requires EXSC 224 A&P II or BIOL 243 A&P
Psychology OR Sociology	PSYC 101 (3 cr), PSYC 360 (3 cr), PSYC 380, or SOCY 101 (3 cr), or SOCY 370 (3 cr)	Required prerequisite Exercise Psychology also fulfills this requirement
Statistics	STAT 110 (3 cr), STAT 205 (3 cr), or STAT 515 (3 cr)	Required prerequisite
Medical Terminology	No USC equivalent -- see online options	Optional for admission; required for graduation Multiple free and low-cost online options available (see page 2)

* Students who have not completed Medical Terminology prior to admission must complete an approved course before graduating from the program.

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Online Course Options for Prerequisite Completion

The courses listed below have been identified as approved or likely-to-be-approved options for completing prerequisites not available through USC or your home institution. Prerequisites must be equivalent to at least 3 undergraduate semester credits. Applicants are encouraged to verify transferability with the USC Registrar before enrollment. Contact us at mspnd@sc.edu with questions about a course not listed here.

Recommended Resource: UC San Diego Division of Extended Studies

UCSD Extended Studies offers online, asynchronous, undergraduate-level courses covering the majority of MS/PND prerequisites -- including Biology, Microbiology, General Chemistry, Organic Chemistry, Biochemistry, Human Physiology, Exercise Physiology, Psychology, and Biostatistics. Courses are offered quarterly, do not require separate lab enrollment, and are open to non-degree-seeking students.

Course catalog: extendedstudies.ucsd.edu/courses-certificates/sciences/basic-sciences

Recommended Resource: SCU Accelerated Sciences (Southern California University of Health Sciences)

SCU Accelerated Sciences offers 5-week, fully online, individually enrollable prerequisite courses designed specifically for health sciences applicants. Courses are available on a rolling 5-week schedule with no program application required. SCU is regionally accredited by WASC (same accreditor as UCSD). Prerequisites covered include Biology, Microbiology, General Chemistry, Organic Chemistry, Biochemistry, Human Physiology, Psychology, Statistics, Biostatistics, and Medical Terminology. Verify transfer credit with the USC Registrar before enrolling.

Course catalog: acceleratedsciences.scuhs.edu/course-listing

Recommended Resource: University of North Dakota Enroll Anytime

UND is an HLC-accredited R1 university offering self-paced, enroll-anytime online courses open to non-degree-seeking students at North Dakota in-state tuition rates. Students may enroll any day of the year and have up to 9 months to complete each course. Credits appear on a UND transcript indistinguishable from semester-based coursework. Prerequisites covered include Biology, General Chemistry, Human Physiology, Psychology, Sociology, Nutrition, and Statistics.

Course catalog: und.edu/academics/online/enroll-anytime

USC Registrar Transfer Credit Search: sc.edu/about/offices_and_divisions/registrar/transfer_credits
Undergraduate Course Evaluation Request Form: Submit evaluation request

Biology

UC San Diego Extended Studies
BIOL-40186 General Biology I Enrollment info

UC San Diego Extended Studies
BIOL-40364 General Biology II Enrollment info

SCU Accelerated Sciences
BIO111 General Biology I (5 weeks) Enrollment info

Microbiology

UC San Diego Extended Studies
BIOL-40336 Microbiology Enrollment info

SCU Accelerated Sciences
BIO231 Microbiology (5 weeks) Enrollment info

Chemistry

UC San Diego Extended Studies
CHEM-40006 General Chemistry I Enrollment info

UC San Diego Extended Studies
CHEM-40008 General Chemistry II Enrollment info

SCU Accelerated Sciences
CHEM211 General Chemistry I (5 weeks) Enrollment info

University of North Dakota
CHEM 121 General Chemistry I (self-paced) Enrollment info

Organic Chemistry

UC San Diego Extended Studies
CHEM-40010 Organic Chemistry I Enrollment info

UC San Diego Extended Studies
CHEM-40011 Organic Chemistry II Enrollment info

SCU Accelerated Sciences
OCHM311 Organic Chemistry I (5 weeks) Enrollment info

Arizona State University
General Organic Chemistry I (online) Enrollment info

Biochemistry

UC San Diego Extended Studies
BIOL-40357 Biochemistry Enrollment info

SCU Accelerated Sciences
BIO322 Biochemistry (5 weeks) Enrollment info

University of Arizona Online
BIOC 385 Metabolic Biochemistry or BIOC 384 Foundations in Biochemistry Enrollment info

Human Physiology

UC San Diego Extended Studies
BIOL-40340 Human Physiology Enrollment info

SCU Accelerated Sciences
BIO261 Human Physiology (5 weeks) Enrollment info

University of North Dakota
BIMD 220 Human Anatomy & Physiology I (self-paced) Enrollment info

University of North Dakota
BIMD 221 Human Anatomy & Physiology II (self-paced) Enrollment info

Exercise Physiology

UC San Diego Extended Studies
FPM-40432 Exercise Physiology Enrollment info

UC Berkeley Extension
MCELLBIX421 Exercise Physiology Enrollment info

UCLA Extension
PHYSCI X 450 Exercise Physiology Enrollment info

MCPHS (Mass. College of Pharmacy & Health Sciences)
BIO 345E Exercise Physiology Enrollment info

Psychology

UC San Diego Extended Studies
PSYC-40028 Introduction to Psychology Enrollment info

SCU Accelerated Sciences
PSY102 Psychology I (5 weeks) Enrollment info

University of North Dakota
PSYC 111 Introduction to Psychology (self-paced) Enrollment info

Arizona State University
PSY 101 Introduction to Psychology Enrollment info

Southern New Hampshire University
Introduction to Psychology Enrollment info

Sociology

University of North Dakota
SOC 110 Introduction to Sociology (self-paced) Enrollment info

Statistics / Biostatistics

UC San Diego Extended Studies
BIOL-40049 Biostatistics Enrollment info

SCU Accelerated Sciences
MATH213 Statistics (5 weeks) Enrollment info

SCU Accelerated Sciences
BIO401 Biostatistics (5 weeks) Enrollment info

University of North Dakota
PSYC 241 Statistics for the Behavioral Sciences (self-paced) Enrollment info

Human Nutrition

SCU Accelerated Sciences
NUTR204 Human Nutrition (5 weeks) Enrollment info

Saint Joseph's University
HSC 253 Nutrition: Health & Disease Enrollment info

University of North Dakota
N&D 240 Fundamentals of Nutrition (self-paced) Enrollment info

Food Science

Clemson University
FNPS 2140 Food Resources and Society (3 cr) Enrollment info

The Ohio State University
FDSCTE 2300 Food Science in Health (3 cr) Enrollment info

NC State University
Introduction to Food Science Enrollment info

Kansas State University Online
FDSCI 302 Introduction to Food Science Enrollment info

Medical Terminology

SCU Accelerated Sciences
BIO200 Intro to Medical Terminology (5 weeks, credit-bearing) Enrollment info

Des Moines University
Medical Terminology Course (Free, non-credit) Enrollment info

Alison / Apex Learning
Introduction to Medical Terminology (Free, non-credit) Enrollment info

University of Pittsburgh (Coursera)
Clinical Terminology for International and U.S. Students Enrollment info

Rice University Online
Medical Terminology Online Course I Enrollment info

Penn Foster
Medical Terminology Certificate Enrollment info

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Syllabus Self-Screening Guide

Before submitting a course for prerequisite review, please compare your course syllabus to the learning objectives and topics listed below for each prerequisite. A course will be considered equivalent if its syllabus demonstrates substantial coverage of the listed objectives and topics. This is the same comparison used during review. Courses with significant gaps in coverage will not be accepted.

How to Use This Guide

1. Locate the section below for each prerequisite course you are submitting for review.
2. Compare your syllabus course description, learning objectives, and topic/week schedule to the listed objectives and topics.
3. If your syllabus substantially covers the listed content, proceed with your application and include the syllabus in your application materials.
4. If your syllabus has significant gaps, consider whether a supplemental course is needed, or contact us at mspnd@sc.edu before applying.

Human Nutrition

RDN Exam Alignment: RDN Exam Domain I, Topic A: Principles of Normal Nutrition; Composition of Food

Expected Learning Objectives	Expected Topics / Course Content
▪ Describe the biological and chemical basis of nutrition ▪ Explain basic nutrition concepts and define commonly used nutrition terms ▪ Examine daily eating patterns and nutrient intake ▪ Identify roles nutrition plays in health promotion and disease prevention ▪ Describe the use of scientific research in nutritional science	▪ Science of nutrition; food supply and dietary tools ▪ Human digestion and absorption ▪ Carbohydrates, lipids, proteins, and alcohol metabolism ▪ Energy metabolism and energy balance ▪ Weight control and eating disorders ▪ Nutrition, exercise, and sports performance ▪ Fat-soluble and water-soluble vitamins ▪ Water and major minerals; trace minerals ▪ Nutrition during pregnancy, breastfeeding, growing years, and adult years

Food Science

RDN Exam Alignment: RDN Exam Domain I, Topic A: Food Science (1a-b); Domain IV: Procurement and Production

Expected Learning Objectives	Expected Topics / Course Content
▪ Describe physical and chemical properties of food ▪ Conduct sensory evaluation of foods ▪ Explain principles of food safety, processing, preservation, and packaging ▪ Describe food biotechnology and genetic engineering ▪ Explain the function of ingredients and techniques of food preparation (e.g., leavening agents, batters, doughs) ▪ Describe effects of preparation techniques on sensory properties and nutrient retention ▪ Explain the role of food additives ▪ Interpret label and packaging claims and conduct nutrient analysis ▪ Apply the scientific method to food science research	▪ Physical and chemical properties: water, vegetables/fruits, sugars, flours/grains, dairy, eggs, meats, fats/oils, beverages, functional foods ▪ Sensory evaluation of food ▪ Food safety, processing, preservation, and packaging ▪ Food biotechnology and genetic engineering ▪ Function of ingredients; techniques of food preparation ▪ Effects of techniques/methods on sensory properties and nutrient retention ▪ Role of food additives ▪ Nutrient databases and nutrient analysis ▪ Label and packaging claims

Biology

RDN Exam Alignment: RDN Exam Domain I, Topic A: Principles of human anatomy, physiology, microbiology, and biochemistry

Expected Learning Objectives	Expected Topics / Course Content
▪ Understand the characteristics and organization of living organisms ▪ Explain cellular structure, function, and processes ▪ Describe the principles of genetics and heredity ▪ Understand evolution and natural selection ▪ Explain ecological relationships and ecosystems ▪ Apply the scientific method to biological questions	▪ Chemistry of life (atoms, molecules, water, organic compounds) ▪ Cell structure and function (prokaryotic vs. eukaryotic) ▪ Cellular respiration and photosynthesis ▪ Cell division (mitosis and meiosis) ▪ Mendelian genetics and DNA structure ▪ Gene expression and regulation ▪ Evolution and natural selection; classification and biodiversity ▪ Ecology, ecosystems, and population dynamics

Microbiology

RDN Exam Alignment: RDN Exam Domain I, Topic A: Principles of microbiology; Domain IV: Food safety and sanitation

Expected Learning Objectives	Expected Topics / Course Content
▪ Describe characteristics of bacteria, viruses, fungi, protozoa, parasites, and prions ▪ Explain fundamentals of microbial reproduction, growth, and regulation ▪ Describe the immune response to microbial-caused infection ▪ Evaluate and apply testing methods for microbes	▪ 5 core concepts: evolution, structure-function relationships, information flow, metabolic pathways, biological systems ▪ Characteristics of microorganisms: bacteria, viruses, fungi, protozoa, parasites, prions ▪ Microbial reproduction, growth, and control ▪ Immune response to microbial infection ▪ Evaluation and testing of microbes; pathogenic features of disease-causing microbes

Chemistry

RDN Exam Alignment: RDN Exam Domain I, Topic A: Supporting sciences underpinning nutrition biochemistry

Expected Learning Objectives	Expected Topics / Course Content
▪ Understand atomic structure and the periodic table ▪ Explain chemical bonding and molecular structure ▪ Apply stoichiometry to chemical reactions ▪ Describe states of matter and their properties ▪ Understand chemical equilibrium and reaction rates ▪ Apply acid-base and redox chemistry concepts	▪ Atomic structure; periodic table organization and trends ▪ Chemical bonding (ionic, covalent, metallic); nomenclature and formulas ▪ Stoichiometry and balancing equations ▪ States of matter; solutions, concentrations, and molarity ▪ Chemical reactions and energy changes ▪ Acids, bases, and pH; oxidation-reduction reactions ▪ Chemical equilibrium; thermodynamics basics

Organic Chemistry

RDN Exam Alignment: RDN Exam Domain I, Topic A: Biochemical foundations relevant to nutrient structure and metabolism

Expected Learning Objectives	Expected Topics / Course Content
▪ Explain organic molecular structure including atom hybridization and bond geometry ▪ Apply organic compound nomenclature, conformations, and configurations ▪ Describe chemical reactions including nucleophilic substitution and elimination ▪ Explain outcomes of addition reactions involving alkenes and alkynes ▪ Describe synthesis and reactivity of alcohols and their derivatives	▪ Organic molecular structure; atom hybridization and bond geometry ▪ Organic compound nomenclature; conformations and configurations ▪ Nucleophilic substitution and elimination reactions ▪ Addition reactions: alkenes and alkynes ▪ Alcohols and their derivatives ▪ Aromatic compounds; electrophilic and nucleophilic aromatic substitution (Org Chem II) ▪ Carbonyl chemistry; enols, enolates, and key reactions (Org Chem II) ▪ Spectroscopy basics: IR and NMR (Org Chem II)

Biochemistry

RDN Exam Alignment: RDN Exam Domain I, Topic A: Principles of human biochemistry; nutrient metabolism; physiological systems

Expected Learning Objectives	Expected Topics / Course Content
▪ Describe the structure, function, digestion, and metabolism of carbohydrates, lipids, and proteins ▪ Explain enzyme kinetics and protein synthesis ▪ Describe signal transduction and membrane function ▪ Explain DNA replication, RNA synthesis, and regulation ▪ Apply understanding of major metabolic pathways	▪ Structure and function of macromolecules: carbohydrates, lipids, proteins, nucleic acids ▪ Enzyme kinetics; protein synthesis and modification ▪ Signal transduction; membrane structure and function ▪ DNA replication and repair; RNA synthesis and regulation ▪ Glycolysis; citric acid cycle; oxidative phosphorylation ▪ Gluconeogenesis; fatty acid oxidation and synthesis; amino acid catabolism

Human Physiology

RDN Exam Alignment: RDN Exam Domain I, Topic A: Principles of human anatomy, physiology -- GI, Renal, Pulmonary, CV, Neurological, Musculoskeletal, Reproductive

Expected Learning Objectives	Expected Topics / Course Content
▪ Explain the organization of the human body from cells to organ systems ▪ Describe homeostatic mechanisms and feedback loops ▪ Understand the structure and function of major organ systems ▪ Explain how organ systems interact to maintain health ▪ Apply physiological principles to clinical scenarios ▪ Understand the pathophysiology of common diseases	▪ Homeostasis and feedback mechanisms; cell physiology and membrane transport ▪ Nervous system (central and peripheral); muscle physiology (skeletal, cardiac, smooth) ▪ Cardiovascular system: heart, blood vessels, circulation ▪ Respiratory system: gas exchange and ventilation ▪ Renal system: kidney function, fluid and electrolyte balance ▪ Digestive system: digestion, absorption, and metabolism ▪ Endocrine system: hormones and regulation ▪ Immune system: innate and adaptive immunity ▪ Reproductive systems; integumentary system

Exercise Physiology

RDN Exam Alignment: RDN Exam Domain I, Topic A: Musculoskeletal physiology; sports nutrition; energy metabolism in exercise

Expected Learning Objectives	Expected Topics / Course Content
▪ Explain bioenergetics and their relationship to exercise demands and adaptations ▪ Describe the role of physical activity and nutrition in regulating body composition ▪ Explain the response, adaptation, and regulation of musculoskeletal, pulmonary, cardiovascular, and endocrine systems related to exercise ▪ Describe the effects of environment on exercise performance and adaptation ▪ Apply current guidelines for sport nutrition and ergogenic aids ▪ Explain basic program design principles for power, strength, and endurance	▪ Bioenergetics: ATP-PCr, glycolytic, and oxidative systems; energy continuum ▪ Cardiovascular and pulmonary responses and adaptations to acute and chronic exercise ▪ Neuromuscular physiology: muscle fiber types, recruitment, fatigue ▪ Endocrine responses to exercise; hormonal regulation ▪ Body composition assessment and regulation; role of exercise and nutrition ▪ Environmental physiology: heat, altitude, cold ▪ Sport nutrition principles: macronutrient and micronutrient needs for performance ▪ Ergogenic aids: evidence base and relationship to performance and health ▪ Basic program design: power, strength, and endurance

Psychology or Sociology

RDN Exam Alignment: RDN Exam Domain I, Topic B: Education theories, human behavior and change management; Domain II: Educational readiness assessment, psychosocial and behavioral factors

Expected Learning Objectives	Expected Topics / Course Content
▪ Understand major psychological or sociological perspectives and theories ▪ Explain biological bases of behavior (Psychology) or social structure and institutions (Sociology) ▪ Describe cognitive processes or social stratification and inequality ▪ Understand human development across the lifespan or processes of socialization and culture ▪ Explain social influences on behavior; deviance and social control ▪ Apply research methods in psychology or sociology	▪ Major theories and models: psychological or sociological ▪ Biological bases of behavior; or society and social institutions ▪ Cognitive processes: perception, memory, learning; or social inequality and stratification ▪ Human development across the lifespan; or culture and socialization ▪ Psychological disorders and treatments; or deviance and social control ▪ Research methods; statistical reasoning applied to psychology or sociology ▪ Social influences on behavior; or social change and globalization

Statistics

RDN Exam Alignment: RDN Exam Domain I, Topic C: Research Applications -- data collection, analysis, interpretation, statistical analysis

Expected Learning Objectives	Expected Topics / Course Content
▪ Organize and summarize data using descriptive statistics ▪ Understand probability distributions ▪ Conduct hypothesis testing and interpret results ▪ Apply estimation techniques (confidence intervals) ▪ Analyze relationships between variables ▪ Use statistical software for data analysis ▪ Interpret statistical results in context	▪ Data types and measurement scales; descriptive statistics (mean, median, mode, SD) ▪ Data visualization: histograms, boxplots, scatterplots ▪ Probability theory; probability distributions (normal, binomial, t-distribution) ▪ Sampling distributions and Central Limit Theorem ▪ Confidence intervals and margin of error ▪ Hypothesis testing: null and alternative hypotheses; t-tests; ANOVA ▪ Chi-square tests; correlation and regression analysis ▪ Type I and Type II errors; statistical power and effect size ▪ Introduction to statistical software (e.g., SPSS, R, Excel)

Medical Terminology

RDN Exam Alignment: Supports clinical documentation and NCP throughout all RDN Exam domains

Expected Learning Objectives	Expected Topics / Course Content
▪ Define and correctly use medical terms derived from Latin and Greek roots, prefixes, and suffixes ▪ Identify terminology associated with major body systems ▪ Apply medical terminology in clinical documentation contexts	▪ Word roots, prefixes, and suffixes ▪ Body systems terminology: integumentary, musculoskeletal, cardiovascular, respiratory, digestive, urinary, nervous, endocrine, reproductive ▪ Diagnostic procedures, surgical terms, and pharmacological terminology ▪ Clinical documentation and abbreviations