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THE UNIVERSITY OF ARIZONA

New Academic Program Workflow Form

General

Proposed Name: Precision Nutrition & Wellness

Transaction Nbr: 00000000000041

Plan Type: Major

Academic Career: Undergraduate

Degree Offered: Bachelor of Science

Do you want to offer a minor? Y

Anticipated 1st Admission Term: Fall 2020

Details

Department(s):

AGSC

DEPTMNT ID	DEPARTMENT NAME	HOST
1237	Nutritional Sciences	Y

Campus(es):

MAIN

LOCATION	DESCRIPTION
TUCSON	Tucson

Admission application terms for this plan: Spring: Y Summer: N Fall: Y

Plan admission types:

Freshman: Y Transfer: Y Readmit: Y Graduate: N

Non Degree Certificate (UCRT only): N

Other (For Community Campus specifics): N

Plan Taxonomy: 30.1901, Nutrition Sciences.

Program Length Type: Program Length Value: 0.00

Report as NSC Program:

SULA Special Program:

Print Option:

Diploma: Y Bachelor of Science in Precision Nutrition and Wellness

Transcript: Y Bachelor of Science in Precision Nutrition and Wellness

Conditions for Admission/Declaration for this Major:

N/A

Requirements for Accreditation:

N/A

Program Comparisons

University Appropriateness

The BS in Precision Nutrition and Wellness aligns with the University of Arizona strategic plan, specifically, Pillar II: Grand Challenges and aims to leverage 4th Industrial Revolution advancements and tackle critical problems at the edge of human endeavor. Students who complete this degree program can go on to confront pressing health and wellness challenges in our communities through interdisciplinary collaboration. Students will be prepared to bring precision health and wellness technologies to communities to improve health, well-being, and quality of life. This degree has a strong focus on technology including data science and machine learning. Students educated in the art and science of "big data" will be in high demand and can help to build a workforce capable of addressing grand challenges related to nutrition, disease prevention, and wellness.

Arizona University System

NBR	PROGRAM	DEGREE	#STDNTS	LOCATION	ACCRDT

Peer Comparison

Faculty & Resources

Faculty

Current Faculty:

INSTR ID	NAME	DEPT	RANK	DEGREE	FCLTY/%
09207273	Veronica Mullins	1237	Assit. Prof. Pract.	Master of Science	.10

INSTR ID	NAME	DEPT	RANK	DEGREE	FCLTY/%
22079663	Floyd Chilton	1237	Professor	Doctor of Philosophy	.10
01268480	Kelly Jackson	1237	Assoc. Prof. Pract.	Master of Science	.10
15309301	Kirsten Limesand	1237	Professor	Doctor of Philosophy	.10
00794256	Melanie Hingle	1237	Assoc. Prof	Doctor of Philosophy	.10
22071194	Ningning Zhao	1237	Assit. Prof	Doctor of Philosophy	.10
22081105	Carmen Young	1237	Assit. Prof. Pract.	Bachelor of Science	.10
22053867	Jennifer Teske	1237	Assoc. Prof	Doctor of Philosophy	.10
22068495	Ann Skulas-Ray	1237	Assit. Prof	Doctor of Philosophy	.10
22074868	Richard Simpson	1237	Assoc. Prof	Doctor of Philosophy	.10
02463079	Donato Romagnolo	1237	Professor	Doctor of Philosophy	.10
12203833	Jennifer Ricketts	1237	Assoc. Prof. Pract.	Doctor of Philosophy	.10
11908210	Jennifer Ravia	1237	Assit. Prof. Pract.	Master of Science	.10

Additional Faculty:

N/A

Current Student & Faculty FTE

DEPARTMENT	UGRD HEAD COUNT	GRAD HEAD COUNT	FACULTY FTE
1237	565	23	27.90

Projected Student & Faculty FTE

	UGRD HEAD COUNT			GRAD HEAD COUNT			FACULTY FTE		
DEPT	YR 1	YR 2	YR 3	YR 1	YR 2	YR 3	YR 1	YR 2	YR 3
1237	575	585	595	23	23	23	27.90	27.90	27.90

Library

Acquisitions Needed:

N/A

Physical Facilities & Equipment

Existing Physical Facilities:

N/A

Additional Facilities Required & Anticipated:

N/A

Other Support

Other Support Currently Available:

N/A

Other Support Needed over the Next Three Years:

N/A

Comments During Approval Process

10/4/2019 7:53 AM

KAYLESKORUPSKI

Comments
Approved.

10/4/2019 8:36 AM

STATENM

Comments
Approved.

10/8/2019 11:07 AM

MARTINMARQUEZ

Comments
Changed upside down question marks in the University Appropriateness section to quotation marks. MARTINMARQUEZ

10/29/2019 10:30 AM

MARTINMARQUEZ

Comments
Updated head count and projected counts per Ronnie Mullins.

THE UNIVERSITY OF ARIZONA

NEW ACADEMIC PROGRAM-UNDERGRADUATE MAJOR
ADDITIONAL INFORMATION FORM

I. PURPOSE AND NATURE OF THE MAJOR–provide a description for the proposed program. Include the purpose, nature, and highlights. The description will be displayed on the advisement report and should match departmental and college websites, handouts, promotional materials, etc.

Bachelor of Science in Precision Nutrition and Wellness (CIP 30.1901 Nutrition Sciences)
The Precision Nutrition and Wellness Bachelor of Science degree prepares students to work in the burgeoning field of precision nutrition. The first of its kind in the United States, our program brings together the study of human genes, nutrition, lifestyle choices, and metabolic diseases to teach students how nutrition and exercise programs, tailored to an individual's genetic composition, can prevent and mitigate common diseases. Precision health and wellness is the future of medicine, and the University of Arizona is the only place where undergraduate students can begin to prepare for a career in this groundbreaking field.

Students in this major will build upon big data solutions developed for precision medicine and cancer treatment by finding new ways to apply data to better understand precision health from a holistic perspective, including interactions between genes, diets, and lifestyles. Students will take courses in genomics, metabolomics, lipidomics, and transcriptomics to acquire a strong foundation in data sciences and the research and technologies shaping modern healthcare.

Over the past 75 years, diseases related to systemic inflammation have increased as lifestyles in developed countries have changed. Technological changes in food production and processing have negatively altered the quality and quantity of food consumed by the majority of Americans and people in other nations who consume a Western diet. Sugars, refined grains, and oils contribute to high-calorie, tasty meals and snacks with little nutritional value. These changes have led to detrimental increases in obesity and gene-diet interactions that are responsible for elevations in localized and systemic inflammation; this inflammation then contributes to a wide range of human diseases including cardiovascular disease (CVD), diabetes, cancer, asthma, allergies, chronic joint disease, skin and digestive disorders, dementia, and Alzheimer's disease.

Through the Precision Nutrition and Wellness Bachelor of Science degree, students will gain the skills to tackle big data to find solutions to individuals' disease risk factors, and they will learn how to create a nutrition prescription, customized to an individual's DNA. They will develop knowledge and skills to counsel individuals to make lifestyle changes that improve their health outcomes while preparing to lead the nutrition-based disease prevention efforts of the future.

II. MAJOR REQUIREMENTS– complete the table below to list the major requirements, including minimum number of credit hours, required core, electives, and any special requirements, including sub-plans, theses, internships, etc. Note: information in this section must be consistent throughout the proposal documents (comparison charts, department checklists, curricular/assessment map, etc.). Delete the EXAMPLE column before submitting/uploading. Complete table found in Appendix A if requesting a corresponding minor.

Total units required to complete degree	126
Upper-division units required to complete degree	42
Foundation courses	
Second language	Complete one of the following: (0-8 units) ● pass a language proficiency exam at 2nd semester level ● complete courses through second semester proficiency (up to 8 units)
Math	Moderate Math Strand (0-3 Units)
English	(3-6 units) ENGL 101 or 107 (3) ENGL 102 or 108 (3) or ENGL 109H (3)
General education requirements	*General Education: (21 units)* 2 courses/ 6 units- Tier I 150 (INDV) 2 courses/ 6 units-Tier I 160 (TRAD) 1 course/ 3 units-Tier II Arts 1 course/ 3 units-Tier II Humanities 1 course/ 3 units-Tier II Individuals and Societies
Pre-major? (Yes/No. If yes, provide requirements). Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	No

List any special requirements to declare or gain admission to this major (completion of specific coursework, minimum GPA, interview, application, etc.)	None
Major requirements	
Minimum # of units required in major (units counting towards major units and major GPA)	61
Minimum # of upper-division units required in the major (upper division units counting towards major GPA)	46
Minimum # of residency units to be completed in the major	18
Required supporting coursework (courses that do not count towards major units and major GPA, but are required for the major). Courses listed must include subject code, units, and title. Include any limits/restrictions needed (house number limit, etc.). Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	*Statistics Requirement (3 units)* *Choose one:* MATH 163 Basic Statistics (3 units) MATH 263 Introduction to Statistics and Biostatistics (3 units) SBS 200 Introduction to Statistics for the Social Sciences (4 units) ISTA 116 Statistical Foundations for the Information Age (3 units) AREC 239 Introduction to Statistics and Data Analysis (4 units) *General Sciences: (24 units)* CHEM 151 or CHEM 141/143 or CHEM 161/163 General Chemistry I (4 units) CHEM 152 or CHEM 142/144 or CHEM 162/164 General Chemistry II (4 units) CHEM 241A or 246A Organic Chemistry I (3 units) BIOC 384 Foundations in Biochem (3 units) BIOC 385 Metabolic Biochemistry (3 units) MCB 181R Introduction to Biology (3 units) PSIO 380 Fundamentals of Human Physiology (4 units)

Major requirements (list all required major coursework including major core, major electives, sub-plan core, and sub-plan electives; courses count towards major units and major GPA) Courses listed must include course prefix, number, units, and title. Mark new coursework (New). Include any limits/restrictions needed (house number limit, etc.). Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	*Major Core: (Complete 11 courses:31 units)* NSC 101 Intro to Human Nutrition (3 units) NSC 260 Nutrition Communication and Scientific Literacy (3 units) NSC 2** Fundamentals of Precision Nutrition and Wellness (3 units) NSC 3** Emerging Topics in Precision Nutrition and Wellness (2 units) NSC 308 Nutrition and Metabolism (3 units) NSC 351R Fundamentals of Food Science (3 units) NSC 392 Directed Research (2 units) NSC 408 Nutritional Biology (3 units) NSC 475 Nutrigenomics for the Study of Disease Prevention & Intervention (3 units) NSC 4** Biomarkers and Disease Status (3 units) NSC 4** Nutrition and Wellness Genomic Counseling (3 units) *Major Elective Areas: (30 units)* *Area 1: Data Analytics & Technology (9 units)* ● BE 310 Introduction to Biosystem Analytics (3 units) ● CSC 250 Essential Computing for the Sciences (3 units) ● ECOL 346 Bioinformatics (4 units) ● PLS 340 Introduction to Biotechnology (3 units) ● MCB 416A Statistical Bioinformatics and Functional Genomic Analysis (3 units) ● MCB 422 Problem Solving with Genetic Tools (3 units) *Area 2: Health and Wellness (9 units)* ● NSC 301 Nutrition and the Life Cycle (3 units) ● NSC 310 Principles of Human Nutrition in health and Disease (3 units) ● NSC 320 Nutrition, Physical Activity and Health Promotion (3 units) ● NSC 444 Community Nutrition (3 unit) *Area 3: Diet and Genes (9 units)* ● FSHD 200 Evolution and Human Development (3 units) ● ECOL 320 Genetics (4 units) ● NSC 375 Diet, Genes, and Disease (3 units)

	● NROS 430 Neurogenetics (3 units) ● BE 487 Metagenomics: From Genes to Ecosystems (3 units) Area 4: Ethics (3 units) ● FSHD 347 Neuroethics (3 units) ● MCB 404 Bioethics (3 units) ● PHIL 321 Medical Ethics (3 units)
Internship, practicum, applied course requirements (Yes/No. If yes, provide description)	NSC 392 Directed Research, individual or small group research under the guidance of the faculty. This option is more structured and goal oriented than research under independent study.
Senior thesis or senior project required (Yes/No. If yes, provide description)	No
Additional requirements (provide description)	No
Minor (specify if optional or required)	Optional
Any double-dipping restrictions? (Yes/No. If yes, provide description)	Yes, major core courses not permitted to double-dip. Supporting coursework may double dip with other majors.

III. CURRENT COURSES–using the table below, list existing courses included in the proposed major. If the courses listed belong to a department that is not a signed party to this implementation request, upload the department head's permission to include the courses in the proposed program and information regarding accessibility to and frequency of offerings for the course(s). Upload letters of support/emails from department heads to the "Letter(s) of Support" field on the UAccess workflow. Add rows to the table, as needed.

Course prefix and number (include cross-listings)	**Units**	**Title**	**Course Description**	**Pre-requisites**	**Modes of delivery (online, in-person, hybrid)**	**Typically Offered (F, W, Sp, Su)**	**Dept signed party to proposal? (Yes/No)**
NSC 101 Equivalent to: (NSC 170C1, NSC 170C1-SA, N_SC 101, N_SC 170C1, N_SC 170C1-SA)	3	Intro to Human Nutrition	Current concepts and controversies in human nutrition. Carbohydrates, proteins, lipids, vitamins and minerals in nutrition; and the relation of nutrition to health throughout the life cycle.	None	In-person, online	All	N/A
NSC 260	3	Nutrition Communication and scientific literacy	This course will prepare students to critically evaluate or interpret, summarize, and communicate evidence-based scientific information in a variety of public and professional venues, including but not limited to scientific conferences, public forums (e.g., social media), food demonstrations and the classroom.	NSC 101 or 170c1 ENG 102 or ENG 109H	In-person	F, Sp	N/A
NSC 301	3	Nutrition and the Life Cycle	Role of nutrients in human development. Physiological bases for changes in nutrient requirements throughout the life cycle (pregnancy, lactation, infancy, childhood, adolescence and aging).	None	In-person, Online	F, Sp, Su	N/A
NSC 308	3	Nutrition and Metabolism	Introduction to nutritional sciences and the integration of the effects of nutrients and nutritional status of metabolic and physiological functions at the cellular, tissue, organ and system level in humans as related to health and disease. Designed for nutritional sciences majors and those with a background in biological and chemical sciences.	NSC 101	In-person, online	F, Sp, Su	N/A
NSC 310	3	Principles of Human Nutrition in Health and Disease	Application of basic nutritional principles in the selection of normal and therapeutic diets; designed for students in the health sciences.	None	In-person	F, Su	N/A
NSC 320	3	Nutrition, Exercise and Health Promotion	This course is designed to build the knowledge and practical skills needed to motivate, communicate, and effect positive nutrition, physical activity, and health behavioral changes in the general population. Students will learn to create nutrition	None	In-person	F, Sp	N/A

			programs, perform physical fitness assessments, set realistic health goals, build rapport, and identify weight management challenges. Topics including nutrition and digestion, obesity physiology, and nutritional programming will be discussed and practiced within case studies. In addition, this course prepares students for the American Council on Exercise (ACE) Personal Training Certification Exam and the ACE Health Coach Certification Exam. Completion of these exams are optional and do not count toward the grade for this course.				
NSC 351R	3	Fundamentals of Food Science	Scientific principles of food production, preservation, and ingredient interactions.	CHEM 241A	In-person	Fa, Su	N/A
NSC 375	3	Diet, Genes, and Disease	Current knowledge of human nutrition and genes has created a unique opportunity to use diet and other biologically active food components in the diet to improve the quality of life of people by the prevention and treatment of human disease. Also called Nutrigenomics, the identification and understanding of how nutrients and bioactive food components interact with the genome will be discussed.	None	Online	Su	N/A
NSC 392	3	Directed Research	Individual or small group research under the guidance of faculty.	None	In-person	All	N/A
NSC 408	3	Nutritional Biology	Structure and function of nutrients, digestion and metabolism of proteins, carbohydrates, lipids, vitamins and minerals; energy and maintenance of cellular functions; nutritional ecology of monogastrics and ruminants; elements of gene regulation; nutritional and hormonal influences on gene expression.	NSC 308	In-person, online	F, Sp	N/A
NSC 444	3	Community Nutrition	This course is an in depth look at how the RD/nutritionist works in the community, by providing hands-on experience in teaching nutrition in a community setting. The course will cover areas such as determining needs for nutrition education, public policy, various nutrition programs, funding and grant writing, and communication skills needed for various audiences.	None	In-person	Sp	N/A
NSC 475	3	Nutrigenomics	Nutrigenomics is the application of genomics to human nutrition. This online course will explore relevant technologies, genetics and nutrition. Designed by researchers in colleges and centers of excellence, it will be continually updated with the latest information.	MCB 181R, MCB 181L, BIOC 460, NSC 308, MATH 112.	Online	F	N/A
NSC 478 Equivalent to: (CPH 478, HPS 478, NSC 478)	3	Public Health Nutrition	This course is an analysis of nutrition issues concerned with health and disease. Biochemical, physiological and socioeconomic interactions will be evaluated as they relate to the development, implementation, monitoring and evaluation	None	In-person, online	F, Sp	N/A

			of nutrition programs and research that affect individuals across the lifespan.				
AREC 239	4	Introduction to Statistics and Data Analysis	This is an introductory course in statistics and probability. This course deals with applied data analysis, probability concepts, and statistical inference including confidence intervals and hypothesis testing. Applications and examples will be drawn from life and social sciences.	None	In-person	Sp	Yes
BE 310	3	Introduction to Biosystem Analytics	New Course, no description available yet.	None	Offered 2020	F	Yes
BE 487	3	Metagenomics: From Genes to Ecosystems	Environmental genomics is revolutionizing our understanding of microbes from the environment to human health, towards a holistic view of ecosystems or "One-Health". At its core are new molecular methods called metagenomics to sequence DNA directly from an environmental sample, thus capturing the whole microbial community and bypassing culture. Modern (Next-Gen) sequencing technologies offer vast new datasets of short sequence reads representing these microbial communities, however many hurdles exist in interpreting data with high species complexity and given specialized software for microbial metagenomic analyses. This course focuses on the science of metagenomics towards understanding (1) questions that metagenomics can address, (2) possible approaches for metagenomic sequencing and analysis, and (3) how genes, pathways, and environmental context are translated into ecosystem-level knowledge. This course alternates between traditional lectures and hands-on experience with programming, bioinformatics tools, and metagenomic analysis. The course concludes with several weeks of seminar-format discussions on current research in metagenomic data analysis and a final project of your choice analyzing real-world experimental data.	MCB 416, ABE 201 and MIC 205 are recommended.	In-person	F	Yes
BIOC 384	3	Foundations in Biochemistry	Structure and function of proteins, lipids, carbohydrates, and nucleic acids, with a focus on understanding the molecular function of essential biomolecules.	None	In-person, online	F, W, Sp, Su	Yes
BIOC 385	3	Metabolic Biochemistry	Fundamentals of metabolism and nucleic acid biochemistry at the cellular and organismal levels, with a focus on key pathways and regulatory mechanisms.	None	In-person, online	F, W, Sp, Su	Yes
CHEM 151	4	General Chemistry I	Integrated lecture-lab course designed to develop a basic understanding of the central principles of chemistry that are useful to explain and predict the properties of chemical substances based on their atomic and molecular structure. Additionally, students will be introduced to modern laboratory techniques and participate in experimental activities that promote the development of basic and advanced science-process skills. The course is designed for students who require a strong foundation in general chemistry, such as science and engineering majors, pre-medical and pre-pharmacy students.	Credit is allowed for only one of these lecture/lab combinations: CHEM 105/106A, CHEM 141/143, CHEM 151 or CHEM 161/163.	In-person	F, Sp, Su	Yes

CHEM 152	4	General Chemistry II	Continuation of CHEM 151. Integrated lecture-lab course designed to develop a basic understanding of the central principles of chemistry that are useful to explain and predict the properties of chemical substances based on their atomic and molecular structure. Additionally, students will be introduced to modern laboratory techniques and participate in experimental activities that promote the development of basic and advanced science-process skills. The course is designed for students who require a strong foundation in general chemistry, such as science and engineering majors, pre-medical and pre-pharmacy students.	Credit allowed for only one of the these lecture/lab combinations: CHEM 105B/106B, CHEM 142/144, CHEM 162/164, or CHEM 152.	In-person	F, Sp, Su	Yes
CHEM 241A	3	Organic Chemistry I	General principles of organic chemistry.	Concurrent registration in CHEM 243A encouraged. Credit allowed for one of the following, CHEM 241A, CHEM 242A, CHEM 246A.	In-person	F, Sp, Su	Yes
CSC 250	3	Essential Computing for the Sciences	This course teaches essential computing skills for students in scientific disciplines. No prior background in programming is required. The content focuses on three computational skills: (i) basic programming in a scripting language such as Python, and knowledge of its supported data structures; (ii) facility with the UNIX operating system environment, including file structure, regular expressions, and job control; (iii) essential database skills, including database accession and interfacing through the SQL query language.	None	In-person	Sp	No
ECOL 320 Equivalent to: (ECOL 320H, MCB 320, MCB 320H)	3	Genetics	The principles that govern the inheritance of all living organisms including molecular, chromosomal, organismal, population and evolutionary aspects of genetics. Extensive problem solving required.	ECOL 181R, ECOL 181L, ECOL 182, CHEM 103B, CHEM 104B.	In-person	Sp	Yes
ECOL 346	3	Bioinformatics	Advances in genomic and other high-throughput biological technologies are rapidly changing how biologists study the diversity of life. This course will introduce students to these new data and computational tools. As a field, bioinformatics is built around a core of fundamental evolutionary biology concepts and these will serve as an organizing theme for the course. Lectures provide 1) the conceptual and methodological basis of how large-scale biological data -- especially genomic and transcriptomic data -- are analyzed, 2) the basic biological principles that underlie bioinformatic analyses, in particular homology, duplication and loss of genes and genomic regions, types and rates of mutation in genomes, and the basic evolutionary forces that shape genomes 3) descriptions of contemporary problems in bioinformatics and computational and wet-laboratory approaches to addressing these issues, and 4) experience with current genomic and other large-scale data sets and	ECOL 320 or 326 or MCB 304	In-person	Sp	Yes

			databases as well as the computational methods for their analysis.				
EDP 200 Equivalent to: FSHD 200, PSY 200, PSYC 200	3	Evolution and Human Development	An examination of human psychological and behavioral development across the lifespan with a focus on how the processes of evolution have influenced individual development	None	In-person	F, Sp	Yes
ISTA 116	4	Statistical Foundations for the Information Age	Understanding uncertainty and variation in modern data: data summarization and description, rules of counting and basic probability, data visualization, graphical data summaries, working with large data sets, prediction of stochastic outputs from quantitative inputs. Operations with statistical computer packages such as R.	None	In-person	F, Sp	Yes
MATH 163 Equivalent to: (DATA 361, DATA 363, MATH 160, MATH 160-CC, MATH 163-CC, MATH 263, MATH 263-CC, MATH 361, MATH 363)	3	Basic Statistics	Organizing data: displaying distributions, measures of center, measures of spread, scatterplots, correlation, regression, and their interpretation. Design of experiments: simple random samples and their sampling distribution, models from probability, normal distributions, and normal approximations. Statistical inference: confidence intervals and hypothesis testing, t procedures and chi-square tests. Not intended for those who plan further studies in statistics. Except as per University policy on repeating a course, credit will not be given for this course if the student has credit in a higher level math course. Such students may be dropped from the course. Examinations are proctored.	None	In-person	F, Sp	Yes
MATH 263 Equivalent to: DATA 361, DATA 363, MATH 160, MATH 160-CC, MATH 163, MATH 163-CC, MATH 263-CC, MATH 361, MATH 363	3	Introduction to Statistics and Biostatistics	Organizing data; distributions, measures of center and spread, scatterplots, nonlinear models and transformations, correlation, regression. Design of experiments: models from probability, discrete and continuous random variables, normal distributions, sampling distributions, the central limit theorem. Statistical inference; confidence intervals and test of significance, t procedures, inference for count data, two-way tables and chi-square procedures, inference for regression, analysis of variance. Examinations are proctored.	None	In-person	F, Sp, Su	Yes
MCB 181R Equivalent to: (BIOC 181R, ECOL 181R, MCB 184, MCB 315, MIC 181R)	3	Introduction to Biology	Introduction to biology covers fundamental principles in molecular and cellular biology and basic genetics. Emphasis is placed on biological function at the molecular level, with a focus on the structure and regulation of genes, the structure and synthesis of proteins, how these molecules are integrated into cells, and how these cells are integrated into multicellular systems. Examples stem from current research in bacteria, plants, and animals (including humans) in the areas of cell biology, genetics, molecular medicine and immunology.	None	In-person, online	F, Sp, Su	Yes
MCB 416A Equivalent to: (ABE 416A, BIOC 416A, ECOL 416A, GENE 416A)	3	Statistical Bioinformatics and Genomic Analysis	The course introduces statistical methods and algorithms for analysis of high-throughput experiments in molecular biology using analysis of gene expression microarrays as a leading example. The course provides hands-on experience with data analysis, critical review of literature and communication of the results.	Basic statistical knowledge and programming experience.	In-person	Sp (even years)	Yes

MCB 404	3	Bioethics	Advances in biomedical research will be reviewed and their ethical, social and legal implications discussed.	One year of college-level introductory biology; botany not acceptable.	In-person	F, Sp, Su	Yes
MCB 422	3	Problem Solving with Genetic Tools	Computer-simulated laboratory. Solving problems via genetic experiments in yeast and Mendelian genetic systems. Individual projects, assessed by regular written lab reports, require deduction and discovery of genotype, pathway, and genetic phenomena through crosses and phenotypic observation. In addition, a mutagenesis design assignment, oral presentation on a monogenic disease, and two literature reviews (on Cancer and Genome editing) will be assigned. Approximately 30 minute active lectures followed by solving of problems in class.		In-person	F, Sp, Su	Yes
NROS 430	3	Neurogenetics	Neurogenetics deals with the molecular function of neural genes, their molecular signaling pathways and their relation to neurological disorders. It also provides a powerful methodology to examine molecular and cellular mechanisms of neuronal patterning, migration, connectivity, and all aspects of neuronal function including locomotion, perception, cognition, memory, and behavior. This course teaches genetic approaches to study the nervous system and provides insights into the genetic nature and genetic models of neurological and psychiatric diseases.		In-person	Sp	Yes
PHIL 321	3	Medical Ethics	Ethical issues that arise in relation to medicine and health care: abortion, euthanasia, the allocation of scarce medical resources, socialized medicine, doctor-patient confidentiality, paternalism, etc.	2 courses from Tier One - Traditions/Cultures .	In-person, online	F, W, Sp, Su	Yes
PLS 340 Equivalent to: MIC 340, MCB 340	3	Introduction to Biotechnology	Survey of both the basic concepts and techniques used in the analysis and improvement of biological organisms by genetic engineering and cell culture as well as examples of biotechnology improvements that have been made in various organisms. The course covers topics ranging from bioremediation to Cancer Stem Cells.	PLS 240 or MCB 181R or MIC 205 or an introductory course in biology	In-person	F	Yes
PSIO 380	3	Fundamentals of Human Performance	Designed to provide upper-division non-physiology majors with a working understanding of the fundamentals of human biological function, elucidating general principles of human physiology, mechanisms of regulation and the normal variations in human biology, while weaving daily-life applications throughout. A combination of lecture, small and large group discussions, and in-class activities will be utilized to provide an understanding of how the body works from the cellular to the organ system level.	Not open to students that have completed PSIO 201 and PSIO 202.	In-person, online	F, Sp	Yes

SBS 200	4	Introduction to Statistics for the Social Sciences	An introductory course in the fundamentals of modern statistics with applications and examples in the social and behavioral sciences. Topics include: methods for describing and summarizing data, probability, random sampling, estimating population parameters, significance tests, contingency tables, simple linear regression, and correlation.	None	In-person, online	F, Sp, Su	Yes

IV. NEW COURSES NEEDED – using the table below, list any new courses that must be created to initiate the major. If specific course number is undetermined, please provide level, (ie CHEM 4**). Add rows as needed. Is a new prefix needed? If so, provide the subject description so Curricular Affairs can generate proposed prefix options.

Course prefix and number (include cross-listings)	**Units**	**Title**	**Course Description**	**Pre-requisites**	**Modes of delivery (online, in-person, hybrid)**	**Status***	**Anticipated first term offered**	**Typically Offered (F, W, Sp, Su)**	**Dept signed party to proposal? (Yes/No)**
NSC 2**	3	Fundamentals of Precision Nutrition & Wellness	This course is designed to teach the fundamental concepts of nutrition and wellness including disease prevention and wellness at an individual/population level through transformative advances in understanding the relationship between nutrition, lifestyle, genomics, metabolomics, and human evolution.	None	In-person, online	D	Spring 2021	F, Sp, Su	
NSC 3**	2	Emerging Topics in Precision Nutrition & Wellness	This journal club style course explores emerging topics in precision nutrition and wellness by examining the latest research in gene-lifestyle/diet interactions, racial/ethnic health disparities, emerging approaches in disease prevention and wellness, understanding molecular networks that drive human diseases, and the use of biomarkers to assess current and future disease status.	NSC 2**	In-person	D	Fall 2021	F, Sp	
NSC 4**	3	Biomarkers of Current and	This course will allow students to better discern the molecular networks that drive human disease and how biomarkers are	NSC 308	In-person	D	Spring 2022	F, Sp	

		Future and Disease Status	developed and used as an indicator of current and future disease status.						
NSC 4**	3	Nutrition and Lifestyle Genomics	This course allows students to study variation in the human genome and its relationship to nutrition, lifestyles and health approaches.	NSC 308	In-person	D	Spring 2022	F, Sp	

*In development (D); submitted for approval (S); approved (A)

Subject description for new prefix (if requested). Include your requested prefix, if any. :

N/A

V. FOUR-YEAR PLAN – provide a sample four-year degree plan that includes all requirements to graduate with this major and takes into consideration course offerings and sequencing. Refer to Degree Search for examples. Use generic title/placeholder for requirements with more than one course option (e.g. Upper Division Major Elective, Minor Course, Second Language, GE Tier 1, GE Tier 2). Add rows as needed.

Semester 1		**Semester 2**		**Semester 3**		**Semester 4**	
Course prefix and number	**Units**	**Course prefix and number**	**Units**	**Course prefix and number**	**Units**	**Course prefix and number**	**Units**
ENGL 101	3	Eng 102	3	NSC 260	3	CHEM 241A	3
MATH 112	3	NSC 2**	3	BE 310	3	NSC 320	3
NSC 101	3	CHEM 151	4	CHEM 152	4	NSC 375	3
Language	4	MCB 181R	3	Math 263	3	Gen Ed	3
Gen Ed	3	Language	4	Gen Ed	3	Gen Ed	3
Total	16	**Total**	17	**Total**	16	**Total**	15
Semester 5		**Semester 6**		**Semester 7**		**Semester 8**	
Course prefix and number	**Units**	**Course prefix and number**	**Units**	**Course prefix and number**	**Units**	**Course prefix and number**	**Units**
BIOC 384	3	BIOC 385	3	NSC 408	3	NSC 4**	3
NSC 308	3	PSIO 380	4	NSC 475	3	NSC 4**	3
NSC 392	2	NSC 310	3	BE 487	3	MCB 422	3
PLS 340	3	NROS 430	3	NSC 3**	2	MCB 404	3
Gen Ed II	3	Gen Ed II	3	NSC 444	3	Gen Ed II	3
Total	14	**Total**	16	**Total**	14	**Total**	15

VI. STUDENT LEARNING OUTCOMES AND CURRICULUM MAP—describe what students should know, understand, and/or be able to do at the conclusion of this major. Work with Office of Instruction and Assessment to create a curricular map using Taskstream. Include your curricular map in this section (refer to Appendix C for sample Curriculum Map).

At the conclusion of this major, students will be able to

1. Apply scientific evidence, best practices, and professional judgment when examining the relationships between the human genome nutrition, lifestyles, metabolism, gene-diet/lifestyle interactions, racial/ethnic disparities and human diseases.

2. Develop, interpret and analyze scientific verbal, written, and multimedia communications.

3. Describe how next-generation technologies, genetics and metabolomics tools, and biomedical resources can be used to acquire and analyze large and complex datasets. This in turn will facilitate the identification of gene-nutrition/lifestyle interactions, the study of racial/ethnic health disparities and the capacity to predict and prevent human diseases to optimize health and quality of life.

4. Demonstrate problem solving and critical reasoning skills related to biomedicine and bioethics.

Curriculum Map:

Precision Nutrition and Wellness

Courses and Activities Mapped to Precision Nutrition and Wellness BS

	Outcome			
	Outcome 1 Apply scientific evidence, best practices, and professional judgment when examining the relationships between the human genome nutrition, lifestyles, metabolism, gene-diet/lifestyle interactions, racial/ethnic disparities and human diseases.	Outcome 2 Develop, interpret and analyze scientific verbal, written, and multimedia communications.	Outcome 3 Describe how next-generation technologies, genetics and metabolomics tools, and biomedical resources can be used to acquire and analyze large and complex datasets. This in turn will facilitate the identification of gene-nutrition/lifestyle interactions, the study of racial/ethnic health disparities and the capacity to predict and prevent human diseases to optimize health and quality of life.	Outcome 4 Demonstrate problem solving and critical reasoning skills related to biomedicine and bioethics.
Courses and Learning Activities				
NSC 2XX Class assignments Fundamentals of Precision Nutrition and Wellness	A			
NSC 308 Class assignments Nutrition and metabolism	A			
NSC 260 Class assignments Nutrition Communication		A		
NSC 4XX Class assignments Biomarkers and Disease Status			A	
NSC 3XX Class assignments Emerging Topics in Precision Nutrition and Wellness				A
NSC 4XX Class assignments Nutrition and Wellness Genomic Counseling				A
Survey Student Survey (Indirect) Senior exit survey	A	A	A	A

Legend : I Introduced P Practiced A Assessed I/P Introduced/Prac

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VII. ASSESSMENT PLAN FOR STUDENT LEARNING- using the table below, provide a schedule for program assessment of intended student learning outcomes 1) while students are in the program and 2) after completion of the major. Add rows as needed. Delete EXAMPLE row.

Learning Outcomes	Sources(s) of Evidence	Assessment Measures	Data Collection Points
Outcome 1: Apply scientific evidence, best practices, and professional judgment when examining the relationships between the human genome nutrition, lifestyles, metabolism, gene-diet/lifestyle interactions, racial/ethnic disparities and human diseases.	Course-embedded qualitative assessments Pre-test on nutrition, metabolism, diet-gene interactions, and precision health. Pre-reflection on learning objectives	Exams, papers, case studies and other forms of student work	NSC 2** Fundamentals of Precision Nutrition and Wellness NSC 308 Nutrition and metabolism
Outcome 2: Develop, interpret and analyze scientific verbal, written, and multimedia communications.	Course-embedded assessments	Research paper and student presentations. Scientific literacy quizzes.	NSC 260 Nutrition Communication
Outcome 3: Describe how next-generation technologies, genetics and metabolomics tools, and biomedical resources can be used to acquire and analyze large	Course-embedded assessments	Exams, papers, case studies and other forms of student work	NSC 4** Biomarkers and Disease Status

and complex datasets. This in turn will facilitate the identification of gene-nutrition/lifestyle interactions, the study of racial/ethnic health disparities and the capacity to predict and prevent human diseases to optimize health and quality of life.			
Outcome 4: Demonstrate problem solving and critical reasoning skills related to biomedicine and bioethics.	Course-embedded assessments Post-test on nutrition, metabolism, diet-gene interactions, and precision health. Post-reflection on learning objectives	Papers, case studies, and other forms of student work	NSC 3** Emerging Topics in Precision Nutrition and Wellness NSC 4** Nutrition and WellnessGenomic Counseling

VIII. PROGRAM ASSESSMENT PLAN- using the table below, provide a schedule for program evaluation 1) while students are in the program and 2) after completion of the major. Add rows as needed. Delete EXAMPLE rows.

Assessment Measure	**Source(s) of Evidence**	**Data Collection Point(s)**
Length of time to graduation	*Department generated statistics*	*Every year*
Student program assessment	*Department Senior Exit Survey*	*During Spring semester of senior year*
Job Placement Statistics	*CALS & Department Student/Alumni Survey*	*At graduation and as part of alumni survey*
Graduate Program Enrollment	*CALS & Department Student/Alumni Survey*	*At graduation and as part of alumni survey*

IX. NEED FOR THE MAJOR-describe how the major fulfills the needs of the city, state, region, and nation. Provide market analysis data or other tangible evidence of the need for and interest in the proposed major. This might include results from surveys of current students, alumni, and/or employers or reference to student enrollments in similar programs in the state or region. Include an assessment of the employment opportunities for graduates of the program during the next three years.

The Precision Nutrition and Wellness Bachelor of Science degree provides a transdisciplinary approach to learning about nutrition and lifestyles as it relates to human evolution, genomics and genomic data, metabolomics/lipidomics analysis, communities, and applied health. This is a rapidly developing field focused on the study of the interactions between the human genome, metabolic capabilities (metabolomics), nutrition, and lifestyles for the purpose of individualizing the prevention and treatment of human disease. An emerging scientific literature reveals that a "one size fits all" approach to nutritional and lifestyle recommendations is often not effective. Consequently, there is a critical need for training programs focused on individualized nutrition and wellness based on metabolic capacity and often highly impacted by genetic ancestry. This field takes into account individual variability in genes, metabolism, environment, and lifestyle, including diet, for each person and utilizes genomic and metabolomics data and technology to create individualized precision nutrition, wellness and healthcare approaches.

Human diet and lifestyles in developed countries have changed dramatically in the past 75 years. For example, changes in food type (quality) and quantity found in the modern western diet (MWD) have been largely driven by technological changes in food production and processing to provide high calorie and taste-appealing (high sugars, refined grains and oils) foods [1]. These changes have led to detrimental increases in obesity and gene-diet interactions that are responsible for elevations in localized and systemic inflammation; this inflammation then contributes to a wide range of human diseases including cardiovascular disease (CVD), diabetes, cancer, asthma, allergies, chronic joint disease, skin and digestive disorders, dementia, and Alzheimer's disease [2-7]. Much of the "precision revolution" started with precision medicine and specifically cancer. Advances in precision medicine now provide a vast opportunity to utilize the same "big data technologies" to understand precision health, from interactions between genes, diets, and lifestyles to fashion health and disease prevention and risk identification strategies.

The Bachelor of Science degree in Precision Nutrition and Wellness would be the first undergraduate degree in the United States combining nutritional and lifestyle genomics and metabolomics with individualized wellness strategies. This Program will capitalize on new, cross-cutting collaborations on campus and will take a transdisciplinary educational approach to create future leaders, researchers and practitioners in this exciting field. Precision nutrition and wellness are a key and vital component of the future of medicine with initiatives at leading universities and medical centers such as University of Arizona, the University of Michigan, Stanford, and Mount Sinai, and is a primary focus of the National Institute of Health. As the field of precision health and wellness grows, the need for an educated workforce will expand with it. Students who complete this degree will have a strong foundation in science and data analytic tools and will take courses in the areas of precision health, nutrigenomics, genetics, biochemistry/metabolism, data science, and community health.

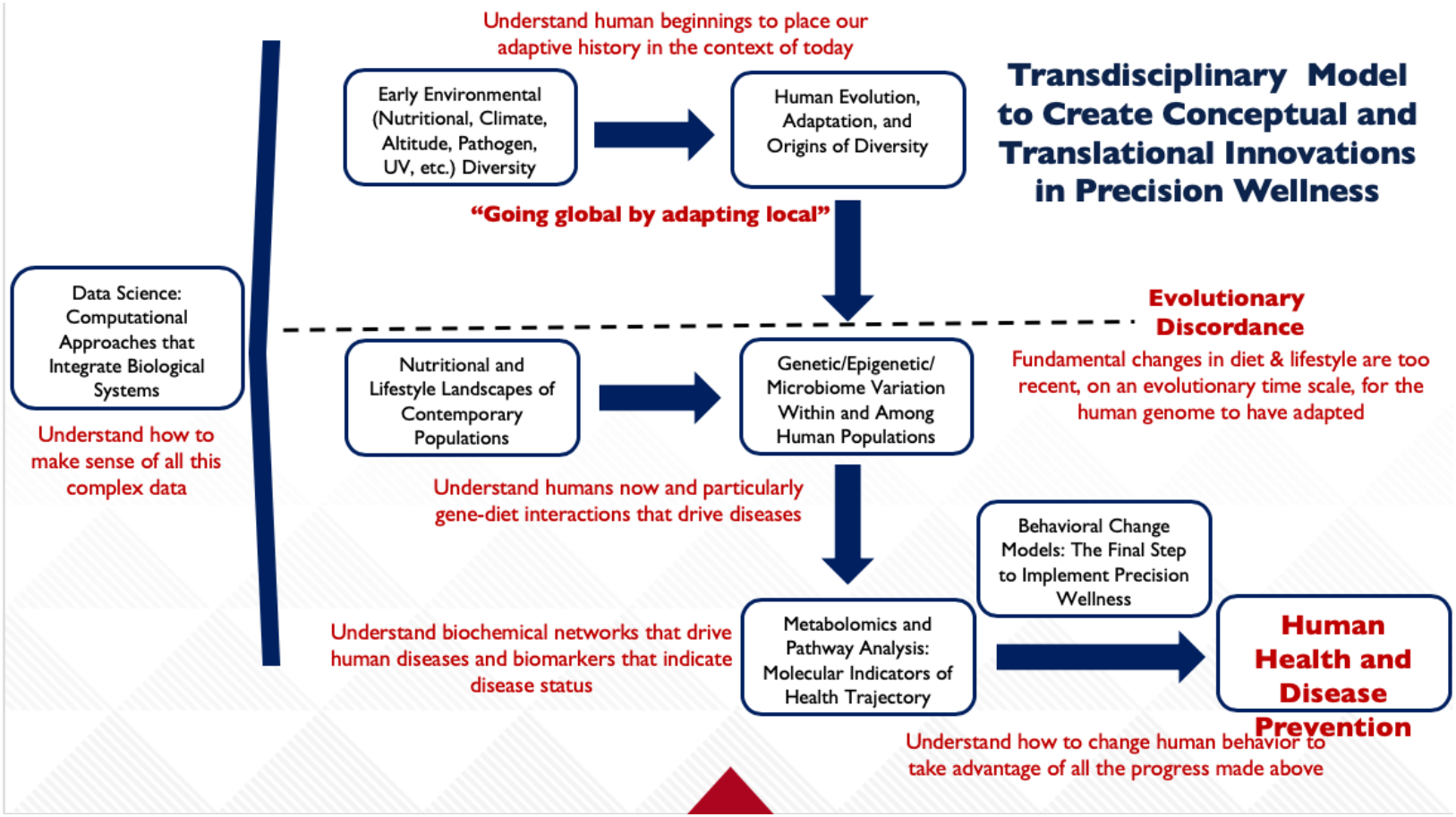
The Precision Nutrition and Wellness degree is distinctly different from both the Nutritional Sciences Dietetics and Nutrition Option BS degrees in that it is transdisciplinary, requiring at least 30 units outside of the Department of Nutritional Sciences, has a strong data, technology and 'omic component including courses on genomics, metabolomics, lipidomics, transcriptomics, and more. This unique degree could not be re-created within any of the current nutrition degree options. See NSC degree comparison chart.

The BS in Precision Nutrition and Wellness aligns with the University of Arizona strategic plan, specifically, Pillar II: Grand Challenges and aims to leverage 4th Industrial Revolution advancements and tackle critical problems at the edge of human endeavor. Students who complete this degree program can go on to confront pressing health and wellness challenges in our communities through interdisciplinary collaboration. Students will be prepared to bring precision health and wellness technologies to communities to improve health, well-being, and quality of life. This degree has a strong focus on technology including data science and machine learning. Students educated in the art and science of "big data" will be in high demand and can help to build a workforce capable of addressing grand challenges related to nutrition, disease prevention, and wellness.

Precision Nutrition and Wellness graduates would also be highly qualified to move on to a graduate study/research program, medical school, or other health related professional programs such as medical, pharmacy, osteopath, chiropractic, physician assistant, and other professional programs. In addition, they could expect to find jobs as a medical coding specialist, genomics counselor, research coordinator, data scientist, neurofeedback technician, research and development lab technicians.

In a survey of 67 University of Arizona students (34% nutrition majors, 21% nutrition minors) enrolled in a general education nutrition course, 31% said they would be interested in pursuing a major in precision nutrition and wellness, while 60% were interested in pursuing a minor. The number one reason stated for disinterest in the major was an already selected major in a non-health related field. Of the nutrition majors, 14% said they would have chosen a precision nutrition and wellness major over their current nutrition major if it was available.

1. Cordain, L., et al., *Origins and evolution of the Western diet: Health implications for the 21st century.* Am J Clin Nutr, 2005. **81**(2): p. 341-354.
2. Naderali, E.K., S.H. Ratcliffe, and M.C. Dale, *Obesity and Alzheimer's disease: a link between body weight and cognitive function in old age.* Am J Alzheimer's Dis Other Demen, 2009. **24**(6): p. 445-449.
3. Leveille, S.G., C.C. Wee, and L.I. Iezzoni, *Trends in obesity and arthritis among baby boomers and their predecessors, 1971-2002.* Am J Public Health, 2005. **95**(9): p. 1607-1613.
4. Ferrante, A.W., Jr., *Obesity-induced inflammation: a metabolic dialogue in the language of inflammation.* J.Intern.Med., 2007. **262**(4): p. 408-414.
5. Popkin, B.M., *Global nutrition dynamics: the world is shifting rapidly toward a diet linked with noncommunicable diseases.* Am J Clin Nutr, 2006. **84**(2): p. 289-98.
6. Akiyama, H., et al., *Inflammation and Alzheimer's disease.* Neurobiol Aging, 2000. **21**(3): p. 383-421.
7. Tuppo, E.E. and H.R. Arias, *The role of inflammation in Alzheimer's disease.* Int J Biochem Cell Biol, 2005. **37**(2): p. 289-305.


Understand human beginnings to place our adaptive history in the context of today
Early Environmental (Nutritional, Climate, Altitude, Pathogen, UV, etc.) Diversity
Human Evolution, Adaptation, and Origins of Diversity
Transdisciplinary Model to Create Conceptual and Translational Innovations in Precision Wellness
"Going global by adapting local"
Data Science: Computational Approaches that Integrate Biological Systems
Evolutionary Discordance
Nutritional and Lifestyle Landscapes of Contemporary Populations
Genetic/Epigenetic/ Microbiome Variation Within and Among Human Populations
Fundamental changes in diet & lifestyle are too recent, on an evolutionary time scale, for the human genome to have adapted
Understand how to make sense of all this complex data
Understand humans now and particularly gene-diet interactions that drive diseases
Behavioral Change Models: The Final Step to Implement Precision Wellness
Understand biochemical networks that drive human diseases and biomarkers that indicate disease status
Metabolomics and Pathway Analysis: Molecular Indicators of Health Trajectory
Human Health and Disease Prevention
Understand how to change human behavior to take advantage of all the progress made above

X. ANTICIPATED STUDENT ENROLLMENT-complete the table below. What concrete evidence/data was used to arrive at the numbers?

5-YEAR PROJECTED ANNUAL ENROLLMENT					
	1st Year	2nd Year	3rd Year	4th Year	5th Year
Number of Students	10	20	30	40	50

Data/evidence used to determine projected enrollment numbers:

Projected annual enrollment was determined using data from current UA programs including Molecular & Cellular Biology: Genetics & Human Health emphasis and the genetic counseling graduate program for comparison. The MCB Genetic & Human Health Emphasis was launched in fall 2018 with 36 students and as of fall 2019 has an enrollment of 42 students. This emphasis may have started with higher numbers because those students all come is as Molecular & Cellular Biology and then at a certain point in time, select their emphasis area. Current enrollment in genetic counseling graduate program at the UA is five students. Based on these two programs, we estimate that we would have 10 incoming freshmen and grow by 10 students a year, with around 50 in five years. Based on our surveys discussed earlier, the minor may be more popular to start and have higher enrollment numbers.

XI. ANTICIPATED DEGREES AWARDED- complete the table below, beginning with the first year in which degrees will be awarded. How did you arrive at these numbers? Use National Center for Education Statistics College Navigator to find program completion information of peer institutions offering a same or similar major.

PROJECTED DEGREES AWARDED ANNUALLY					
	1st Year	2nd Year	3rd Year	4th Year	5th Year
Number of Degrees	0	0	5	15	25

This number was derived through the estimation that the trend in graduates will trail behind the estimated enrollment due to attrition and time to complete the requirements is expected to be 2-3 years.

XII. PROGRAM DEVELOPMENT TIMELINE- describe plans and timelines for 1) marketing the major and 2) student recruitment activities.

If the program has completed the approval process during the fall 2019 semester, marketing will begin immediately. The Department of Nutritional Sciences and the College of Agriculture and Life Sciences have dedicated marketing and development staff members who can develop and produce marketing material. In addition, the major will be added to the College and Department websites as well as the lead generating sites used for prospective students, parents, and employers and advertises programs on Facebook, Pandora, Google and online channels to generate requests for more information. Department advisors host recruitment events throughout the spring and summer. Recruitment activities include the following:

- Advisors attend on campus recruitment events (such as Meet your Major Fair);
- High school recruitment events including tabling at college fairs and presenting at high school student leadership conferences;
- CALS has recruiters who go to targeted high schools in AZ and select out of state to promote all CALS majors; CALS runs a lead generation site

Enrollment can begin Fall 2020.

XIII. DIVERSITY AND INCLUSION-describe how you will recruit diverse students and faculty to this program.

CALS and the Department recruits diverse students through several practices: 1) A diverse group of academic advisors and college-level recruiters attend in-person recruitment events to interact with students 2) CALS and the department are proactive about ensuring that students of diverse backgrounds are reflected on items including recruitment and marketing materials. 3) CALS has a relationship with Pima Community College and provides up to date information on all CALS majors in resource booklet each semester so that PCC advisors can promote CALS programs to their diverse student population. There are also student retention efforts in CALS including: 1) A robust new student success course, as well as a success course for probationary students which advisors teach and support student success 2) CALS offers several programs with our diverse student population in mind including Peer Mentors, ASEMS, and First Gen Mixers with students, faculty and staff to support student success, especially those from underrepresented backgrounds such as low income, first generation and minority groups. 3) CALS and the Department each have committees focused on diversity and inclusion; these committees offer professional development opportunities to staff and faculty on topics which advance perspectives on best practices for fostering an inclusive environment on campus 4) CALS Career and Academic Services office sponsors several events each year designed to foster a sense of community and belonging for CALS students including resource fairs and seasonal festivities with free food and fun activities.

Faculty from diverse backgrounds will be recruited through research-based strategies which search committee members learn at *Faculty Recruitment Workshops* provided by Laura Hunter. Such strategies include writing position descriptions which speak to the unit's commitment to diversity and inclusion and the value we place as a unit on joining diverse perspectives in departmental initiatives and curriculum and casting a very large net to advertise the position and assembling search committees with diverse representation.

XIV. ABOR REQUIREMENT: Table-Proposed New Programs

Name of Proposed Degree (degree type and major), College/School, Location, Anticipated Catalog Year	**Program Fee Required? (Yes or No)**	**Brief Description Justification and Identified Market Need**	**Learning Outcomes and Assessment Plan**	**Projected 3rd Year Enrollment**
Bachelor of Science in Precision Nutrition and Wellness *College of Agriculture and Life Sciences* *Department of Nutritional Sciences* *Main Campus*	*Yes*	**Description:** *The Precision Nutrition and Wellness Bachelor of Science degree provides a transdisciplinary approach to learning about nutrition as it relates to human evolution, genomics and genomic data, metabolomics/lipidomics, lifestyles, communities, and applied health.* **Justification:** *Precision nutrition and wellness is a rapidly developing field focused on predicting, preventing and curing disease and this degree would prepare students to be leaders in an area that uses big data and technology to create individualized precision healthcare.* **Market Need:** *This would be the first undergraduate degree in area of precision nutrition and wellness in the United States and*	**Learning Outcome #1** **Concepts (Knowledge)** *Understand the relationship between nutrition, genetics, and human health.* **Competencies (Skills)** *Apply scientific evidence, best practices, and professional judgment when examining the relationships between the human genome nutrition, lifestyles, metabolism, gene-diet/lifestyle interactions, racial/ethnic disparities and human diseases.* **Measures** *Exams, papers, case studies and other forms of student work* **Assessment Method and/or Instrument(s)** *Course-embedded qualitative assessments, Pre-test on nutrition, metabolism, diet-gene interactions, and precision health. Pre-reflection on learning objectives.*	*30 Students*

		would foster a collaborative, transdisciplinary approach to student engagement and learning. Precision wellness is the future of medicine, health, and wellness with initiatives at the University of Arizona, the University of Michigan, Stanford, and the National Institute of Health. As the field of precision health and wellness grows, the need for an educated workforce grows with it.	**Learning Outcome #2** **Concepts (Knowledge)** *Comprehend written and verbal scientific information in order to better understand nutrition, genetics, and health relationships.* **Competencies (Skills)** *Develop, interpret and analyze scientific verbal, written, and multimedia communications.* **Measures** *Research papers, student presentations, and scientific literacy quizzes.* **Assessment Method and/or Instrument(s)** *Course embedded assessments.* **Learning Outcome #3** **Concepts (Knowledge)** *Understand how technology is used to generate, analyze and interpret large data sets in order to identify gene-nutrition/lifestyle interactions.* **Competencies (Skills)** *Describe how next-generation technologies, genetics and metabolomics tools, and biomedical resources can be used to acquire and analyze large and complex datasets. This in turn will facilitate the identification of gene-nutrition/lifestyle interactions, the study of racial/ethnic health disparities and the capacity to predict and prevent human diseases to optimize health and quality of life.*	

			Measures *Exams, papers, case studies and other forms of student work* **Assessment Method and/or Instrument(s)** Course embedded assessments. **Learning Outcome #4** **Concepts (Knowledge)** *Understand the ethics of science and the study of nutrition, genomics, and human health.* **Competencies (Skills)** *Demonstrate problem solving and critical reasoning skills related to biomedicine and bioethics.* **Measures** *Papers, case studies and other forms of student work* **Assessment Method and/or Instrument(s)** *Course-embedded assessments, post-test on nutrition, metabolism, diet-gene interactions, and precision health. Post-reflection on learning objectives*	

Appendix A. Minor Requirements. Complete if requesting a minor (must have same name). Delete EXAMPLE column before submitting.

Total units required to complete minor	20
Upper-division units required	9
Total transfer units that may apply to minor	9
List any special requirements to declare/admission to this minor (completion of specific coursework, minimum GPA, interview, application, etc.)	Complete all pre-requisite work
Minor requirements (list all required coursework including core and electives). Courses listed must include course prefix, number, units, and title. Mark new coursework (New). Include any limits/restrictions needed (house number limit, etc.). Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	*Minor Core: (11 Units)* NSC 101 Intro to Human Nutrition (3 units) NSC 2** Fundamentals of Precision Nutrition and Wellness(3 units) NSC 3** Emerging Topics in Precision Nutrition and Wellness (2 units) NSC 308 Nutrition and Metabolism (3 units) *<u>Minor Elective Tracks:</u> (9 units)* *Track 1: Data Analytics & Technology (3 units)* ● ECOL 346 Bioinformatics (3 units) ● MCB/PLS 340 Introduction to Biotechnology (3 units) ● MCB 416A Statistical Bioinformatics and Genomic Analysis (3 units) ● MCB 422 Problem solving with genetic tools (3 units) ● NSC 4** Biomarkers and Disease Status (3 units) *Track 2: Health and Wellness (3 units)* ● NSC 301 Nutrition and the Life Cycle (3 units) ● NSC 320 Nutrition, Exercise and Health Promotion (3 units) ● NSC 444 Community Nutrition (3 unit) ● NSC 478 Public Health Nutrition (3 units) *Track 3: Diet and Genes (3 units)* ● FSHD 200 Evolution and Human Development (3 units) ● NSC 375 Diet, Genes, and Disease (3 units)

	● BE 487 Metagenomics: From Genes to Ecosystems (3 units) ● NSC 475 Nutrigenomics (3 units) ● NSC 4** Nutrition and Wellness Genomic Counseling (3 units)
Internship, practicum, applied course requirements (yes/no). If yes, provide description.	None
Additional requirements (provide description)	None
Any double-dipping restrictions? (Yes/No. If yes, provide description)	minor coursework may not double dip with another minor.

Appendix B. Faculty CV. Complete the table below by providing UA Vitae profile link or short CV for each faculty member participating in the proposed program. Add rows as needed. UA Vitae profiles can be found in the UA directory/phonebook.

Faculty Member	UA Vitae link or "CV attached"
Floyd (Ski Chilton)	https://nutrition.cals.arizona.edu/person/floyd-ski-chilton-phd
Melanie Hingle	https://nutrition.cals.arizona.edu/person/melanie-hingle-phd-mph-rd
Kelly Jackson	https://nutrition.cals.arizona.edu/directory/faculty
Kirsten Limesand	https://nutrition.cals.arizona.edu/person/kirsten-limesand-phd
Veronica Mullins	https://nutrition.cals.arizona.edu/person/veronica-ronnie-mullins-ms-rd-cscs
Jennifer Ravia	https://nutrition.cals.arizona.edu/person/jennifer-ravia-ms
Jennifer Ricketts	https://nutrition.cals.arizona.edu/person/jennifer-ricketts-phd-rd
Donato Romagnolo	https://nutrition.cals.arizona.edu/person/donato-romagnolo-msc-phd
Richard Simpson	https://nutrition.cals.arizona.edu/person/richard-simpson-phd
Ann Skulas-Ray	https://nutrition.cals.arizona.edu/person/ann-skulas-ray-phd
Jennifer Teske	https://nutrition.cals.arizona.edu/person/jennifer-teske-phd
Carmen Young	https://nutrition.cals.arizona.edu/person/carmen-young-mfn-rd
Ningning Zhao	https://nutrition.cals.arizona.edu/person/ningning-zhao-phd

THE UNIVERSITY OF ARIZONA®

BUDGET PROJECTION FORM

Name of Proposed Program or Unit:

Precision Nutrition and Wellness

Budget Contact Person: Darren Shevchuk

	Projected		
	t Year 2020 - 2021	**nd Year** 20 ___ - 20 ___	**d Year** 20 ___ - 20 ___
METRICS			
Net increase in annual college enrollment UG	10	20	30
Net increase in college SCH UG	260	520	780
Net increase in annual college enrollment Grad			
Net increase in college SCH Grad			
Number of enrollments being charged a Program Fee			
New Sponsored Activity (MTDC)			
Number of Faculty FTE	3	3	3
FUNDING SOURCES			
Continuing Sources			
UG RCM Revenue (net of cost allocation)	62,000	124,000	186,000
Grad RCM Revenue (net of cost allocation)			
Program Fee RCM Revenue (net of cost allocation)			
F and A Revenues (net of cost allocations)			
UA Online Revenues			
Distance Learning Revenues			
Reallocation from existing College funds (attach description)			
Other Items (attach description)			
Total Continuing	**$ 62,000**	**$ 124,000**	**$ 186,000**
One-time Sources			
College fund balances			
Institutional Strategic Investment			
Gift Funding			
Other Items (attach description)			
Total One-time	**$ -**	**$ -**	**$ -**
TOTAL SOURCES	**$ 62,000**	**$ 124,000**	**$ 186,000**
EXPENDITURE ITEMS			
Continuing Expenditures			
Faculty	133,046	133,046	133,046
Other Personnel (Academic Advisor)	1,019	1,019	1,019
Employee Related Expense	42,097	42,097	42,097
Graduate Assistantships			
Other Graduate Aid			
Operations (materials, supplies, phones, etc.)	1,000	1,000	1,000
Additional Space Cost			
Other Items (attach description)			
Total Continuing	**$ 177,162**	**$ 177,162**	**$ 177,162**
One-time Expenditures			
Construction or Renovation			
Start-up Equipment			
Replace Equipment			
Library Resources			
Other Items (attach description)			
Total One-time	**$ -**	**$ -**	**$ -**
TOTAL EXPENDITURES	**$ 177,162**	**$ 177,162**	**$ 177,162**
Net Projected Fiscal Effect	**$ (115,162)**	**$ (53,162)**	**$ 8,838**

Undergraduate Major Peer Comparison Chart-delete EXAMPLE columns once ready to submit/upload. Find UA peers here: https://www.azregents.edu/arizonas-public-universities/peer-institutions

Program name, sub-plan name (if applicable), degree, and institution	**Proposed UA Program:** **Precision Nutrition and Wellness**	**Peer 1:** University of Arizona BS in Molecular and Cellular Biology Genetics and Human Health Sub Plan	**Peer 2:** University of Florida BS Nutritional Sceinces
Current # of enrolled students		42	Requested
Major Description - provide a description for the proposed program. Include the purpose, nature, and program highlights. Description must be consistent throughout the proposal documents and match departmental and college websites, handouts, and promotional materials.	The Precision Nutrition and Wellness Bachelor of Science degree provides a transdisciplinary approach to learning about nutrition as it relates to human evolution, genomics and genomic data, metabolomics/lipidomics, lifestyles, communities, and applied health. This is a rapidly developing field focused on the study of the human genome, nutrition, and health for the purpose of predicting, preventing and treating disease. This field takes into account individual variability in genes, environment, and lifestyle, including diet, for each person and utilizes genomic data and technology to create individualized precision healthcare.	University of Arizona Molecular and Cellular Biology students learn cutting edge biology through innovative teaching methods and hands-on research experiences. The MCB degree provides students the strong foundation in genetics, development, and biotechnology they need to pursue careers in medicine and other healthcare fields, pharmaceutical and biology research, and education. We aim for students to develop a deep understanding of current ideas and problems in molecular and cellular biology. At the same time, we help to build foundational skills in logic, reasoning, self-expression and communication--skills relevant to any career. Throughout our coursework, the MCB Department emphasizes active learning and problem-solving skills, encourages interdisciplinary pursuits, and is committed to providing hands-on and intellectually challenging experiences in research labs. Our goal is to prepare students for creative futures in the pursuit of scientific discovery, science education,	The Nutritional Sciences major encompasses all aspects of the consumption and utilization of food by people and animals as well as how these processes affect the health of individuals and populations. Nutritional Sciences students study organic chemistry, physics, food science, genetics, nutrition, biology of microorganisms, and diseases.

		health, or as knowledgeable representatives of science in society.	
Target careers	Graduate study/research Professional schools such as medical, pharmacy, osteopath, chiropractic, physician assistant, and other professional programs. Medical coding specialist, genomics counselor, research coordinator, data scientist, neurofeedback technician, research and development lab technician.	Medical doctor, biomedical researcher, pharmacist, genetic counselor, or other health professional	Pharmaceutical sales, extension nutrition education, nutrition policy development and employment with government agencies. Graduate study/research Professional schools
Total units required to complete degree	126	120	120
Upper-division units required to complete degree	42	42	36
Foundation courses			
English composition	**(3-6 units)** ENGL 101 or 107 (3) ENGL 102 or 108 (3) or ENGL 109H	ENGL 101 or 107 (3) ENGL 102 or 108 (3) or ENGL 109H	Included in general education requirements
Second language	**(0-8 units)** 2nd Semester Proficiency	2nd Semester Proficiency	None
Math	**(0-3 units)** Moderate Math Strand	Math 122A/B or 125 (3-5 units) Math 129 or Math 263 (3 units)	MAC 2311 Analytic Geometry and Calculus 1 (Critical Tracking; State Core Gen Ed Mathematics) (4 units)
General education requirements	**(21 units)** 2 courses/ 6 units- Tier I 150 (INDV) 2 courses/ 6 units-Tier I 160 (TRAD) 1 course/ 3 units-Tier II Arts 1 course/ 3 units-Tier II Humanities 1 course/ 3 units-Tier II Individuals and Societies	2 courses/ 6 units- Tier I 150 (INDV) 2 courses/ 6 units-Tier I 160 (TRAD) 1 course/ 3 units-Tier II Arts 1 course/ 3 units-Tier II Humanities 1 course/ 3 units-Tier II Individuals and Societies One diversity emphasis course	State Core Gen Ed: (24 Units) Composition (3 units) Humanities (3 units) Social and Behavioral Science (3 units) Biological and phytsical Science (8 units) Mathematics (3 units)

	One diversity emphasis course		
Pre-major? (Yes/No. If yes, provide requirements.) Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	NO	No	No
List any special requirements to declare or gain admission to this major (completion of specific coursework, minimum GPA, interview, application, etc.)	None	None	None
Major requirements			
Minimum # of units required in major (units counting towards major units and major GPA)	61	39	N/A
Minimum # of upper-division units required in the major (upper	46	42	36

division units counting towards major GPA)			
Minimum # of residency units to be completed in the major	18	30+ total Units 18+ MCS units	N/A
Required supporting coursework (courses that do not count towards major units and major GPA, but are required for the major). Courses listed must include subject code, units, and title. Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	***Statistics Requirement (3 units)*** *Choose one:* MATH 163 Basic Statistics (3 units) MATH 263 Introduction to Statistics and Biostatistics (3 units) SBS 200 Introduction to Statistics for the Social Sciences (4 units) ISTA 116 Statistical Foundations for the Information Age (3 units) AREC 239 Introduction to Statistics and Data Analysis (4 units) ***General Sciences: (24 units)*** CHEM 151 or CHEM 141/143 or CHEM 161/163 General Chemistry I (4 units) CHEM 152 or CHEM 142/144 or CHEM 162/164 General Chemistry II (4 units) CHEM 241A or 246A Organic Chemistry I (3 units) BIOC 384 Foundations in Biochem (3 units) BIOC 385 Metabolic Biochemistry (3 units) MCB 181R Introduction to Biology (3 units) PSIO 380 Fundamentals of Human Physiology (4 units)	MCB 330 (1 unit)	None

Major requirements (list all required major coursework including major core, major electives, sub-plan core, and sub-plan electives; courses count towards major units and major GPA) Courses listed must include course prefix, number, units, and title. Mark new coursework (New). Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	***Major Core: (Complete 11 courses: 31 units)*** NSC 101 Intro to Human Nutrition (3 units) NSC 260 Nutrition Communication and Scientific Literacy (3 units) NSC 2** Fundamentals of Precision Health (3 units) NSC 3** Emerging Topics in Precision Wellness (2 units) NSC 308 Nutrition and Metabolism (3 units) NSC 351R Fundamentals of Food Science (3 units) NSC 392 Directed Research (2 units) NSC 408 Nutritional Biology (3 units) NSC 475 Nutrigenomics for the Study of Disease Prevention & Intervention (3 units) NSC 4** Biomarkers and Disease Status (3 units) NSC 4** Nutrition and Wellness Genomic Counseling (3 units) **Major Elective Areas: (30 units)** *Area 1: Data Analytics & Technology (9 units)* BE 310 Introduction to Biosystems Analytics (3 units) CSC 250 Essential Computing for the Sciences (3 units) ECOL 346 Bioinformatics (4 units) PLS 340 Introduction to Biotechnology (3 units) MCB 416A Statistical Bioinformatics and Functional Genomic Analysis (3 units)	**MCB Foundational Courses** Chemistry: (16 units) CHEM 141/143 or 151 or 161/163 (4 units) CHEM 142/144 or 152 or 162/164 (4 units) CHEM 214A & 243A (4 units) CHEM 241B & 243B (4 units) Mathematics: (6-8 units) MATH 122A/B or 125 (3-5 units) MATH 129 or MATH 263 (3 units) Physics: (8 units) PHYS 102/181 or 141 or 161H (4 units) PHYS 103/182 or 241H (4 units) **MCB Major Courses** Core Requirements (21 units) MCB 195 or 295 (1 unit) MCB 181R (3 units) MCB181L (1 unit) ECOL 182R (3 units) ECOl 182L (1 uit) MCB 301 (4 units) MCB 304 (4 units) MCB 305 (4 units) **Genetics and Human health Sub-Plan** Choose three (9 units) MCB 325 (3 units) MCB 442 (3 units) MCB 482 (3 units) BIOC 385 (3 units) Choose one lab/research/internship (3 units) MCB 392/492 (3 unts) MCB 399/499 (3 units) MCB 399H/499H (3 units) MCB 422 (3 units) MCB 493 (3 units) MCB 398 (3 units) MB 498H (3 units) Choose Additional Electives (6 units)	**General Science (41-42 units)** CHM 2045 & 2045L General Chemistry (4 units) CHM 2046 & 2046L Gen Chem 2 (4 units) BSC 2010 & 2010L Biology 1 (4 units) BSC 2211 & 2211L Biology 2 (4 units) CHM 2210 Organic Chem 1 (3 units) BCH 3025 Biochemistry (4 units) PHY 2053 & 2053L Physics (5 units) PHY 2054 & 2054L Physics 2 (5 units) PCB 4723C or APK 2105C Physiology and Molecular Biology of animal or Applied Human Physiology (4-5 units) MCB 3020 & 3020L Biology of Microorganisms (4 units) **Major Core: (17 units)** HUN 2201 Human Nutrition (3 units) FOS 3042 Food Science (3 units) HUN 3403 Nutrition through the lifecycle (3 units) HUN 4445 Nutrition and Disease 1 (2 units) HUN 4221 Nutrition and metabolism (3) HUN 4446 Nutrition and Disease 2 (3 units) **Electives (14-17 units or more)** Genetics Electives: (3-4 units) Choose one: PCB 3063 Genetics AGR 3303 Genetics MCB 4303 Genetics of Microorganisms PCB 4304 Molecular Genetics Approved Science Course (3-4 units) Approved Science lab (1-2 units)

	MCB 422 Problem solving with genetic tools (3 units) *Area 2: Health and Wellness (9 units)* NSC 301 Nutrition and the Life Cycle (3 units) NSC 310 Principles of Human Nutrition in health and Disease (3 units) NSC 320 Nutrition, Physical Activity and Health Promotion (3 units) NSC 444 Community Nutrition (3 unit) *Area 3: Diet and Genes (9 units)* FSHD 200 Evolution and Human Development (3 units) ECOL 320 Genetics (4 units) NSC 375 Diet, Genes, and Disease (3 units) NROS 430 Neurogenetics (3 units) BE 487 Metagenomics: From Genes to Ecosystems (3 units) Area 4: Ethics (3 units) FSHD 347 Neuroethics (3 units) MCB 404 Bioethics (3 units) PHIL 210 Moral Thinking (3 units)	Writing Emphasis Elective (3 units) Upper Division MCB Elective (3 units) Recommended Courses PSIO 201 (4 units) PSIO 202 (4 units)	Select 7 elective credits (7 units) *Additional electives may be needed to complete the 120 credits required for graduation.*
Internship, practicum, applied course requirements (Yes/No. If yes, provide description)	NSC 392 Directed Research, individual or small group research under the guidance of the faculty. This option is more structured and goal oriented than research under independent study	See above	No
Senior thesis or senior project	No	Optional	No

required (Yes/No. If yes, provide description)			
Additional requirements (provide description)	No	No	No
Minor (specify if optional or required)	Optional	Optional	Optional

*Note: comparison of additional relevant programs may be requested.

Undergraduate Major Peer Comparison Chart-delete EXAMPLE columns once ready to submit/upload. Find UA peers here: https://www.azregents.edu/arizonas-public-universities/peer-institutions

Program name, sub-plan name (if applicable), degree, and institution	**Proposed UA Program:** BS Precision Nutrition and Health	**Peer 1:** BS Nutritional Sciences: Dietetics Option	**Peer 2:** BS Nutritional Sciences: Nutrition Option
Current # of enrolled students	[redacted]	229	227
Major Description - provide a description for the proposed program. Include the purpose, nature, and program highlights. Description must be consistent throughout the proposal documents and match departmental and college websites, handouts, and promotional materials.	The Precision Nutrition and Wellness Bachelor of Science degree provides a transdisciplinary approach to learning about nutrition as it relates to human evolution, genomics and genomic data, metabolomics/lipidomics, lifestyles, communities, and applied health. This is a rapidly developing field focused on the study of the human genome, nutrition, and health for the purpose of predicting, preventing and treating disease. This field takes into account individual variability in genes, environment, and lifestyle, including diet, for each person and utilizes genomic data and technology to create individualized precision healthcare.	Choose the Dietetics option to pursue a career in the field of dietetics, most likely as a registered dietitian nutritionist (RDN). You'll take courses in the areas of medical nutrition therapy (MNT), community nutrition, nutrition counseling, and food service management. Upon graduation, you'll be eligible to take the Registration Examination for Dietetic Technicians to earn the Nutrition and Dietetic Technician Registered (NDTR). You can also apply to an accredited dietetic internship program in pursuit of the Registered Dietitian Nutritionist (RDN) credential. In order to become an RDN, graduates must complete an accredited Dietetic Internship. These programs have competitive admissions and can only be started after graduation from a dietetics program. Following the dietetic internship, a national exam	Choose the Nutrition option to customize your degree program while taking many of the same science foundation and core nutrition course requirements as the dietetics option. You may take additional math and science courses required by professional schools like medical, dental, physician assistant, and physical therapy programs. Or, you may want to incorporate accounting, economics, and food service courses for an emphasis on food service management. This option does not meet the dietetics requirements to be eligible to complete a dietetic internship immediately upon graduation.

		is required as the final step to earn the RDN credential.	
Target careers	Careers in nutrition allow you to empower people to lead healthier lives, but the way you do that is up to you. Potential career paths include: ● Graduate study/research ● Medicine, pharmacy, osteopath, chiropractic, and physician assistant ● Medical coding specialist ● Genomics counselor ● Research coordinator ● Data scientist ● Neurofeedback technician ● Research and development lab technician	Careers in nutrition allow you to empower people to lead healthier lives, but the way you do that is up to you. Potential career paths include: ● Clinical Dietetics ● Medicine, Pharmacy, and Physical Therapy ● Public Health Nutrition ● Consultant / Private Practice ● Education and Research ● Food and Nutrition Program Management ● Sports Nutrition ● Health Coach ● Spokesperson ● Public Policy / Government	Careers in nutrition allow you to empower people to lead healthier lives, but the way you do that is up to you. Potential career paths include: ● Medicine, Pharmacy, and Physical Therapy ● Public Health Nutrition ● Education and Research ● Food and Nutrition Program Management ● Health Coach ● Spokesperson ● Public Policy / Government
Total units required to complete degree	126	120	120
Upper-division units required to complete degree	42	42	42
Foundation courses			
English composition	**(3-6 units)** ENGL 101 or 107 (3) ENGL 102 or 108 (3) or ENGL 109H (3)	ENGL 101 or 107 (3) ENGL 102 or 108 (3) or ENGL 109H	ENGL 101 or 107 (3) ENGL 102 or 108 (3) or ENGL 109H
Second language	**(0-8 units)** 2nd Semester Proficiency	2nd Semester Proficiency	2nd Semester Proficiency

Math	**(0-3 units)** Moderate Math Strand	Math 122A/B or 125 (3-5 units) Math 129 or Math 263 (3 units)	MAC 2311 Analytic Geometry and Calculus 1 (Critical Tracking; State Core Gen Ed Mathematics) (4 units)
General education requirements	**(21 units)** 2 courses/ 6 units- Tier I 150 (INDV) 2 courses/ 6 units-Tier I 160 (TRAD) 1 course/ 3 units-Tier II Arts 1 course/ 3 units-Tier II Humanities 1 course/ 3 units-Tier II Individuals and Societies One diversity emphasis course	2 courses/ 6 units- Tier I 150 (INDV) 2 courses/ 6 units-Tier I 160 (TRAD) 1 course/ 3 units-Tier II Arts 1 course/ 3 units-Tier II Humanities 1 course/ 3 units-Tier II Individuals and Societies One diversity emphasis course	2 courses/ 6 units- Tier I 150 (INDV) 2 courses/ 6 units-Tier I 160 (TRAD) 1 course/ 3 units-Tier II Arts 1 course/ 3 units-Tier II Humanities 1 course/ 3 units-Tier II Individuals and Societies One diversity emphasis course
Pre-major? (Yes/No. If yes, provide requirements.) Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	NO	No	No
List any special requirements to declare or gain admission to this major (completion of specific coursework, minimum GPA, interview, application, etc.)	None	None	None
Major requirements			

Minimum # of units required in major (units counting towards major units and major GPA)	61	56	56
Minimum # of upper-division units required in the major (upper division units counting towards major GPA)	46	42	42
Minimum # of residency units to be completed in the major	18	56	56
Required supporting coursework (courses that do not count towards major units and major GPA, but are required for the major). Courses listed must include subject code, units, and title. Provide email(s)/letter(s) of support from home department head(s) for courses not owned by	***Statistics Requirement (3 units)*** *Choose one:* MATH 163 Basic Statistics (3 units) MATH 263 Introduction to Statistics and Biostatistics (3 units) SBS 200 Introduction to Statistics for the Social Sciences (4 units) ISTA 116 Statistical Foundations for the Information Age (3 units) AREC 239 Introduction to Statistics and Data Analysis (4 units) ***General Sciences: (24 units)*** CHEM 151 or CHEM 141/143 or CHEM 161/163 General Chemistry I (4 units)	None	None

your department.	CHEM 152 or CHEM 142/144 or CHEM 162/164 General Chemistry II (4 units) CHEM 241A or 246A Organic Chemistry I (3 units) BIOC 384 Foundations in Biochem (3 units) BIOC 385 Metabolic Biochemistry (3 units) MCB 181R Introduction to Biology (3 units) PSIO 380 Fundamentals of Human Physiology (4 units)		
Major requirements (list all required major coursework including major core, major electives, sub-plan core, and sub-plan electives; courses count towards major units and major GPA) Courses listed must include course prefix, number, units, and title. Mark new coursework (New). Provide email(s)/letter(s) of support from home department	***Major Core: (Complete 11 courses:31 units)*** NSC 101 Intro to Human Nutrition (3 units) NSC 260 Nutrition Communication and Scientific Literacy (3 units) NSC 2** Fundamentals of Precision Health (3 units) NSC 3** Emerging Topics in Precision Wellness (2 units) NSC 308 Nutrition and Metabolism (3 units) NSC 351R Fundamentals of Food Science (3 units) NSC 392 Directed Research (2 units) NSC 408 Nutritional Biology (3 units) NSC 475 Nutrigenomics for the Study of Disease Prevention & Intervention (3 units) NSC 4** Biomarkers and Disease Status (3 units) NSC 4** Nutrition and Wellness Genomic Counseling (3 units) ***Major Elective Areas: (30 units)***	***Statistics Requirement (3 units)*** *Choose one:* MATH 163 MATH 263 SBS 200 AREC 239 ***General Sciences: (36 units)*** CHEM 151 General Chemistry I (4 units) CHEM 152 General Chemistry II (4 units) CHEM 241A Organic Chemistry I (3 units) CHEM 241B Organic Chemistry II (3 units) BIOC 384 Foundations in Biochem (3 units) BIOC 385 Metabolic Biochemistry (3 units) MCB 181R Introduction to Biology (3 units) MCB 181L Introductory Biology Lab (1 unit) MIC 205A General Microbiology (3 units) MIC 205L General Microbiology Lab (1 unit) PSIO 201 Human Anatomy & Physiology I (4 units)	***Statistics Requirement (3 units)*** *Choose one:* MATH 163 MATH 263 SBS 200 AREC 239 ***General Sciences: (36 units)*** CHEM 151 General Chemistry I (4 units) CHEM 152 General Chemistry II (4 units) CHEM 241A Organic Chemistry I (3 units) CHEM 241B Organic Chemistry II (3 units) BIOC 384 Foundations in Biochem (3 units) BIOC 385 Metabolic Biochemistry (3 units) MCB 181R Introduction to Biology (3 units) MCB 181L Introductory Biology Lab (1 unit) MIC 205A General Microbiology (3 units) MIC 205L General Microbiology Lab (1 unit) PSIO 201 Human Anatomy & Physiology I (4 units)

head(s) for courses not owned by your department.	*Area 1: Data Analytics & Technology (9 units)* BE 310 Introduction to Biosystems Analytics (3 units) CSC 250 Essential Computing for the Sciences (3 units) ECOL 346 Bioinformatics (4 units) PLS 340 Introduction to Biotechnology (3 units) MCB 416A Statistical Bioinformatics and Functional Genomic Analysis (3 units) MCB 422 Problem solving with genetic tools (3 units) *Area 2: Health and Wellness (9 units)* NSC 301 Nutrition and the Life Cycle (3 units) NSC 310 Principles of Human Nutrition in health and Disease (3 units) NSC 320 Nutrition, Physical Activity and Health Promotion (3 units) NSC 444 Community Nutrition (3 unit) *Area 3: Diet and Genes (9 units)* FSHD 200 Evolution and Human Development (3 units) ECOL 320 Genetics (4 units) NSC 375 Diet, Genes, and Disease (3 units) NROS 430 Neurogenetics (3 units) BE 487 Metagenomics: From Genes to Ecosystems (3 units) Area 4: Ethics (3 units)	PSIO 202 Human Anatomy & Physiology II (4 units OR PSIO 380 Fundamentals of Human Physiology (3 units) ***Major Core: (49 units)*** NSC 101 Intro to Human Nutrition (3 units) NSC 225 Skills in Nutritional Sciences (3 units) NSC 260 Nutrition Communication (3 units) NSC 301 Nutrition and the Lifecycle (3 units) NSC 308 Nutrition and Metabolism (3 units) NSC 325 Foundations In MNT (3 units) NSC 351R Fundamentals of food science (3 units) NSC 351L Fundamentals of food science Lab (1 unit) NSC 358R Intro to food management (3 units) NSC 358L Intro to food management lab (1 unit) NSC 395A Experiential Learning in NSC (2 units) NSC 396A Career Seminar (1 unit) NSC 408 Nutritional Biology (3 units) NSC 420 Nut Ed and Counseling (2 units) NSC 425 MNT I (4 units) NSC 435 MNT II (4 units) NSC 444 Community Nutrition (3 units) NSC 458 Food Service (3 units) NSC 495A Internship Prep (1 unit) ***Electives: (3+ units)*** Choose one from approved list.	PSIO 202 Human Anatomy & Physiology II (4 units OR PSIO 380 Fundamentals of Human Physiology (3 units) ***Major Core: (26 units)*** NSC 101 Intro to Human Nutrition (3 units) NSC 225 Skills in Nutritional Sciences (3 units) NSC 260 Nutrition Communication (3 units) NSC 301 Nutrition and the Lifecycle (3 units) NSC 308 Nutrition and Metabolism (3 units) NSC 351R Fundamentals of food science NSC 395A Experiential Learning in NSC (2 units) NSC 396A Career Seminar (1 unit) NSC 408 Nutritional Biology (3 units) NSC 410 Applied Nutrition and Disease (3 units) ***Major Electives (30 Units)*** Choose from the following: NSC 255 – Food and Culture (3 units) NSC 311 – Obesity Prevention (3 units) NSC 315 – Sports Nutrition (3 units) NSC 320 – Physical Activity & Health Promo. (3 units) NSC 351L – Food Science Lab (1 unit) NSC 358R – Inst. Food Management (2 units) NSC 358L – Inst. Food Management Lab (1 unit) NSC 375 – Diet Genes, and Disease (3 units) NSC 376 – Bioactive Compounds (3 units)

	FSHD 347 Neuroethics (3 units) MCB 404 Bioethics (3 units) PHIL 210 Moral Thinking (3 units)		NSC 415R – Advanced Sports Nutrition (3 units) NSC 415L – Advanced Sports Nutrition Lab (1 unit) NSC 420 – Nutritional Ed. & Counseling (2 units) NSC 444 – Community Nutrition (3 units) NSC 445 – Human Body Composition (3 units) NSC 455 – Mediterranean Study Abroad (6 units) NSC 458 – Food Service Org. & Mgt. (3 units) NSC 475 – Nutrigenomics (3 units)
Internship, practicum, applied course requirements (Yes/No. If yes, provide description)	NSC 392 Directed Research, individual or small group research under the guidance of the faculty. This option is more structured and goal oriented than research under independent study.	No	No
Senior thesis or senior project required (Yes/No. If yes, provide description)	No	No	No
Additional requirements (provide description)	No	No	No
Minor (specify if optional or required)	Optional	Optional	Optional

*Note: comparison of additional relevant programs may be requested.

THE UNIVERSITY OF ARIZONA

Department of Agricultural
and Resource Economics
College of Agriculture and
Life Sciences

304 McClelland Park, 650 N. Park Ave.
P.O. Box 210078
Tucson, AZ 85721-0078
Tel: (520) 621-2421
Fax: (520) 621-6250
http://ag.arizona.edu/arec/

July 29, 2019

Dear Dr. Going,

We would be happy to include AREC 239 *Introduction to Statistics and Data Analysis* as an elective option for your new program in Precision Nutrition and Wellness. For the moment, there is ample space for students pursuing a major or minor in your new program. Should space become constraining, we will seek a larger classroom to accommodate all your majors and minors. We enthusiastically welcome all Nutrition Science students, be they majors and minors in your new program or in existing programs, into AREC 239.

Please be advised we have two other classes, which would be excellent general education options for your majors and minors:

AREC150C *Sustaining Life: The Global Economy of Food*
AREC210 *Understanding the World of Commerce*

We wish you success in launching and growing your new program in Precision Nutrition and Wellness.

Sincerely,

Gary Thompson
Professor and Department Head
Department of Agricultural and Resource Economics
College of Agriculture & Life Sciences
The University of Arizona
McClelland Park 304C
650 N. Park Avenue
Tucson, AZ 85719-0078

THE UNIVERSITY OF ARIZONA
COLLEGE OF AGRICULTURE & LIFE SCIENCES
COLLEGE OF ENGINEERING
Biosystems Engineering

Shantz, Room 403
1177 E 4th Street
PO Box 210038
Tucson, AZ 85721-0038

Tel: 520-621-3691
Fax: 520-621-3963

http://be.arizona.edu

September 26, 2019

Scott Going
Professor and Head
Nutritional Sciences Department
University of Arizona

Dear Dr. Going,

As the Head of Biosystems Engineering, the home department for BE 310 (Introduction to Biosystems Analytics) and BE 487 (Metagenomics: From Genes to Ecosystems), I support including these classes as electives for the proposed undergraduate major and minor in Precision Nutrition and Wellness.

Sincerely,

K. L. Farrell-Poe

Kathryn L. Farrell-Poe
Specialist, Professor, and Head
Biosystems Engineering

THE UNIVERSITY OF ARIZONA
COLLEGE OF SCIENCE
COLLEGE OF MEDICINE TUCSON
Chemistry
& Biochemistry

Andrei Sanov
Professor and Interim Department Head
Chemistry & Biochemistry (CBC)
CBC-DeptHeadOffice@email.arizona.edu

1306 East University Blvd.
Old Chemistry (OC) 221B
Tucson, AZ 85721-0041
Tel: (520) 621-5672

July 26, 2019

Scott Going
Professor and Department Head
Department of Nutritional Sciences
College of Agriculture & Life Sciences
The University of Arizona
1177 E. 4th Street Shantz Building 315
Tucson, AZ 85721-0038

Dear Prof. Going,

The Department of Chemistry & Biochemistry (CBC) enthusiastically supports the creation of the new Bachelor of Science major and minor degree programs in Precision Nutrition and Wellness. As part of our support, as you requested, we will welcome the enrollment of Precision Nutrition and Wellness majors and minors in the following courses offered by CBC:

Biochemistry:
BIOC 384, BIOC 385

General Chemistry:
CHEM 141 (First semester lecture, 3 units), CHEM 143 (First semester lab, 1 unit)
CHEM 142 (Second semester lecture, 3 units), CHEM 144 (Second semester lab, 1 unit)
OR
CHEM 151 (First semester lecture+lab combined, 4 units)
CHEM 152 (Second semester lecture+lab combined, 4 units)

Organic Chemistry:
CHEM 241A

A special note about our General Chemistry courses: You may not be aware that a year ago we launched a new course sequence emphasizing a more quantitative approach to General Chemistry, CHEM 141-144 General Chemistry – Quantitative Approach. Compared to CHEM 151-152, in addition to differences in pedagogy, the CHEM 14x series separates the lecture and lab into separate courses, providing for maximum flexibility in the student plans of study. For all prerequisites and degree requirements, however, the CHEM 141x and CHEM 151x series are designed to be equivalent. In short, CHEM 141+143 is equivalent to CHEM 151, while CHEM 142+144 is equivalent to CHEM 152.

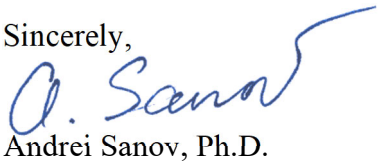
Your students are welcome to enroll into either CHEM 14x or CHEM 15x and the completion of either sequence will satisfy the requirements for Organic Chemistry. However, depending on their degree requirements and individual plans of study, some students may be better served by taking only the

lecture part of General Chemistry. This is possible in the CHEM 14x sequence (take CHEM 141 and CHEM 142), but not possible in CHEM 151-152 (the lecture and the lab are integrated).

Regardless of which courses your new program will require and what classes your students choose, we will welcome them in all of the above courses.

If you would like more detailed information about the CBC course offerings, please do not hesitate to contact me.

Sincerely,



Andrei Sanov, Ph.D.
Professor and Interim Department Head

THE UNIVERSITY OF ARIZONA

Ecology & Evolutionary Biology
College of Science
University of Arizona

P.O. Box 210088
Tucson, Arizona 85721-0088
(520) 621-1588
FAX: (520) 621-9190
http://eebweb.arizona.edu

Date: July 23, 2019

To: Scott Going, Department Head and Professor, Nutritional Sciences

From: Michael Worobey, Department Head and Louise Foucar Marshall Science Research Professor, Ecology and Evolutionary Biology

Re: Support for B.S. major degree and minor in Precision Nutrition and Wellness

Dear Scott,

This letter is a formal expression of support for the Bachelor of Science major degree and minor in Precision Nutrition and Wellness proposed by the Department of Nutritional Sciences.

We do not anticipate that this new degree program will have a negative impact on our B.S. or B.A. in Ecology and Evolutionary Biology, B.S. in Biology, or B.S. in Bioinformatics, and believe this collaboration between EEB and Nutritional Sciences has the potential to be beneficial for both departments. Therefore, the following ECOL courses are permitted to be included as elective options in the proposed program's supporting requirements:

ECOL 320 Genetics (offered Fall & SSII in-person, and SSII & Winter online)
ECOL 346 Bioinformatics (offered Spring in-person)

We anticipate that our Department will be able to support the enrollment of Precision Nutrition and Wellness majors or minors in the courses listed above as space allows, and that the SCH revenue generated will cover our cost of delivery.

Sincerely,

Dr. Michael Worobey
Department Head
Louise Foucar Marshall Science Research Professor
Ecology and Evolutionary Biology

Morrow, Trudy - (morrow1)

From: Todd Proebsting <proebsting@cs.arizona.edu>
Sent: Saturday, August 10, 2019 2:20 PM
To: Morrow, Trudy - (morrow1)
Cc: Proebsting, Todd A - (proebsting); Chilton, Floyd - (fchilton); Scott Going; Mullins, Veronica Anne - (vamullins); Bridget Radcliff,
Subject: Re: Letters of support needed

Trudy,
We can certainly handle 10 more students in CSC 250. We should note that Computer Science is very likely to revisit the content of 250 in the next year or two to better serve our constituents.

Cheers,
Todd

On Fri, Aug 2, 2019 at 2:43 PM Morrow, Trudy - (morrow1) <morrow1@email.arizona.edu> wrote:

> Please reply.
>
> **From:** Morrow, Trudy - (morrow1)
> **Sent:** Wednesday, July 17, 2019 10:16 AM
> **To:** Proebsting, Todd A - (proebsting) <proebsting@email.arizona.edu>
> **Cc:** Chilton, Floyd - (fchilton) <fchilton@email.arizona.edu>; Scott Going <scottbgoing@gmail.com>; Mullins, Veronica Anne - (vamullins) <vamullins@email.arizona.edu>
> **Subject:** Letters of support needed
> **Importance:** High
>
> Please see the attached request sent on behalf of Dr. Scott Going, Professor and Head, Department of Nutritional Sciences.
>
> **Trudy Morrow**
> Administrative Associate for Dr. Scott Going
> Department of Nutritional Sciences
> THE UNIVERSITY OF ARIZONA
>
> Shantz, 315A
> PO Box 210038 | Tucson, AZ 85721
> Office: 520-621-3096
> **morrow1@email.arizona.edu**

EDUCATIONAL PSYCHOLOGY DEPARTMENT
College of Education, Rm 602
1430 E. 2nd St.
PO Box 210069
Tucson, AZ 85721

https://www.coe.arizona.edu/ep

19 July 2019

Dear Dr. Scott Going,

This letter is in strong support for students, from your Bachelor of Science degree with a minor in Precision Nutrition and Wellness, to take EDP/PSY/FSHD 200 Evolution and Human Development, as an elective option.

In addition, as we move forward, if you could share information on the number of students who might be enrolling in the course, it would help us plan for the potential number of sections that might be needed.

Thx paul

Paul Schutz
UA College of Education
Interim chair of the Department of Educational Psychology
1430 E. Second Street
P.O. Box 210069
Tucson, AZ 85721-0069

CC: Dr. Eric Smith

THE UNIVERSITY OF ARIZONA
COLLEGE OF SCIENCE
Mathematics

617 N. Santa Rita Avenue
Tucson, Arizona 85721
www.math.arizona.edu

September 4, 2019

Pamela Coonan
Executive Director
Academic/Curricular Affairs
University of Arizona

RE: Bachelor of Science in Precision Nutrition and Wellness

Dear Dr. Coonan:

I am writing to express the support of the Department of Mathematics for the proposed new Bachelor of Science major and minor in Precision Nutrition and Wellness to be offered by the Department of Nutritional Sciences in the College of Agriculture and Life Sciences. In particular, the Math Department has no objections to the inclusion of the following courses as electives for the new degrees:

MATH 163 (Basic Statistics)
MATH 263 (Introduction to Statistics and Biostatistics)

We expect to offer these course each fall and spring, and we expect to be able to accomodate the additional students without any difficulties. Normal prerequisites and registration priorities will apply.

Sincerely,

D L Ulmer

Douglas Ulmer
Professor and Head

THE UNIVERSITY OF ARIZONA
COLLEGE OF SCIENCE
Molecular & Cellular Biology

Joyce Schroeder, Ph.D.
Professor and Department Head
1007 E Lowell St
Tucson, AZ 85721
Telephone: (520) 626-1384
joyces@email.arizona.edu

July 17, 2019

Scott Going, Ph.D.
Department of Nutritional Sciences
College of Agriculture & Life Sciences

Dear Dr. Going,

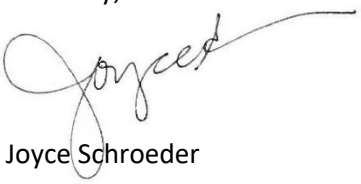
This is to formally express our support of the proposed new Precision Nutrition and Wellness major/minor being offered by the Department of Nutritional Sciences in the College Agriculture & Life Sciences.

We can offer the following MCB courses for this degree:

MCB 181R – Introductory Biology I
MCB 404 - Bioethics
MCB 416A – Statistical Bioinformatics and Genomic Analysis
MCB 422 – Problem Solving with Genetic Tools

We anticipate that the SCH revenue for these courses will cover our costs of delivery.

Sincerely,



Joyce Schroeder
Professor and Head

THE UNIVERSITY OF ARIZONA
College of Social & Behavioral Sciences

OFFICE OF THE DEAN
Douglass Building 200W
PO Box 210028
Tucson, AZ 85721-0028

Ofc: 520-621-1112
Fax: 520-621-9424

www.sbs.arizona.edu

July 29, 2019

Dear Dr. Going:

The College of Social and Behavioral Sciences agrees to give regular access to *SBS 200 Introduction to Statistics for the Social Sciences* to students in the Department of Nutritional Sciences' proposed major, Precision Nutrition and Wellness.

We look forward to having these students in the class.

Sincerely,

Amy Kimme Hea
Associate Dean, SBS Academic Affairs & Student Success
College of Social and Behavioral Sciences

THE UNIVERSITY OF ARIZONA

Department of Neuroscience
School of Mind, Brain & Behavior
College of Science

1040 E. 4th Street
P.O. Box 210077
Tucson AZ 85721-0077
(520) 621-6629
Fax: (520) 621-8282
http://www.neurobio.arizona.edu

Dr. Alan Nighorn
Professor and Head
Dept of Neuroscience
Room 611 Gould-Simpson Bldg.
Tucson, AZ 85721

July 17, 2019,

Dear Dr. Going,

I support and encourage the use of NROS 430 Neurogenetics as an elective in the Precision Nutrition and Wellness program.

Sincerely,

Alan Nighorn

THE UNIVERSITY OF ARIZONA
Arizona Health Sciences Center

Department of Physiology
College of Medicine

P.O. Box 245051
Tucson, AZ 85724-5051
Tel: (520) 626-6511
Fax: (520) 626-2382
www.physiology.arizona.edu

July 30, 2019

Scott Going, PhD.
Professor and Department Head
Department of Nutritional Sciences
The University of Arizona
1177 E 4th Street
Shantz Building 315
Tucson, AZ 85721

Dear Scott,

As the Head of the home department for PSIO 380, I support including this class as an Elective in the curriculum of the proposed Bachelor of Science major and minor in Precision Nutrition and Wellness.

Good luck with your exciting new initiative.

Nicholas A Delamere, PhD
Head, Department of Physiology
The University of Arizona

Cc: Claudia Stanescu, PhD., Director, Physiology Undergraduate Program
Cindy Rankin, PhD., Associate Director, Physiology Undergraduate Program

THE UNIVERSITY OF ARIZONA
COLLEGE OF SOCIAL & BEHAVIORAL SCIENCES
School of Information

Harvill Building, 4th Floor
1103 E 2nd St.
Tucson, AZ 85721
520.621.3565
si.arizona.edu

July 31, 2019
Scott Going, PhD
Department Head, Department of Nutritional Sciences

Dear Dr. Going,

This is a letter of support for the use of ISTA 116 in your new program. We are so pleased to be a part of this as we aim to serve the campus in interdisplinary data science education. We look forward to working with you and wish you a positive experience with your new plan. Data Science in many forms is a critical skill needed in many sciences and professions. To be clear, we support your work on the Bachelor of Science major degree and minor in Precision Nutrition and Wellness.

There is no conflict with School of Information programs and there are certainly opportunities for synergy moving forward. We are eager to welcome your students into our relevant courses (notice interdisciplinary data mining, ISTA 321 and others too).

We look forward to our ongoing collaboration.

Sincerely,

Catherine D. Brooks

Catherine Brooks
Director, School of Information

THE UNIVERSITY OF ARIZONA

School of Plant Sciences
College of Agriculture and
Life Sciences
520.621.1977 Telephone

1145 E. South Campus Drive
P.O. Box 210036
Tucson, Arizona 85721-0036
520.621.7186 FAX
www.cals.arizona.edu/pls

MEMORANDUM

Date: August 9, 2019

To: Scott Going, Head of the Department of Nutritional Sciences

From: Matthew A. Jenks, Director of the School of Plant Sciences

Subject: Approval to use PLS/MCB 340 for new degree

Dear Dr. Scott Going,

I am writing this letter to express support from The School of Plant Sciences for the creation of a new Bachelor of Science major degree program in Precision Nutrition and Wellness, a transdisciplinary program designed to prepare students to study and work at the intersection of precision nutrition, wellness and disease prevention. We will continue to offer the course PLS/MCB 340 Introduction to Biotechnology, and we are happy to invite the students in this new program to utilize that course as an elective option for this new degree. We recognize that this course will be one of at least four electives courses from which students can choose to complete the required nine credits for each elective track.

Thank you for considering Plant Sciences in the preparation of this program. We look forward to working with you to support the program.

VALIDATE: EMPLOYMENT POTENTIAL

PROJECT CRITERIA

Validate	Programs
Metro Areas (MSAs)	Tucson, AZ
Degree Level	Bachelor's degree
Time Period	10/1/2018 - 9/30/2019
Selected Programs	Nutrition Sciences (30.1901)
Career Outcomes mapped to Selected Programs of Study	Dietitian / Nutritionist

HOW MANY JOBS ARE THERE FOR YOUR GRADUATES?

For your project criteria, there were 88 job postings in the last 12 months.

Compared to:

- 113,978 total job postings in your selected location
- 32,720 total job postings requesting a Bachelor's degree in your selected location

The number of jobs is expected to grow over the next 10 years.

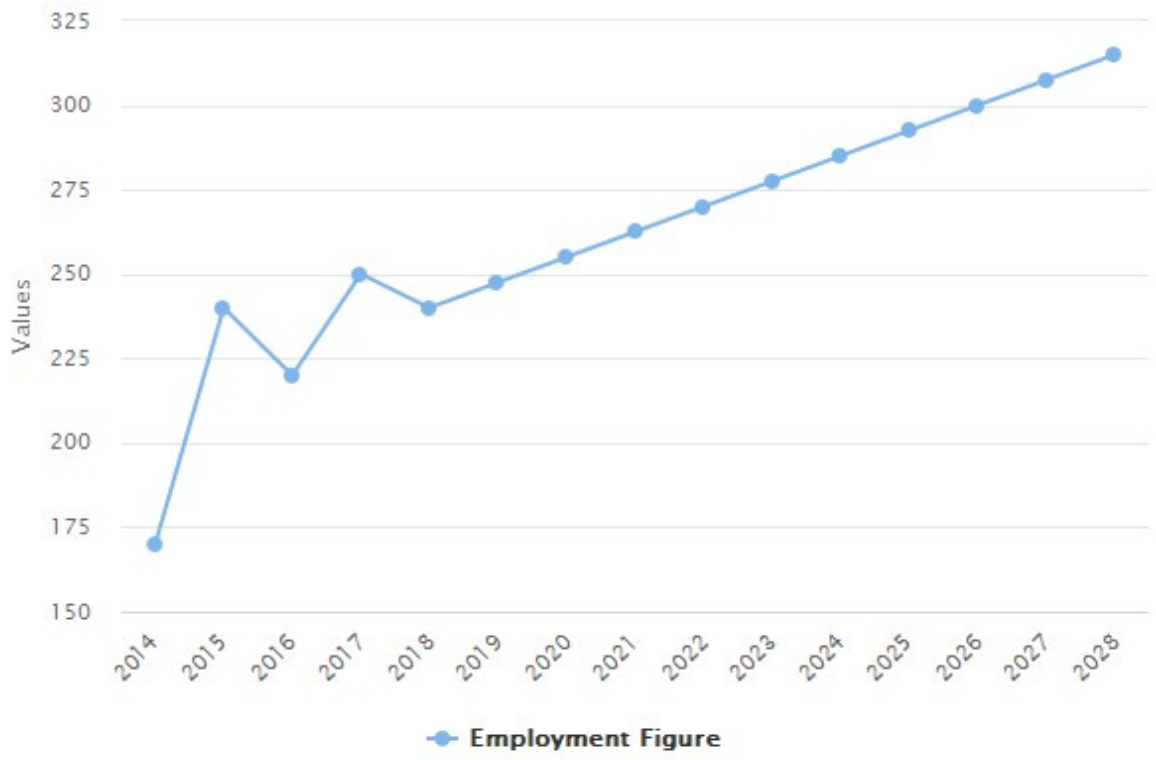
GROWTH BY GEOGRAPHY

Geography	Selected Occupations	Total Labor Market	Relative Growth
Tucson, AZ	31.25 %	17.14 %	High
Arizona	31.29 %	14.97 %	High

Nationwide	14.60 %	5.78 %	High

HOW HAS EMPLOYMENT CHANGED FOR CAREER OUTCOMES OF YOUR PROGRAM?

	2014	2015	2016	2017	2018	2028
Employment (BLS)	170	240	220	250	240	315



Employment data between years 2019 and 2028 are projected figures.

DETAILS BY OCCUPATION

Occupation Group	Postings	LQ	Employment (2018)	Employment Growth (2017 - 2018)	Projected Employment Growth (2019-2028)
Mid-Level Healthcare Therapists	88	1.8	240	-4.0%	31.2%

HOW VERSATILE IS MY PROGRAM?

Graduates of this program usually transition into any of the 1 different occupation groups:

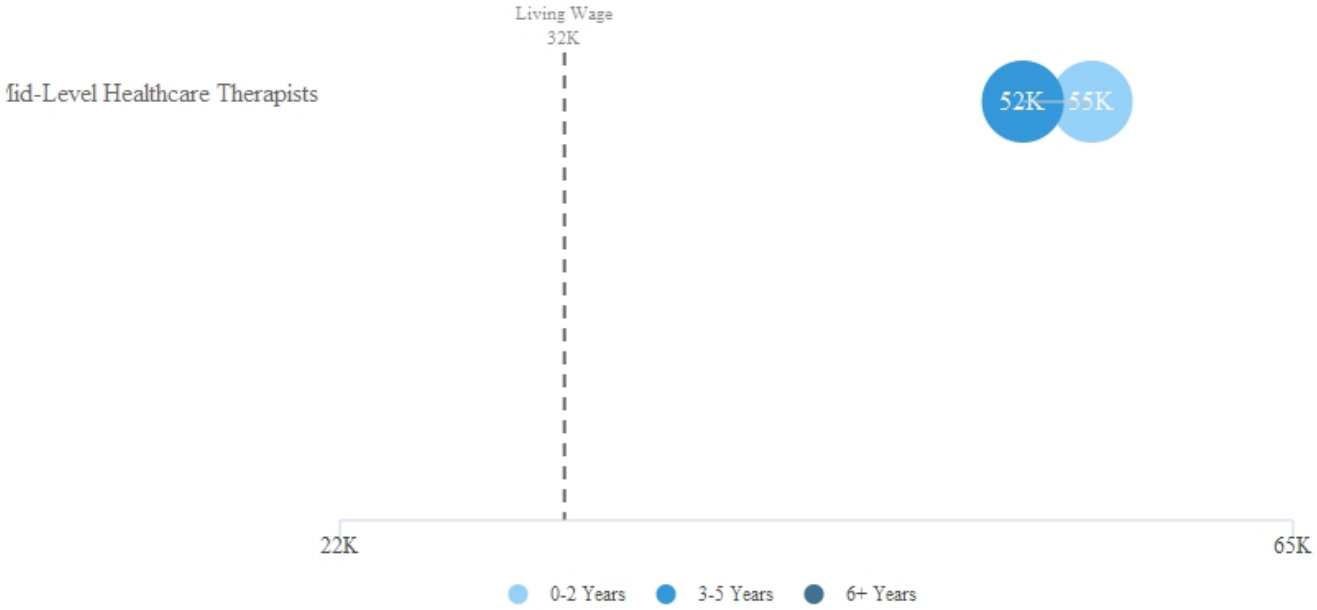
Occupations Group	Market Size (postings)	Percentage of Career Outcome demand
Mid-Level Healthcare Therapists	88	100.0%

WHAT SALARY WILL MY GRADUATES MAKE?

The average salary in Tucson, AZ for graduates of your program is $54,464

This average salary is Above the average living wage for Tucson, AZ of 32011

Report generated using Program Insight from Burning Glass Technologies

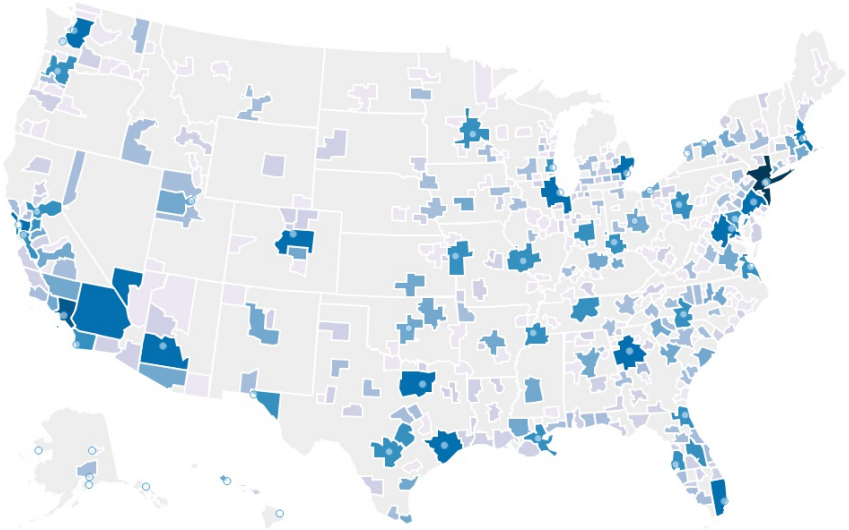


Report generated using Program Insight from Burning Glass Technologies

Salary numbers are based on Burning Glass models that consider advertised job posting salary, BLS data, and other proprietary and public sources of information.

Occupation Group	25th Percentile	Average	75th Percentile
Mid-Level Healthcare Therapists	$54989	$52150	$0

WHERE IS THE DEMAND FOR MY GRADUATES?



TOP LOCATIONS BY POSTING DEMAND

Location	Postings
New York-Newark-Jersey City, NY-NJ-PA	1,057
Los Angeles-Long Beach-Anaheim, CA	733
Chicago-Naperville-Elgin, IL-IN-WI	432
Detroit-Warren-Dearborn, MI	415
Dallas-Fort Worth-Arlington, TX	387
Atlanta-Sandy Springs-Roswell, GA	350
Houston-The Woodlands-Sugar Land, TX	343

Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	333
Boston-Cambridge-Nashua, MA-NH	330
Miami-Fort Lauderdale-West Palm Beach, FL	329

VALIDATE: COMPETITIVE LANDSCAPE

PROJECT CRITERIA

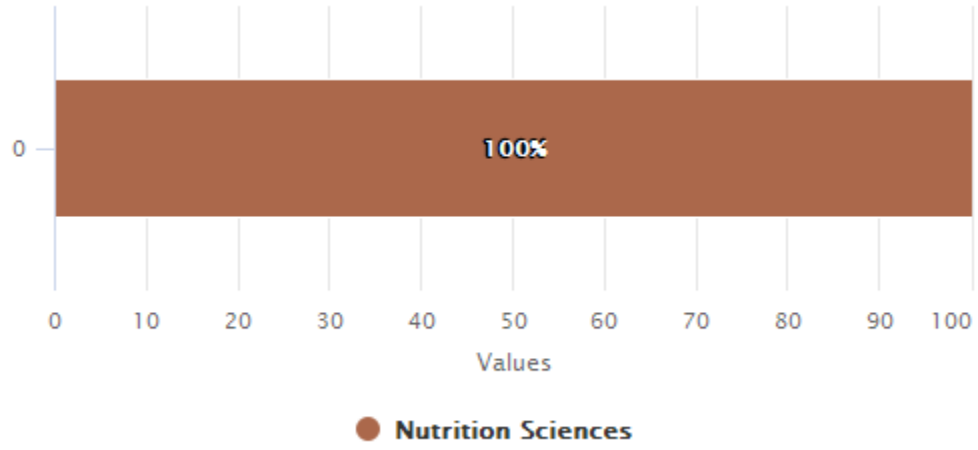
Validate	Programs
Metro Areas (MSAs)	Tucson, AZ
Degree Level	Bachelor's degree
Time Period	10/1/2018 - 9/30/2019
Selected Programs	Nutrition Sciences (30.1901)
Career Outcomes mapped to Selected Programs of Study	Dietitian / Nutritionist

OVERVIEW

	#	% Change (2013-2017)
Degrees Conferred	139	35%
Number of Institutions	1	0%
Average Conferrals by Institution	139	35.00%
Median Conferrals by Institution	139	35.00%

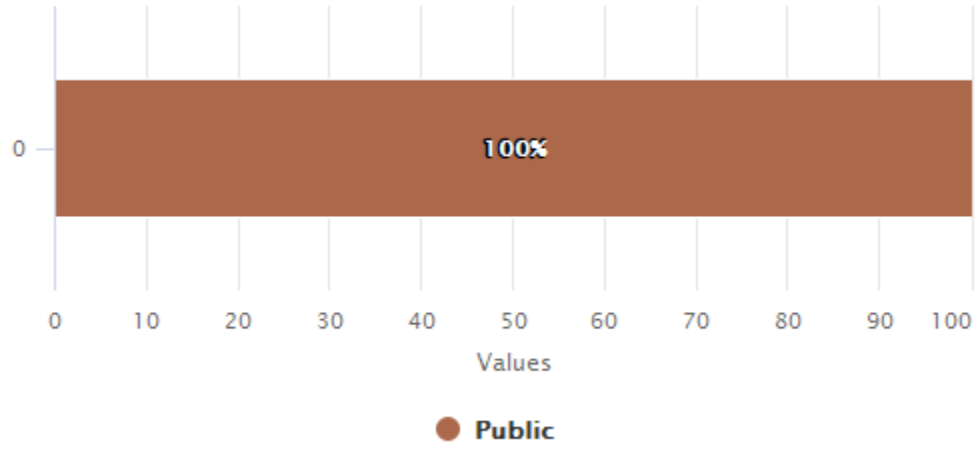
MARKET SHARE BY PROGRAM

Report generated using Program Insight from Burning Glass Technologies



Program	Conferrals (2017)	Market Share (%)
Nutrition Sciences	139	100.00%

MARKET SHARE BY INSTITUTION TYPE



Institution Type	Conferrals (2017)	Market Share (%)
Public	139	100.00%

TOP INSTITUTIONS

Report generated using Program Insight from Burning Glass Technologies

Institution	School Type	Market Share (2017)	Market Share Change	Conferrals (2017)	Conferrals Change (2013-2017)
University of Arizona	Public	100.00%	0.00%	139	35.00%

TOP PROGRAMS

Program	Market Share (2017)	Market Share Change	Conferrals (2017)	Conferrals Change (2013-2017)
Nutrition Sciences	100.00%	0.00%	139	35.00%

ACTIVE COMPETITORS

Institution	School Type	Market Share (2017)	Market Share Change	Conferrals (2017)	Conferrals Change (2013-2017)

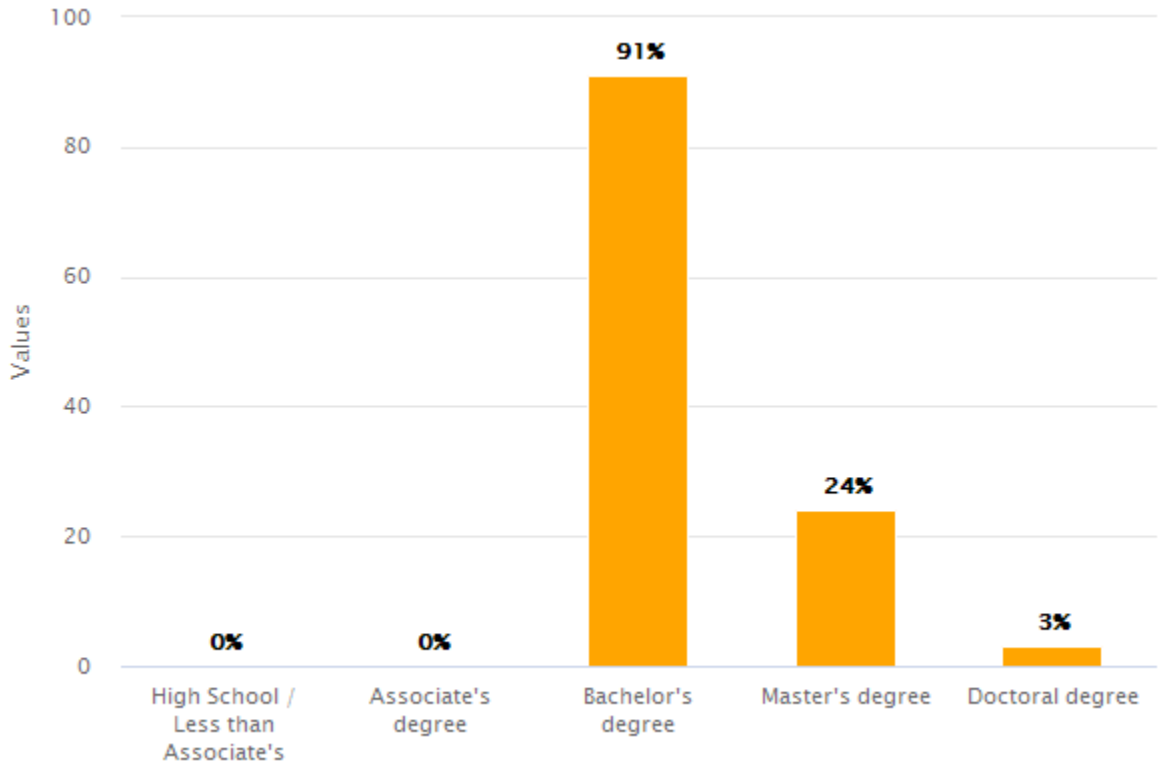
VALIDATE: MARKET ALIGNMENT

PROJECT CRITERIA

Validate	Programs
Metro Areas (MSAs)	Tucson, AZ
Degree Level	Bachelor's degree
Time Period	10/1/2018 - 9/30/2019
Selected Programs	Nutrition Sciences (30.1901)
Career Outcomes mapped to Selected Programs of Study	Dietitian / Nutritionist

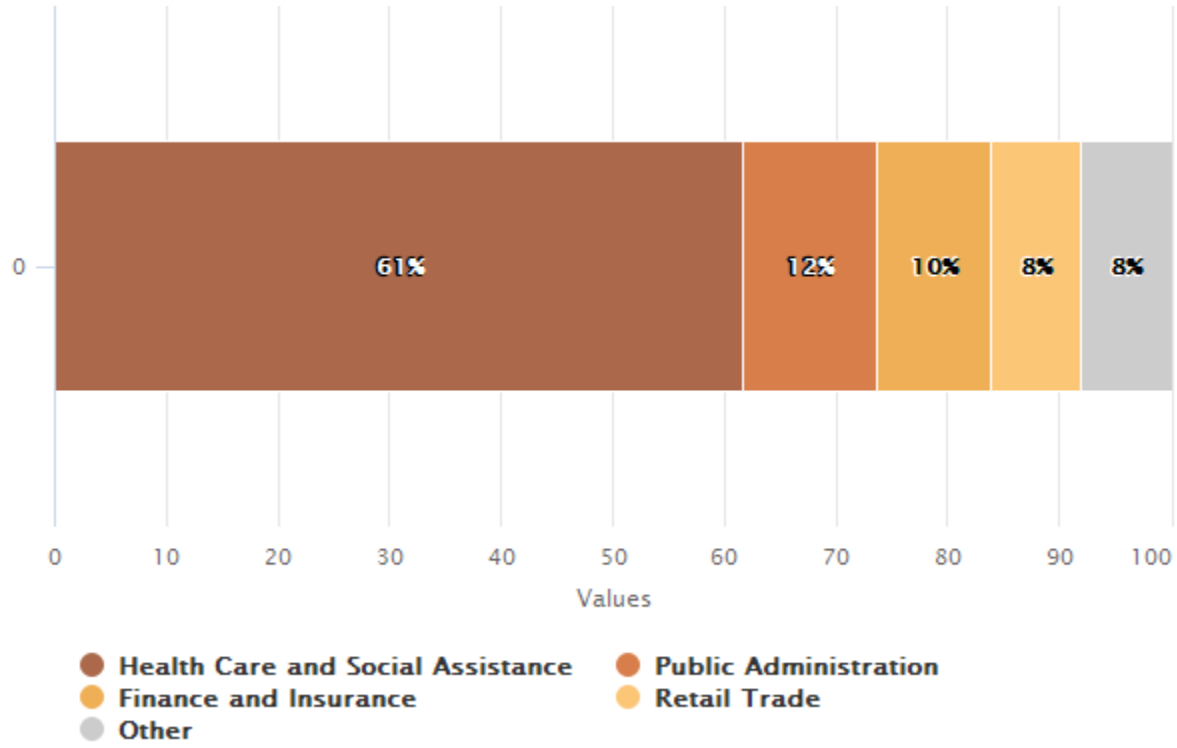
JOB POSTINGS BY ADVERTISED EDUCATION (%)

Report generated using Program Insight from Burning Glass Technologies



JOB POSTINGS BY INDUSTRY (%)

Report generated using Program Insight from Burning Glass Technologies



JOB POSTINGS BY EXPERIENCE REQUESTED (%)

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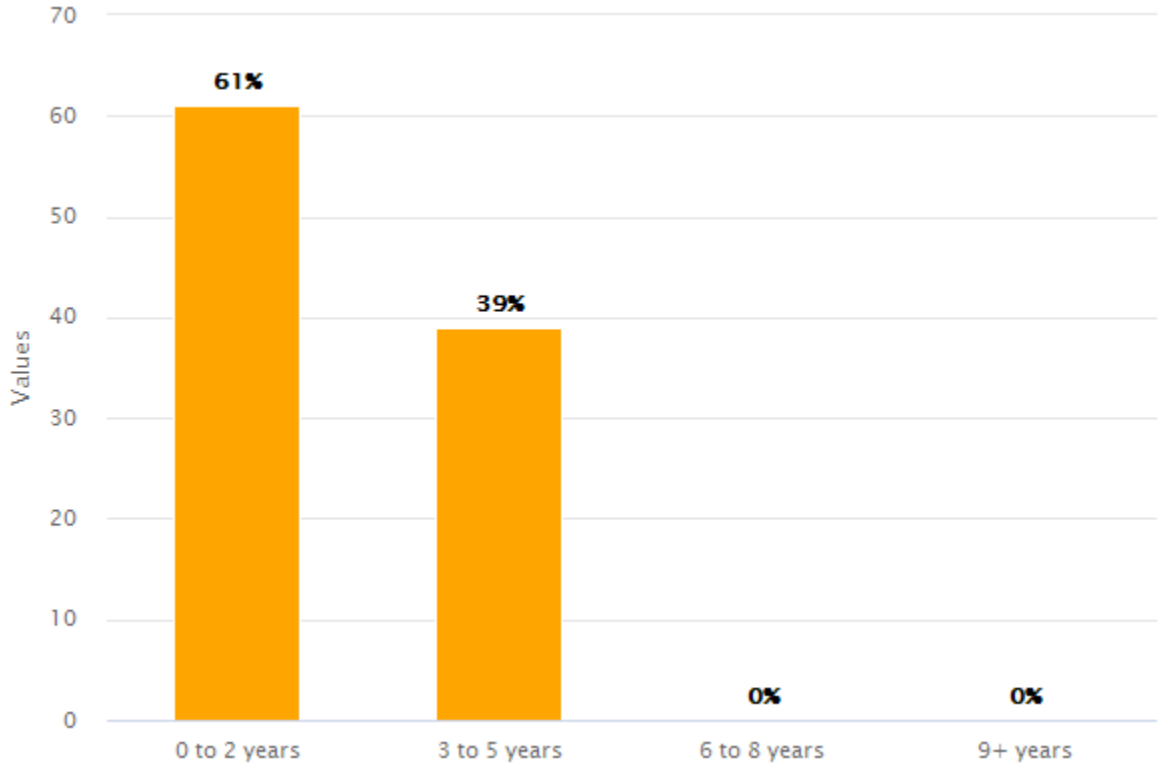


TOP TITLES

Experience Level: All Experience

Title	Postings	Market Share (%)
Registered Dietitian	25	47.17%
Clinical Dietitian	11	20.75%
Dietitian	10	18.87%
Health Coach	4	7.55%
Nutritionist	2	3.77%
Health Nutrition Specialist	1	1.89%

TOP EMPLOYERS HIRING

Experience Level: All Experience

Employer	Postings	Market Share (%)
Banner Health System	10	18.87%
Tucson Medical Center	8	15.09%
Anthem Blue Cross	4	7.55%
Acadia Healthcare	3	5.66%
Department of Veterans Affairs	3	5.66%
Natural Grocers By Vitamin Cottage	3	5.66%
Avosys	2	3.77%
Child Parent Centers	2	3.77%
Curo Health Services	2	3.77%
Encompass Health	2	3.77%
Sierra Tucson	2	3.77%
US Air Force	2	3.77%
Amerita	1	1.89%
Amerita Inc	1	1.89%
Bayada Home Health Care	1	1.89%

VALIDATE: KEY COMPETENCIES

PROJECT CRITERIA

Validate	Programs
Metro Areas (MSAs)	Tucson, AZ
Degree Level	Bachelor's degree
Time Period	10/1/2018 - 9/30/2019
Selected Programs	Nutrition Sciences (30.1901)
Career Outcomes mapped to Selected Programs of Study	Dietitian / Nutritionist

TOP 15 SPECIALIZED SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage
Dietetics	80 (91%)	-38.41%	No	No
Patient/Family Education and Instruction	23 (26%)	11.82%	No	No
Care Planning	23 (26%)	27.44%	No	No
Patient Care	21 (24%)	15.79%	No	No

Nutrition Counseling	19 (22%)	-13.84%	No	No
Patient Evaluation	18 (20%)	4.7%	No	No
Quality Assurance and Control	15 (17%)	39.46%	Yes	No
Teaching	14 (16%)	-12.75%	No	No
Behavioral Health	14 (16%)	21.66%	No	No
Staff Management	13 (15%)	-13.84%	No	No
Process Improvement	13 (15%)	5.17%	No	No
Treatment Planning	13 (15%)	13.44%	No	Yes
Continuous Quality Improvement	12 (14%)	3.79%	No	No
Diabetes Diagnosis / Treatment	12 (14%)	8.89%	No	No
Food Preparation	11 (12%)	14.17%	No	No

TOP 15 BASELINES SKILLS

Report generated using Program Insight from Burning Glass Technologies

Skill	Postings
Communication Skills	26 (30%)
Physical Abilities	24 (27%)
Planning	23 (26%)
Teamwork / Collaboration	18 (20%)
Research	16 (18%)
Time Management	13 (15%)
Organizational Skills	12 (14%)
Microsoft Office	10 (11%)
Building Effective Relationships	9 (10%)

Writing	9 (10%)
English	7 (8%)
Spanish	6 (7%)
Decision Making	6 (7%)
Bilingual	5 (6%)
Range of Motion	4 (5%)

TOP 15 SOFTWARE PROGRAMMING SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage
Microsoft Office	10 (11%)	-10.2%	No	No
Tetanus	2 (2%)	53.94%	No	No
Facebook	1 (1%)	-34.28%	No	No

Flickr	1 (1%)	-68.61%	No	No

TOP 15 SKILL CLUSTERS

Skill	Postings
Nutrition and Diet	87 (99%)
Basic Patient Care	38 (43%)
Advanced Patient Care	27 (31%)
Quality Assurance and Control	16 (18%)
General Medicine	15 (17%)
Pediatrics	10 (11%)
Basic Living Activities Support	9 (10%)
General Medical Tests and Procedures	8 (9%)
Rehabilitation	6 (7%)

Medical Support	5 (6%)
Budget Management	4 (5%)
Pharmacy	2 (2%)
Instructional and Curriculum Design	0 (0%)
Uncategorized	0 (0%)
Urology	0 (0%)

TOP 15 SALARY PREMIUM SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage
Quality Assurance and Control	15 (17%)	39.46%	Yes	No
Home Health	6 (7%)	-4.73%	Yes	No
Rehabilitation	6 (7%)	-7.58%	Yes	No
Long-Term Care	4 (5%)	1.28%	Yes	No

Anemia	4 (5%)	49.17%	Yes	No
Budgeting	4 (5%)	-10.04%	Yes	No
Pediatrics	3 (3%)	23.93%	Yes	Yes
Drug Interaction	2 (2%)	-21.17%	Yes	No
Enteral Nutrition	2 (2%)	11.24%	Yes	No
Acute Care	2 (2%)	44.69%	Yes	No

TOP 15 COMPETITIVE ADVANTAGE SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage
Treatment Planning	13 (15%)	13.44%	No	Yes
Public Speaking	4 (5%)	-2.13%	No	Yes
Pediatrics	3 (3%)	23.93%	Yes	Yes
Hospice	3 (3%)	10.28%	No	Yes

Discharge Planning	1 (1%)	11.77%	No	Yes

TOP 15 CERTIFICATIONS

Skill	Postings	Salary Premium	Competitive Advantage
Registered Dietitian	53 (60%)	No	No
Driver's License	7 (8%)	No	No
Certified Safety Professional	5 (6%)	No	No
Nutrition Certification	5 (6%)	No	No
Certified Diabetes Educator (CDE)	3 (3%)	No	No
ACHC Accreditation	2 (2%)	No	No
Security Clearance	2 (2%)	No	No
Certified Medical Assistant	1 (1%)	No	No
Certified Lactation Counselor	1 (1%)	No	No

Community Health Certificate	1 (1%)	No	No

TOP 15 SALARY PREMIUM CERTIFICATIONS

Skill	Postings	Salary Premium	Competitive Advantage
No certificates available			

TOP 15 COMPETITIVE ADVANTAGE CERTIFICATIONS

Skill	Postings	Salary Premium	Competitive Advantage
No certificates available			

VALIDATE: EMPLOYMENT POTENTIAL

PROJECT CRITERIA

Validate	Programs
States	Arizona
Degree Level	Bachelor's degree
Time Period	10/1/2018 - 9/30/2019
Selected Programs	Nutrition Sciences (30.1901)
Career Outcomes mapped to Selected Programs of Study	Dietitian / Nutritionist

HOW MANY JOBS ARE THERE FOR YOUR GRADUATES?

For your project criteria, there were 400 job postings in the last 12 months.

Compared to:

- 887,606 total job postings in your selected location
- 279,760 total job postings requesting a Bachelor's degree in your selected location

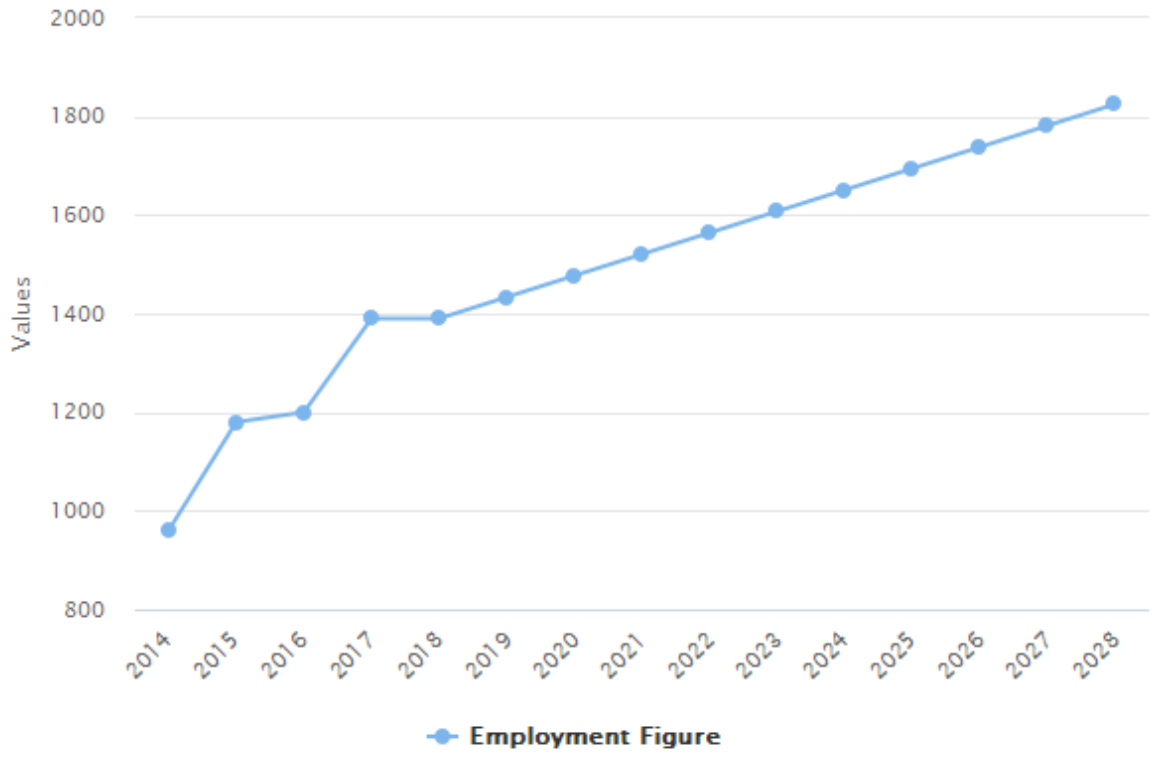
The number of jobs is expected to grow over the next 10 years.

GROWTH BY GEOGRAPHY

Geography	Selected Occupations	Total Labor Market	Relative Growth
Arizona	31.29 %	14.97 %	High
Nationwide	14.60 %	5.78 %	High

HOW HAS EMPLOYMENT CHANGED FOR CAREER OUTCOMES OF YOUR PROGRAM?

	2014	2015	2016	2017	2018	2028
Employment (BLS)	960	1,180	1,200	1,390	1,390	1,825



Employment data between years 2019 and 2028 are projected figures.

DETAILS BY OCCUPATION

Occupation Group	Postings	LQ	Employment (2018)	Employment Growth (2017 - 2018)	Projected Employment Growth (2019-2028)
Mid-Level Healthcare Therapists	400	1.1	1,390	0.0%	31.3%

Report generated using Program Insight from Burning Glass Technologies

HOW VERSATILE IS MY PROGRAM?

Graduates of this program usually transition into any of the 1 different occupation groups:

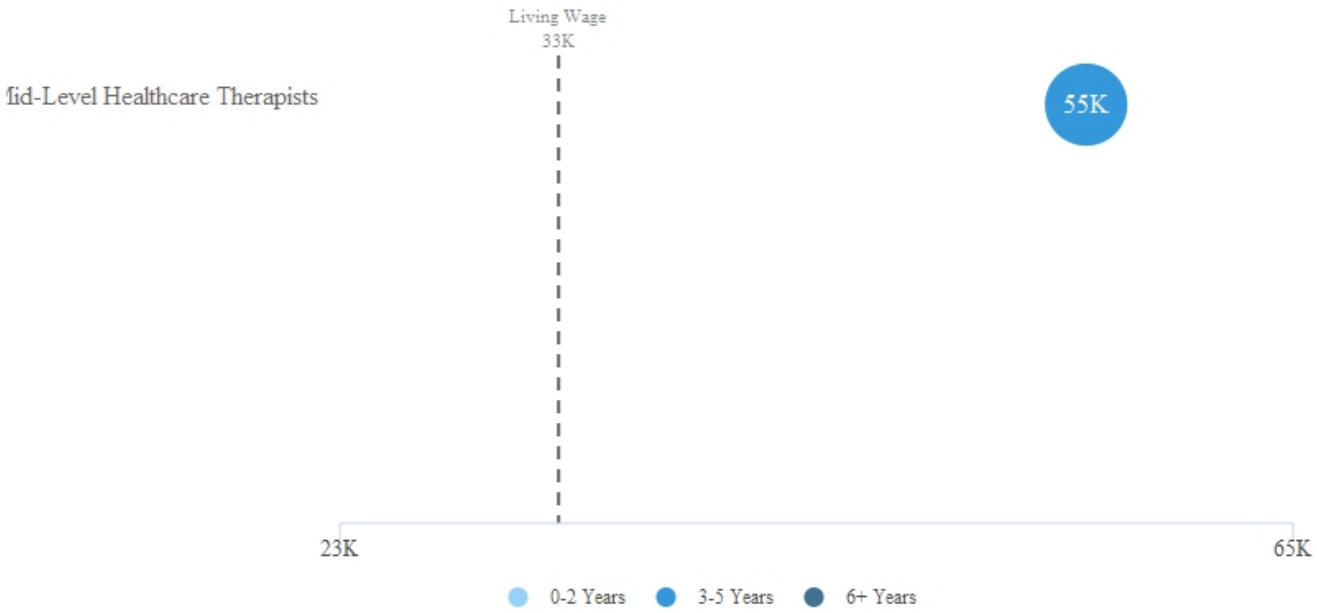
Occupations Group	Market Size (postings)	Percentage of Career Outcome demand
Mid-Level Healthcare Therapists	400	100.0%

WHAT SALARY WILL MY GRADUATES MAKE?

The average salary in Arizona for graduates of your program is $54,457

This average salary is Above the average living wage for Arizona of 32531

Report generated using Program Insight from Burning Glass Technologies

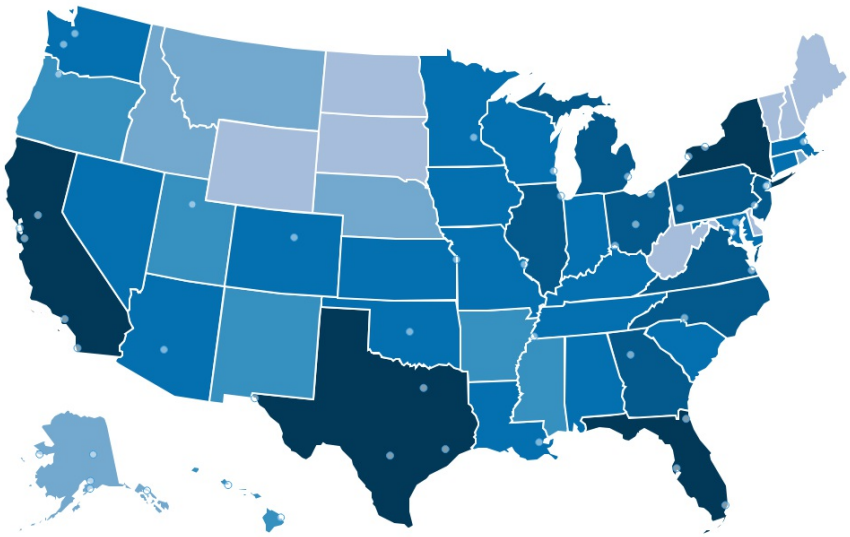


Report generated using Program Insight from Burning Glass Technologies

Salary numbers are based on Burning Glass models that consider advertised job posting salary, BLS data, and other proprietary and public sources of information.

Occupation Group	25th Percentile	Average	75th Percentile
Mid-Level Healthcare Therapists	$54930	$55203	$0

WHERE IS THE DEMAND FOR MY GRADUATES?



TOP LOCATIONS BY POSTING DEMAND

Location	Postings
California	2,395
Texas	1,672
Florida	1,193
New York	1,020
Michigan	772
Pennsylvania	637
Georgia	630

Illinois	576
North Carolina	571
New Jersey	560

VALIDATE: COMPETITIVE LANDSCAPE

PROJECT CRITERIA

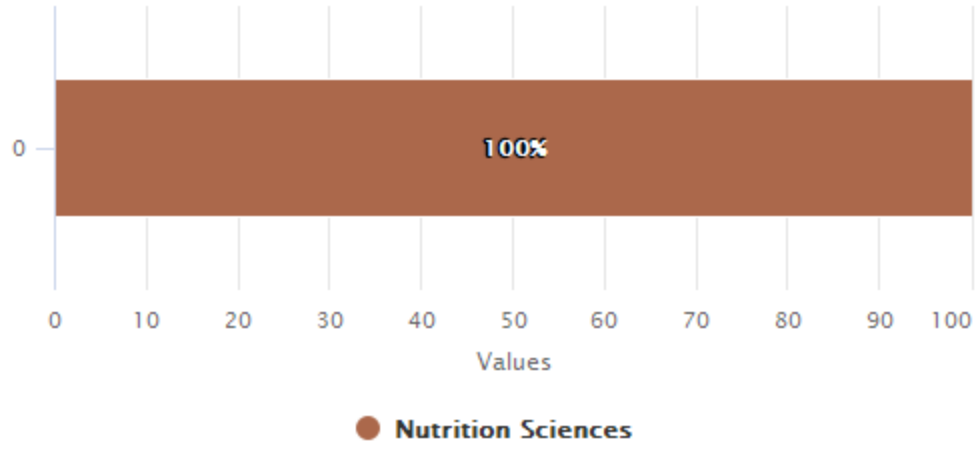
Validate	Programs
States	Arizona
Degree Level	Bachelor's degree
Time Period	10/1/2018 - 9/30/2019
Selected Programs	Nutrition Sciences (30.1901)
Career Outcomes mapped to Selected Programs of Study	Dietitian / Nutritionist

OVERVIEW

	#	% Change (2013-2017)
Degrees Conferred	139	35%
Number of Institutions	1	0%
Average Conferrals by Institution	139	35.00%
Median Conferrals by Institution	139	35.00%

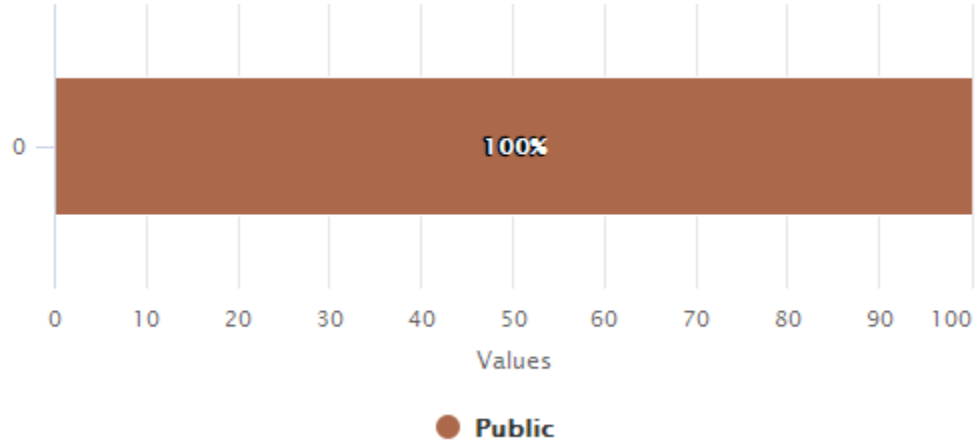
MARKET SHARE BY PROGRAM

Report generated using Program Insight from Burning Glass Technologies



Program	Conferrals (2017)	Market Share (%)
Nutrition Sciences	139	100.00%

MARKET SHARE BY INSTITUTION TYPE



Institution Type	Conferrals (2017)	Market Share (%)
Public	139	100.00%

TOP INSTITUTIONS

Institution	School Type	Market Share (2017)	Market Share Change	Conferrals (2017)	Conferrals Change (2013-2017)

University of Arizona	Public	100.00%	0.00%	139	35.00%

TOP PROGRAMS

Program	Market Share (2017)	Market Share Change	Conferrals (2017)	Conferrals Change (2013-2017)
Nutrition Sciences	100.00%	0.00%	139	35.00%

ACTIVE COMPETITORS

Institution	School Type	Market Share (2017)	Market Share Change	Conferrals (2017)	Conferrals Change (2013-2017)

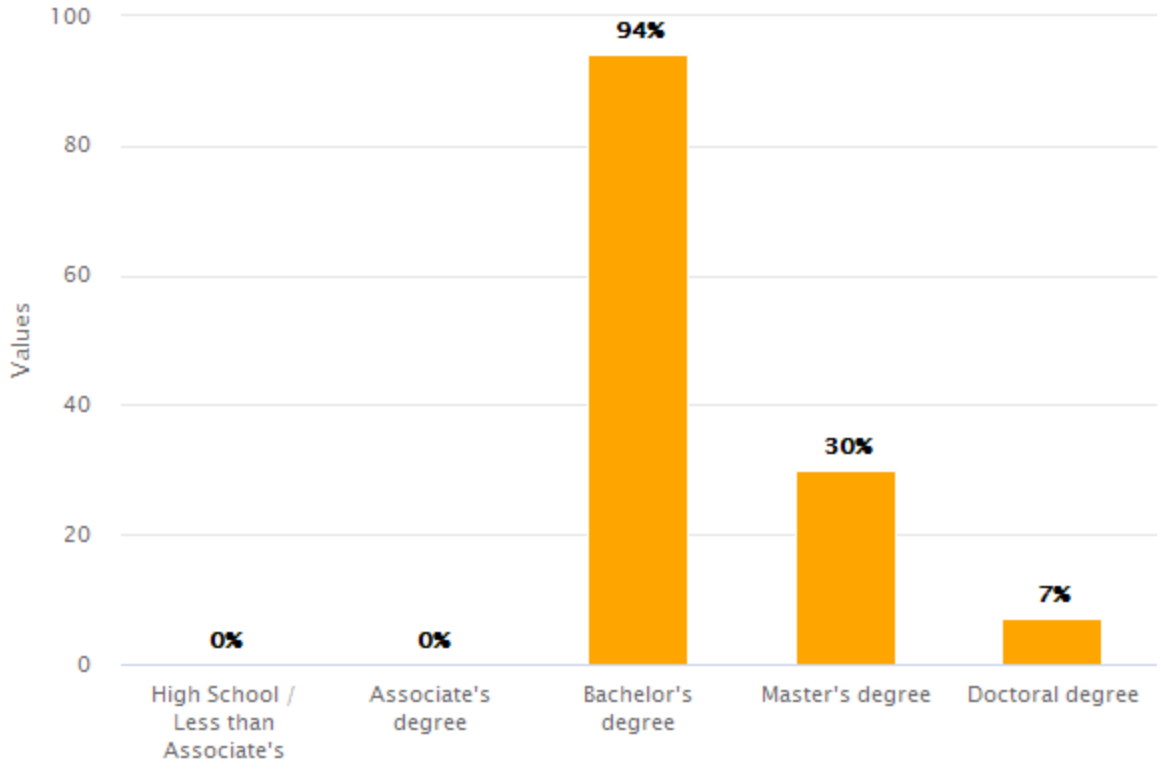
VALIDATE: MARKET ALIGNMENT

PROJECT CRITERIA

Validate	Programs
States	Arizona
Degree Level	Bachelor's degree
Time Period	10/1/2018 - 9/30/2019
Selected Programs	Nutrition Sciences (30.1901)
Career Outcomes mapped to Selected Programs of Study	Dietitian / Nutritionist

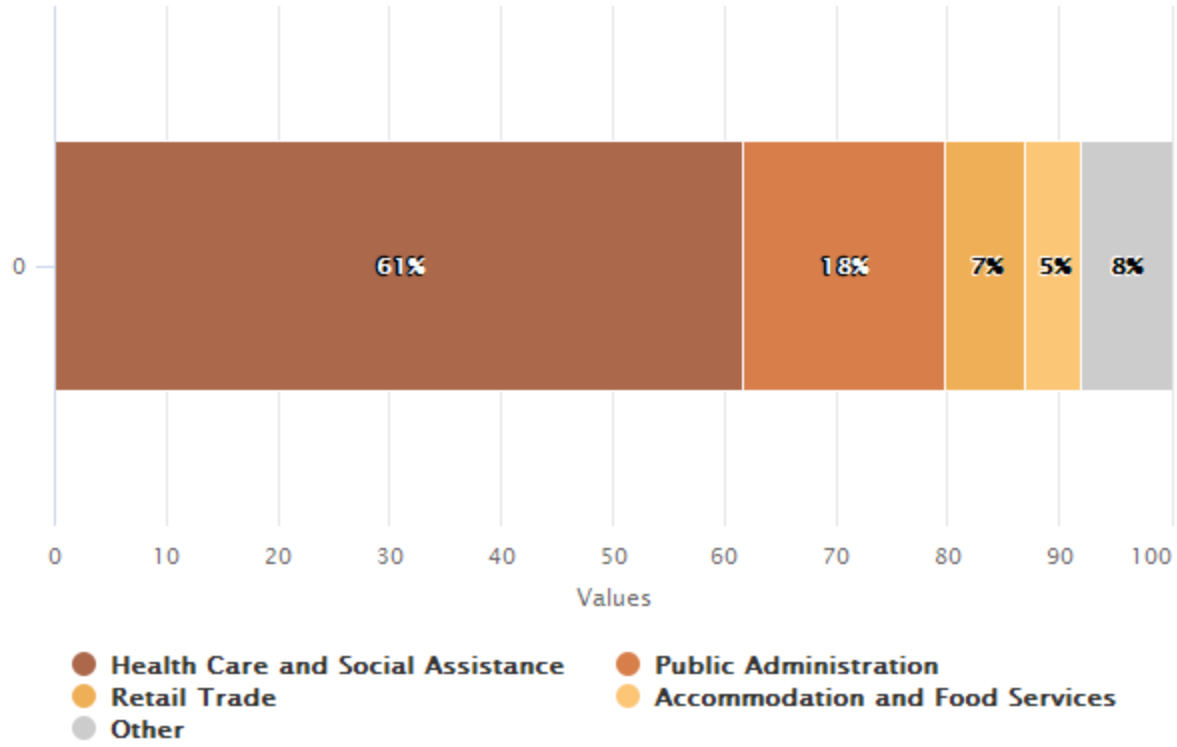
JOB POSTINGS BY ADVERTISED EDUCATION (%)

Report generated using Program Insight from Burning Glass Technologies



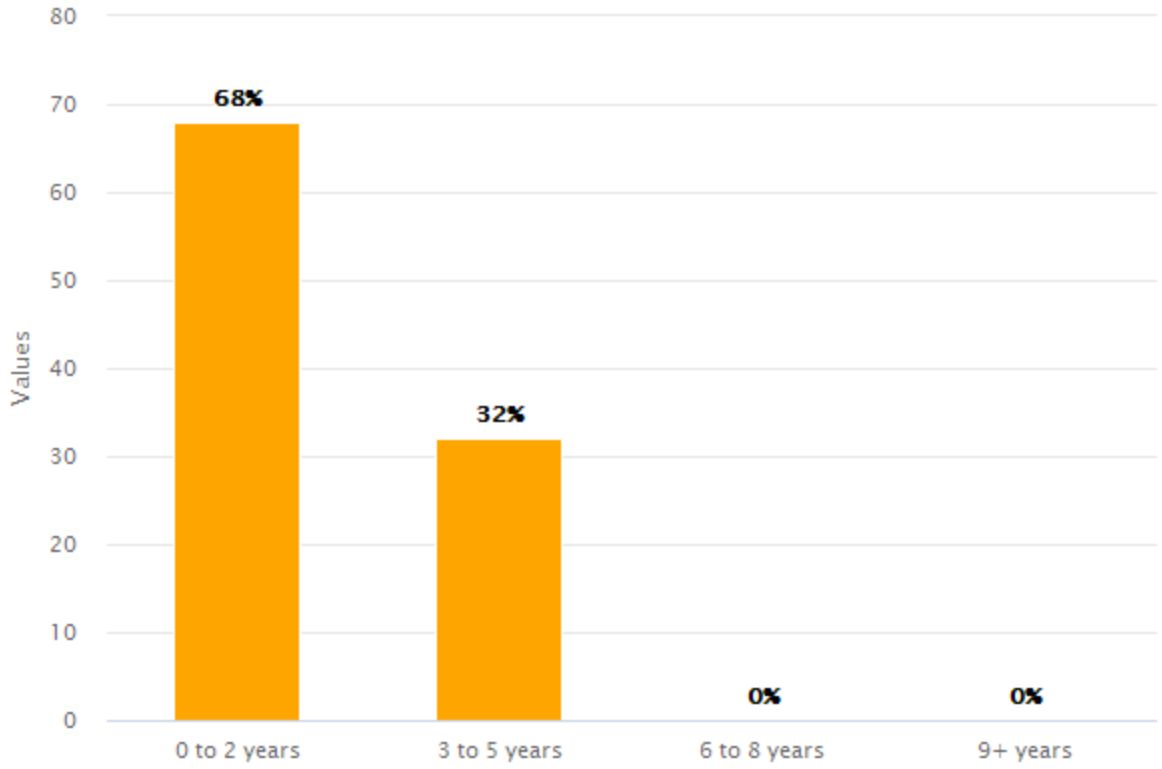
JOB POSTINGS BY INDUSTRY (%)

Report generated using Program Insight from Burning Glass Technologies



JOB POSTINGS BY EXPERIENCE REQUESTED (%)

Report generated using Program Insight from Burning Glass Technologies



TOP TITLES

Experience Level: All Experience

Title	Postings	Market Share (%)
Registered Dietitian	113	42.32%
Dietitian	81	30.34%
Clinical Dietitian	34	12.73%
Health Coach	17	6.37%
Nutritionist	15	5.62%
Geriatrics Therapist	3	1.12%
Clinical Nutrition Manager	1	0.37%
Health Nutrition Coach	1	0.37%
Health Nutrition Specialist	1	0.37%
Weight Loss Consultant	1	0.37%

TOP EMPLOYERS HIRING

Experience Level: All Experience

Employer	Postings	Market Share (%)
Banner Health System	44	16.48%
Department of Veterans Affairs	13	4.87%
Honorhealth	12	4.49%
Davita Incorporated	11	4.12%
US Army	11	4.12%
Natural Grocers	10	3.75%
Anthem Blue Cross	9	3.37%
Tucson Medical Center	8	3.00%
Dignity Health	7	2.62%
US Air Force	7	2.62%
Sodexo	6	2.25%
Athletes Performance, Inc	5	1.87%
Natural Grocers By Vitamin Cottage	5	1.87%
Encompass Health	4	1.50%
Maricopa County Attorneys Office	4	1.50%

VALIDATE: KEY COMPETENCIES

PROJECT CRITERIA

Validate	Programs
States	Arizona
Degree Level	Bachelor's degree
Time Period	10/1/2018 - 9/30/2019
Selected Programs	Nutrition Sciences (30.1901)
Career Outcomes mapped to Selected Programs of Study	Dietitian / Nutritionist

TOP 15 SPECIALIZED SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage
Dietetics	358 (90%)	-38.41%	No	No
Patient Care	129 (32%)	15.79%	No	No
Quality Assurance and Control	106 (26%)	39.46%	Yes	No
Nutrition Counseling	105 (26%)	-13.84%	No	No

Patient/Family Education and Instruction	101 (25%)	11.82%	No	No
Care Planning	97 (24%)	27.44%	No	No
Process Improvement	75 (19%)	5.17%	No	No
Teaching	65 (16%)	-12.75%	No	No
Diabetes Diagnosis / Treatment	64 (16%)	8.89%	No	No
Treatment Planning	63 (16%)	13.44%	No	Yes
Patient Evaluation	61 (15%)	4.7%	No	No
Nutrition Services	59 (15%)	-6.99%	No	No
Empower	51 (13%)	23.22%	No	No
Staff Management	48 (12%)	-13.84%	No	No
Continuous Quality Improvement	47 (12%)	3.79%	No	No

TOP 15 BASELINES SKILLS

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Skill	Postings
Communication Skills	100 (25%)
Research	94 (24%)
Teamwork / Collaboration	89 (22%)
Physical Abilities	82 (20%)
Planning	76 (19%)
Organizational Skills	72 (18%)
Building Effective Relationships	66 (16%)
Computer Literacy	60 (15%)
English	39 (10%)
Decision Making	35 (9%)

Time Management	31 (8%)
Microsoft Office	30 (8%)
Writing	30 (8%)
Work Area Maintenance	30 (8%)
Microsoft Excel	28 (7%)

TOP 15 SOFTWARE PROGRAMMING SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage
Microsoft Office	30 (8%)	-10.2%	No	No
Microsoft Excel	28 (7%)	17.03%	No	No
Microsoft Word	28 (7%)	-13.39%	No	No
Flickr	8 (2%)	-68.61%	No	No

Microsoft Powerpoint	8 (2%)	-8.52%	No	No
Microsoft Outlook	3 (1%)	-1.45%	No	No
Tetanus	2 (0%)	53.94%	No	No
Word Processing	1 (0%)	-19.34%	No	No
Microsoft Windows	1 (0%)	6.61%	No	No
Facebook	1 (0%)	-34.28%	No	No

TOP 15 SKILL CLUSTERS

Skill	Postings
Nutrition and Diet	393 (98%)
Basic Patient Care	159 (40%)
Advanced Patient Care	129 (32%)
Quality Assurance and Control	108 (27%)

General Medicine	89 (22%)
Medical Support	80 (20%)
Basic Living Activities Support	36 (9%)
Instructional and Curriculum Design	33 (8%)
General Medical Tests and Procedures	33 (8%)
Rehabilitation	33 (8%)
Pediatrics	25 (6%)
Urology	25 (6%)
Pharmacy	6 (2%)
Budget Management	6 (2%)
Uncategorized	0 (0%)

Report generated using Program Insight from Burning Glass Technologies

TOP 15 SALARY PREMIUM SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage
Quality Assurance and Control	106 (26%)	39.46%	Yes	No
Rehabilitation	33 (8%)	-7.58%	Yes	No
Educational Materials	28 (7%)	-28.66%	Yes	No
Patient Assistance	28 (7%)	20.76%	Yes	No
Malnutrition	27 (7%)	8.12%	Yes	No
Anemia	27 (7%)	49.17%	Yes	No
Metabolism	26 (6%)	-22.32%	Yes	No
Acute Care	22 (6%)	44.69%	Yes	No
Long-Term Care	21 (5%)	1.28%	Yes	No
Enteral Nutrition	10 (2%)	11.24%	Yes	No
Pediatrics	8 (2%)	23.93%	Yes	Yes

Home Health	7 (2%)	-4.73%	Yes	No
Budgeting	6 (2%)	-10.04%	Yes	No
Drug Interaction	5 (1%)	-21.17%	Yes	No

TOP 15 COMPETITIVE ADVANTAGE SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage
Treatment Planning	63 (16%)	13.44%	No	Yes
Public Speaking	31 (8%)	-2.13%	No	Yes
Urea	25 (6%)	42.25%	No	Yes
Caregiving	23 (6%)	20.38%	No	Yes
Pediatrics	8 (2%)	23.93%	Yes	Yes
Hospice	4 (1%)	10.28%	No	Yes

Discharge Planning	3 (1%)	11.77%	No	Yes

TOP 15 CERTIFICATIONS

Skill	Postings	Salary Premium	Competitive Advantage
Registered Dietitian	293 (73%)	No	No
Nutrition Certification	31 (8%)	No	No
Certified Diabetes Educator (CDE)	30 (8%)	No	No
Driver's License	26 (6%)	No	No
Certified Safety Professional	20 (5%)	No	No
Security Clearance	15 (4%)	No	No
Food Handler Certification	10 (2%)	No	No
American Occupational Therapy Association (AOTA)	3 (1%)	No	No
ACHC Accreditation	2 (0%)	No	No

ServSafe	2 (0%)	No	No
Certified Medical Assistant	1 (0%)	No	No
Basic Cardiac Life Support Certification	1 (0%)	No	No
Basic Life Saving (BLS)	1 (0%)	No	No
Certified Lactation Counselor	1 (0%)	No	No
Community Health Certificate	1 (0%)	No	No

TOP 15 SALARY PREMIUM CERTIFICATIONS

Skill	Postings	Salary Premium	Competitive Advantage
No certificates available			

TOP 15 COMPETITIVE ADVANTAGE CERTIFICATIONS

Skill	Postings	Salary Premium	Competitive Advantage
No certificates available			

VALIDATE: EMPLOYMENT POTENTIAL

PROJECT CRITERIA

Validate	Programs
Location	Nationwide
Degree Level	Bachelor's degree
Time Period	10/1/2018 - 9/30/2019
Selected Programs	Nutrition Sciences (30.1901)
Career Outcomes mapped to Selected Programs of Study	Dietitian / Nutritionist

HOW MANY JOBS ARE THERE FOR YOUR GRADUATES?

For your project criteria, there were 18,804 job postings in the last 12 months.

Compared to:

- 32,387,800 total job postings in your selected location
- 11,470,108 total job postings requesting a Bachelor's degree in your selected location

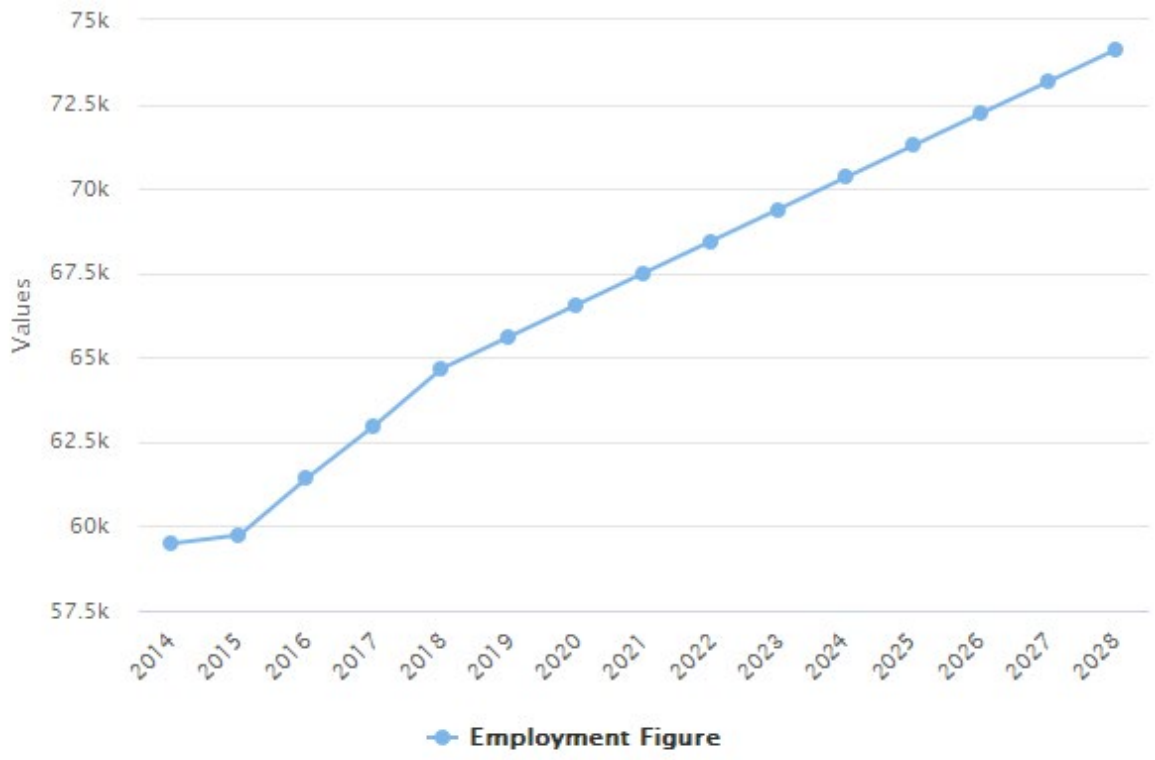
The number of jobs is expected to grow over the next 10 years.

GROWTH BY GEOGRAPHY

Geography	Selected Occupations	Total Labor Market	Relative Growth
Nationwide	14.60 %	5.78 %	High

HOW HAS EMPLOYMENT CHANGED FOR CAREER OUTCOMES OF YOUR PROGRAM?

	2014	2015	2016	2017	2018	2028
Employment (BLS)	59,490	59,740	61,430	62,980	64,670	74,112



Employment data between years 2019 and 2028 are projected figures.

DETAILS BY OCCUPATION

Occupation Group	Postings	LQ	Employment (2018)	Employment Growth (2017 - 2018)	Projected Employment Growth (2019-2028)
Mid-Level Healthcare Therapists	18,804	NA	64,670	2.7%	14.6%

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HOW VERSATILE IS MY PROGRAM?

Graduates of this program usually transition into any of the 1 different occupation groups:

Occupations Group	Market Size (postings)	Percentage of Career Outcome demand
Mid-Level Healthcare Therapists	18,804	100.0%

WHAT SALARY WILL MY GRADUATES MAKE?

The average salary in the nation for graduates of your program is $55,521

This average salary is Above the average living wage for your region of 31450

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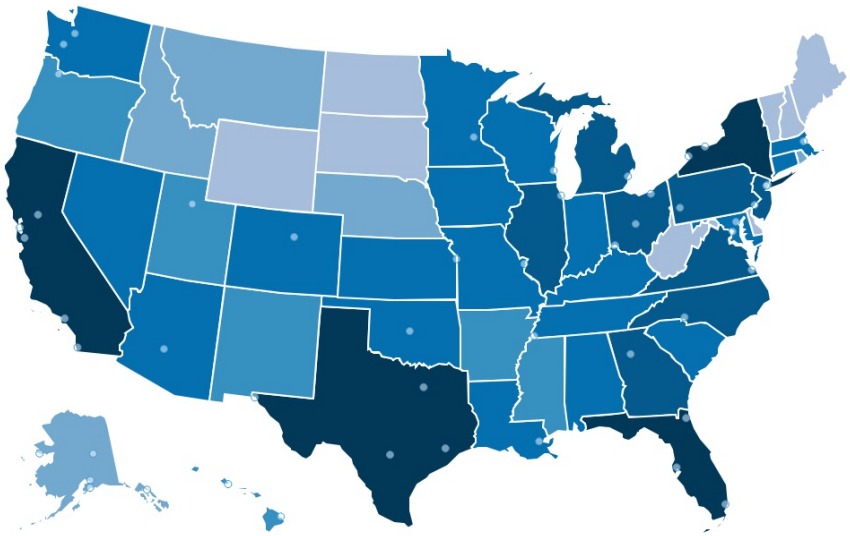
Salary numbers are based on Burning Glass models that consider advertised job posting salary, BLS data, and other proprietary and public sources of information.

Occupation Group	25th Percentile	Average	75th Percentile
Mid-Level Healthcare Therapists	$55099	$57658	$55374

WHERE IS THE DEMAND FOR MY GRADUATES?



TOP LOCATIONS BY POSTING DEMAND

Location	Postings
California	2,395
Texas	1,672
Florida	1,193
New York	1,020
Michigan	772
Pennsylvania	637
Georgia	630

Illinois	576
North Carolina	571
New Jersey	560

VALIDATE: COMPETITIVE LANDSCAPE

PROJECT CRITERIA

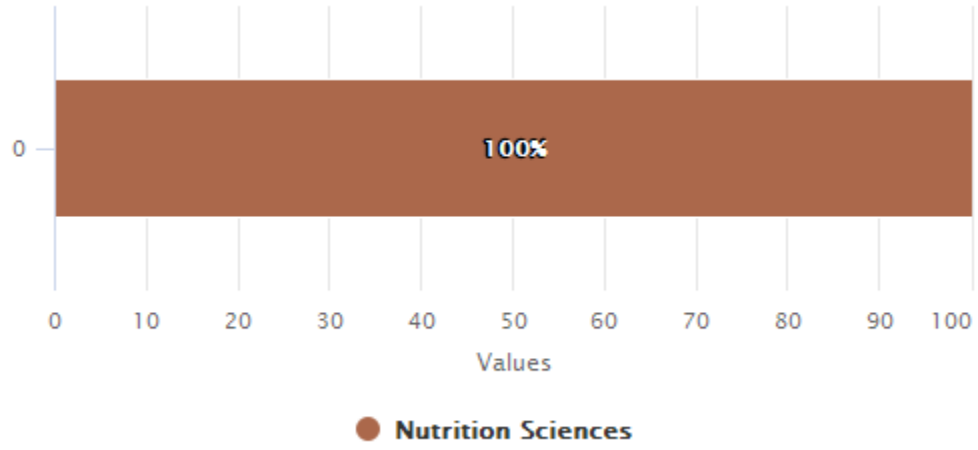
Validate	Programs
Location	Nationwide
Degree Level	Bachelor's degree
Time Period	10/1/2018 - 9/30/2019
Selected Programs	Nutrition Sciences (30.1901)
Career Outcomes mapped to Selected Programs of Study	Dietitian / Nutritionist

OVERVIEW

	#	% Change (2013-2017)
Degrees Conferred	2,564	34%
Number of Institutions	75	41%
Average Conferrals by Institution	34	-5.60%
Median Conferrals by Institution	20	-23.10%

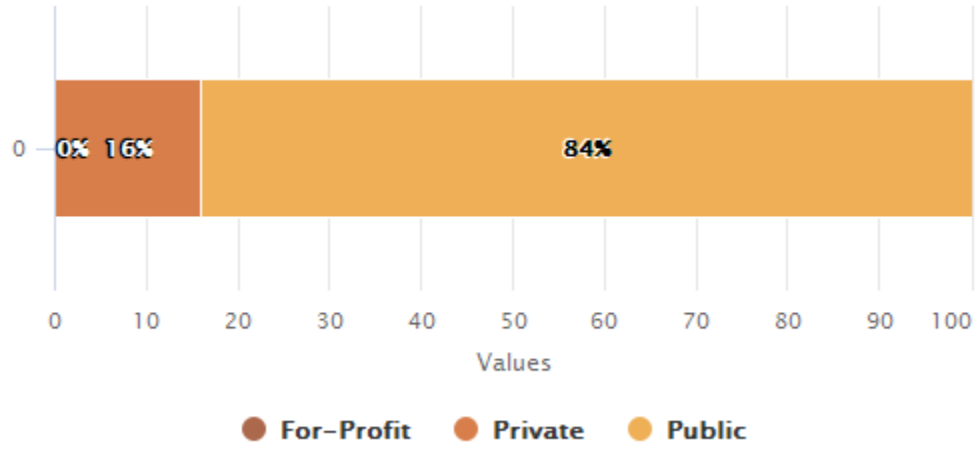
MARKET SHARE BY PROGRAM

Report generated using Program Insight from Burning Glass Technologies



Program	Conferrals (2017)	Market Share (%)
Nutrition Sciences	2,564	100.00%

MARKET SHARE BY INSTITUTION TYPE



Institution Type	Conferrals (2017)	Market Share (%)
For-Profit	2	0.08%
Private	399	15.56%
Public	2,163	84.36%

TOP INSTITUTIONS

Report generated using Program Insight from Burning Glass Technologies

Institution	School Type	Market Share (2017)	Market Share Change	Conferrals (2017)	Conferrals Change (2013-2017)
University of California-Davis	Public	8.46%	0.74%	217	47.60%
University of Arizona	Public	5.42%	0.01%	139	35.00%
Pennsylvania State University-Main Campus	Public	4.33%	4.33%	111	100.00%
Metropolitan State University of Denver	Public	3.78%	0.26%	97	44.80%
University of California-Berkeley	Public	3.51%	0.20%	90	42.90%
University of Minnesota-Twin Cities	Public	3.51%	-1.43%	90	-4.30%
Rutgers University-New Brunswick	Public	3.28%	-1.03%	84	2.40%
University of Wisconsin-Madison	Public	3.28%	-0.08%	84	31.20%
Texas Woman's University	Public	3.20%	-0.74%	82	9.30%
University of Massachusetts-Amherst	Public	3.04%	1.36%	78	143.80%

TOP PROGRAMS

Program	Market Share (2017)	Market Share Change	Conferrals (2017)	Conferrals Change (2013-2017)
Nutrition Sciences	100.00%	0.00%	2,564	34.70%

ACTIVE COMPETITORS

Report generated using Program Insight from Burning Glass Technologies

Institution	School Type	Market Share (2017)	Market Share Change	Conferrals (2017)	Conferrals Change (2013-2017)

VALIDATE: MARKET ALIGNMENT

PROJECT CRITERIA

Validate	Programs
Location	Nationwide
Degree Level	Bachelor's degree
Time Period	10/1/2018 - 9/30/2019
Selected Programs	Nutrition Sciences (30.1901)
Career Outcomes mapped to Selected Programs of Study	Dietitian / Nutritionist

JOB POSTINGS BY ADVERTISED EDUCATION (%)

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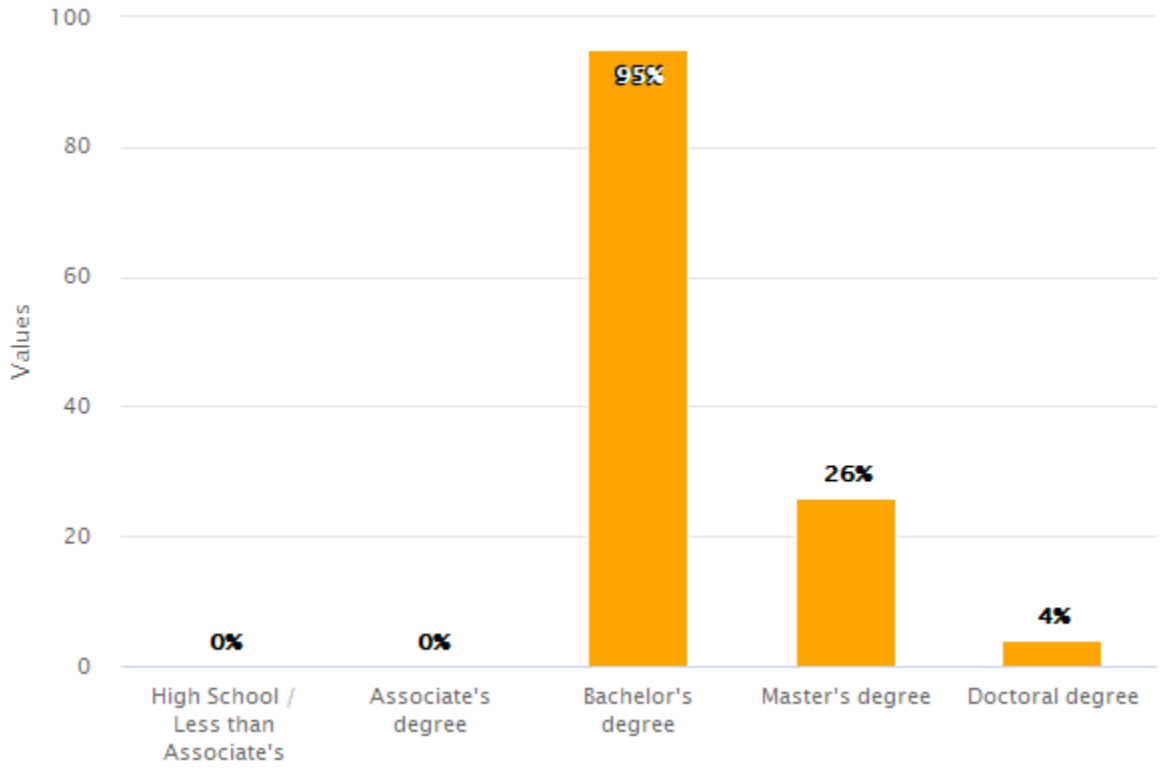
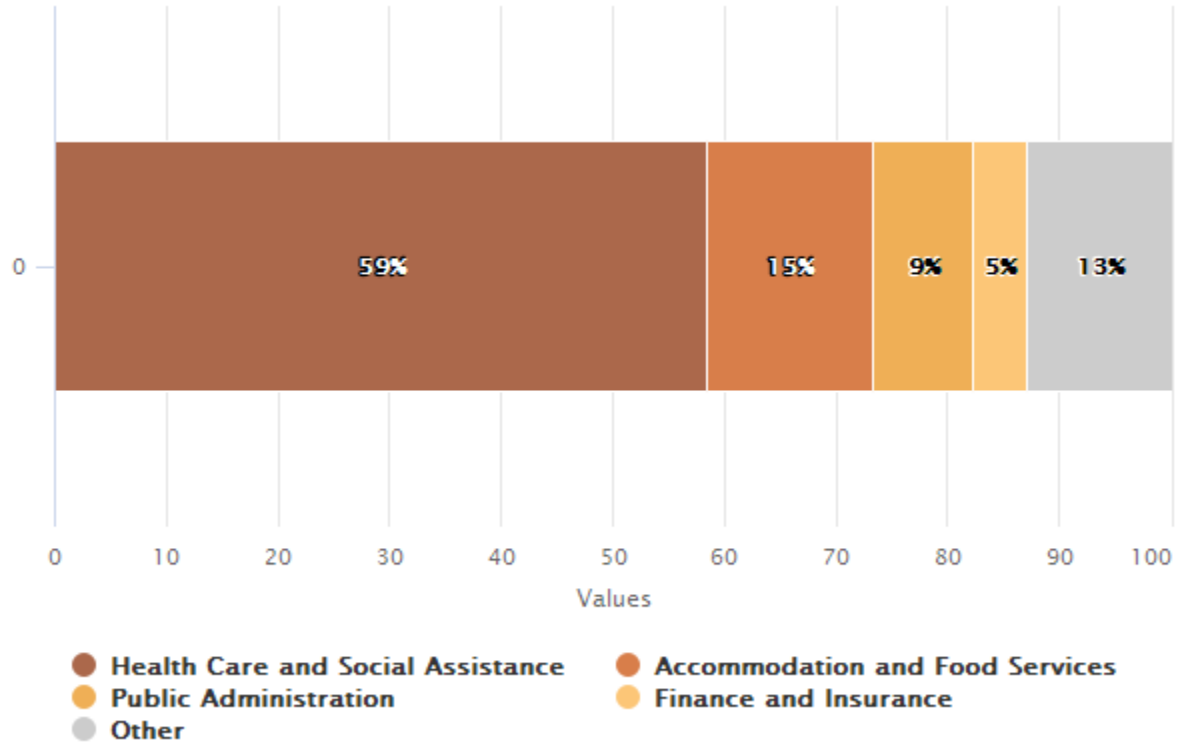


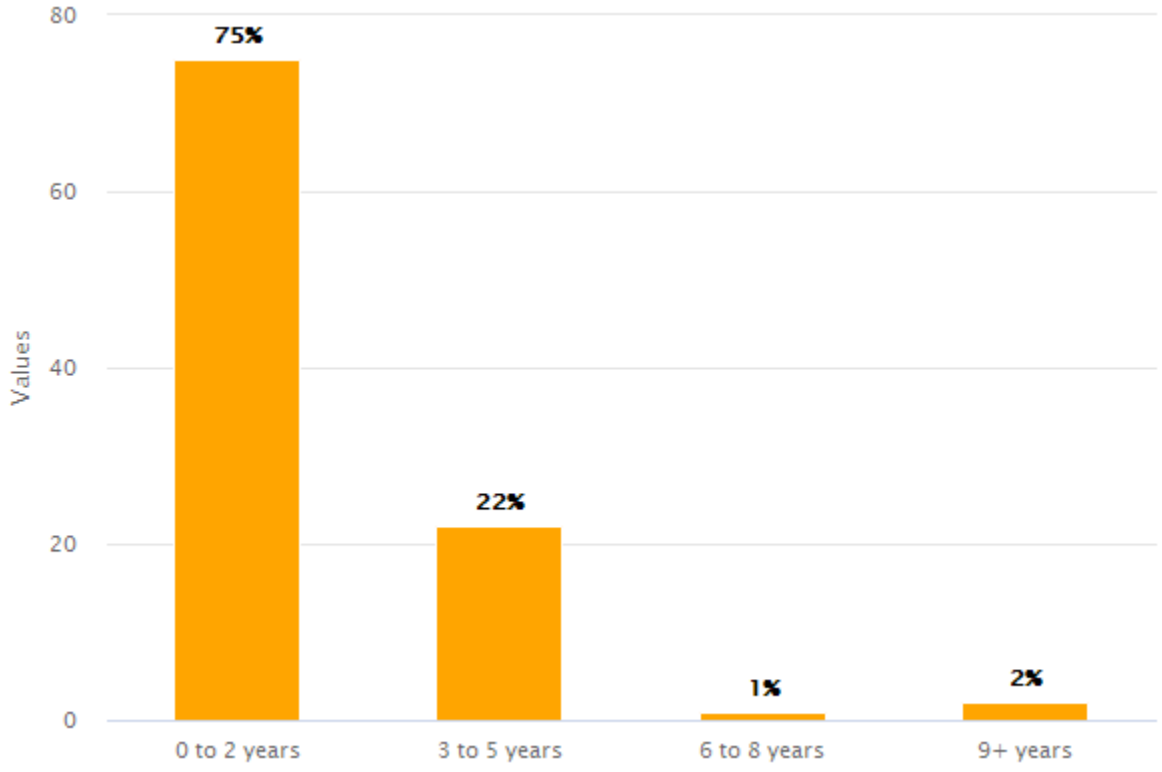
JOB POSTINGS BY INDUSTRY (%)

Report generated using Program Insight from Burning Glass Technologies



JOB POSTINGS BY EXPERIENCE REQUESTED (%)

Report generated using Program Insight from Burning Glass Technologies



TOP TITLES

Experience Level: All Experience

Title	Postings	Market Share (%)
Registered Dietitian	4,299	36.86%
Dietitian	3,079	26.40%
Clinical Dietitian	2,500	21.44%
Nutritionist	992	8.51%
Clinical Nutrition Manager	344	2.95%
Health Coach	111	0.95%
Health Nutrition Coach	66	0.57%
Associate Health Nutrition Coach	47	0.40%
Pediatric Dietitian	25	0.21%
Health Manager	15	0.13%

Clinical Registered Dietitian	14	0.12%
Director, Sports,Nutrition	13	0.11%
Community Dietitian	11	0.09%
Weight Loss Consultant	10	0.09%
Associate, Health,Nutrition	8	0.07%

TOP EMPLOYERS HIRING

Experience Level: All Experience

Employer	Postings	Market Share (%)
Sodexo	1,057	9.06%
Anthem Blue Cross	429	3.68%
Aramark	332	2.85%
Davita Incorporated	324	2.78%
US Army	249	2.14%
Hospital Corporation of America	233	2.00%
Department of Veterans Affairs	208	1.78%
Select Medical	173	1.48%
US Air Force	166	1.42%
Healthcare Services Group Incorporated	134	1.15%
Sanford Health	123	1.05%
Healthcare Services Group	91	0.78%
Natural Grocers	87	0.75%
Dignity Health	80	0.69%
HCR ManorCare	75	0.64%

VALIDATE: KEY COMPETENCIES

PROJECT CRITERIA

Validate	Programs
Location	Nationwide
Degree Level	Bachelor's degree
Time Period	10/1/2018 - 9/30/2019
Selected Programs	Nutrition Sciences (30.1901)
Career Outcomes mapped to Selected Programs of Study	Dietitian / Nutritionist

TOP 15 SPECIALIZED SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage
Dietetics	16314 (87%)	-38.41%	No	No
Nutrition Services	4163 (22%)	-6.99%	No	No
Patient Care	3819 (20%)	15.79%	No	No
Care Planning	3417 (18%)	27.44%	No	No

Nutrition	3136 (17%)	-27.1%	No	No
Patient/Family Education and Instruction	2946 (16%)	11.82%	No	No
Treatment Planning	2266 (12%)	13.44%	No	Yes
Nutrition Counseling	2259 (12%)	-13.84%	No	No
Long-Term Care	2240 (12%)	1.28%	Yes	No
Health Insurance Portability and Accountability Act (HIPAA)	2186 (12%)	6.62%	No	No
Acute Care	2123 (11%)	44.69%	Yes	No
Quality Assurance and Control	1797 (10%)	39.46%	Yes	No
Diabetes Diagnosis / Treatment	1785 (9%)	8.89%	No	No
Customer Service	1468 (8%)	1.05%	No	No
Scheduling	1431 (8%)	1.88%	No	No

TOP 15 BASELINES SKILLS

Report generated using Program Insight from Burning Glass Technologies

Skill	Postings
Communication Skills	4309 (23%)
Research	3928 (21%)
Planning	3091 (16%)
Teamwork / Collaboration	2733 (15%)
Building Effective Relationships	2718 (14%)
Computer Literacy	2481 (13%)
Microsoft Office	2334 (12%)
Organizational Skills	2043 (11%)
Physical Abilities	1873 (10%)

English	1675 (9%)
Time Management	1183 (6%)
Microsoft Excel	1182 (6%)
Writing	1164 (6%)
Written Communication	1130 (6%)
Problem Solving	1106 (6%)

TOP 15 SOFTWARE PROGRAMMING SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage
Microsoft Office	2334 (12%)	-10.2%	No	No
Microsoft Excel	1182 (6%)	17.03%	No	No
Microsoft Word	892 (5%)	-13.39%	No	No

Word Processing	386 (2%)	-19.34%	No	No
Microsoft Powerpoint	308 (2%)	-8.52%	No	No
Microsoft Outlook	294 (2%)	-1.45%	No	No
Ada (Programming Language)	124 (1%)	-28.7%	No	No
Flickr	112 (1%)	-68.61%	No	No
Facebook	72 (0%)	-34.28%	No	No
Microsoft Windows	56 (0%)	6.61%	No	No
Customer Relationship Management (CRM)	52 (0%)	15.03%	No	No
Meditech	52 (0%)	-22.7%	No	No
Microsoft Access	34 (0%)	-57.74%	No	No
LinkedIn	24 (0%)	11.67%	No	No
Pointclickcare	23 (0%)	81.82%	No	No

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TOP 15 SKILL CLUSTERS

Skill	Postings
Nutrition and Diet	17779 (95%)
Medical Support	5966 (32%)
Basic Patient Care	4919 (26%)
Advanced Patient Care	4428 (24%)
General Medicine	2858 (15%)
Quality Assurance and Control	1950 (10%)
Basic Living Activities Support	1665 (9%)
General Medical Tests and Procedures	1457 (8%)
Pediatrics	1085 (6%)
Rehabilitation	1015 (5%)

Budget Management	912 (5%)
Instructional and Curriculum Design	706 (4%)
Pharmacy	534 (3%)
Urology	463 (2%)
Uncategorized	0 (0%)

TOP 15 SALARY PREMIUM SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage
Long-Term Care	2240 (12%)	1.28%	Yes	No
Acute Care	2123 (11%)	44.69%	Yes	No
Quality Assurance and Control	1797 (10%)	39.46%	Yes	No
Rehabilitation	1010 (5%)	-7.58%	Yes	No
Budgeting	912 (5%)	-10.04%	Yes	No

Pediatrics	775 (4%)	23.93%	Yes	Yes
Patient Assistance	745 (4%)	20.76%	Yes	No
Malnutrition	732 (4%)	8.12%	Yes	No
Home Health	641 (3%)	-4.73%	Yes	No
Educational Materials	570 (3%)	-28.66%	Yes	No
Metabolism	524 (3%)	-22.32%	Yes	No
Drug Interaction	471 (3%)	-21.17%	Yes	No
Anemia	421 (2%)	49.17%	Yes	No
Enteral Nutrition	370 (2%)	11.24%	Yes	No

TOP 15 COMPETITIVE ADVANTAGE SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage
Treatment Planning	2266 (12%)	13.44%	No	Yes

Pediatrics	775 (4%)	23.93%	Yes	Yes
Caregiving	754 (4%)	20.38%	No	Yes
Urea	453 (2%)	42.25%	No	Yes
Public Speaking	408 (2%)	-2.13%	No	Yes
Discharge Planning	344 (2%)	11.77%	No	Yes
Hospice	306 (2%)	10.28%	No	Yes

TOP 15 CERTIFICATIONS

Skill	Postings	Salary Premium	Competitive Advantage
Registered Dietitian	13052 (69%)	No	No
Driver's License	1140 (6%)	No	No
Nutrition Certification	707 (4%)	No	No

Certified Diabetes Educator (CDE)	673 (4%)	No	No
ServSafe	400 (2%)	No	No
Basic Life Saving (BLS)	305 (2%)	No	No
Security Clearance	304 (2%)	No	No
First Aid Cpr Aed	284 (2%)	No	No
Certified Safety Professional	190 (1%)	No	No
Basic Cardiac Life Support Certification	145 (1%)	No	No
Certified Hipaa Professional	90 (0%)	No	No
American Heart Association Certification	85 (0%)	No	No
Food Handler Certification	74 (0%)	No	No
Certified Lactation Consultant	58 (0%)	No	No
Food Service Certification	34 (0%)	No	No

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TOP 15 SALARY PREMIUM CERTIFICATIONS

Skill	Postings	Salary Premium	Competitive Advantage
No certificates available			

TOP 15 COMPETITIVE ADVANTAGE CERTIFICATIONS

Skill	Postings	Salary Premium	Competitive Advantage
No certificates available			