

SCIENCE PATHWAYS

WSU Microbiology



Education Requirements

Associate's	Sufficient for some entry level positions (lab technicians, etc). Consider obtainin a chem tech certificate.
Bachelor's	May lead to entry-level positions (e.g., lab technologist, research assistant, quality assurance, producing analysis, etc.) as well as some advancement opportunity (lab coordinator, etc.)
Licensing	Some work environments require special licensing or certification. A teaching certificate is usually required for teaching in public schools (explore teaching majors). Alternative licensure options may be available in some science fields.
Graduate Degree	Required for specialization in most science fields.
Master's	Qualifies for applied research positions, administrative positions, and some community college teaching.
Doctorate	Required for advanced research, upper-level administrative positions, independent research, and most university-level teaching.
Professional	Advanced professional degrees may be required in some areas and can be combined with a science degree (e.g., MD/DO/DDS for medicine, JD for environmental law, MLS for librarian, MBA for upper management, etc.

Specialty Fields

Bacteriology	Study of bacteria
Biological Science Education	Secondary, college, or university.
Biomimetics	Imitation of natural biological systems in designing products and materials.
Bioremediation	The use of organisms to remove or neutralize pollutants.
Environmental Microbiology	Study of microbes found in natural systems (soil, groundwater, etc).
Epidemiology	Causes, patterns, and possilbe control of diseases in populations.
Evolutionary Biology	Evolutionary processes that produced the diversity of life on earth.
Forensic Science	Application of the sciences to crime scene investigation.
Human/Animal Genetics	Heredity and variation.
Immunology	Study of the immune system
Industrial Microbiology	The use of microbes in the manufacturing of food, pharmaceuticals, and industrial products.
Medical Laboratory Science (MLT, MT)	Performs medical analyses on bodily fluids and other specimens.
Medical Microbiology	Prevention, diagnosis, and treatment of infectious diseases.
Medical Research (MS, PhD, MD/PhD)	Advanced research in areas such as epidemiology, immunology, toxicology, sorology, medical genetics, etc.
Microbial Ecology	Relationship between plants and the environment in which they live.
Microbial Genetics	How genes are organized and regulated in microbes.
Microbial Physiology	Structure, metabolism, and growth of microorganisms.
Mycology	Study of fungi
Nematology	Study of nematodes (microscopic worms, often parasitic).
Parasitology	Study of parasites
Pharmacology (MS, PhD)	Branch of science that focuses on the development of medications.
Phycology/Algology	Study of algae
Plant and Soil Microbiology	Study of microbes plants/soils including plant pathogens.
Plant Microbiology	Study of microorganisms that inhabit and contaminate food.
Protozoology	Study of protozoa
Systematics	Evolutionary history and relationships among plants.
Taxonomy	Identification, naming, and classification of plants.
Toxicology	Adverse affects of the adverse effects of chemical substances (and other agents) on living organisms.

Strategies

Academics

- Obtain a minor that is compatible with your career goals can be helpful (e.g., neuroscience, business, criminal justice, etc.)
- Choose appropriate coursework to specialize in an area that interests you.
- Read journals, magazines, and other literature to stay current in your field.
- Consider electives in relevant fields such as computer science, business, public speaking, and writing.
- Maintain excellent grades, especially if you are considering graduate school.
- Undergraduate research projects are great to decide on specific areas of interest, gain hands-on experience, and prepare for graduate school. Publishing and presenting research is ideal. Contact faculty in your department or the WSU Undergraduate Research Office for details.

Extracurricular

- Join professional organizations related to your field (low-cost student memberships are typically available). Consider attending professional conferences.
- Join related student organizations and consider holding leadership positions.

Skills

- Develop excellent mathematics, verbal, and written communication skills.
- Become proficient with computers and software related to your field (including desktop publishing).
- Develop excellent laboratory skills.
- Develop strong interpersonal, teamwork, and presentation skills.
- Develop excellent verbal and written communication skills. Consider taking technical writing courses to aid in authoring proposals, obtaining grants, etc.

Experience

- Post-doctoral experience is preferred for research positions in industry, universities, and government.
- Build your resume through part-time, volunteer, internship, and summer work related to your major.

Technology

- Become proficient with high-tech scientific equipment.

Professional

- Develop work habits that are systematic, precise, and patient.

Network

- Develop an effective resume (or CV), interviewing skills, and job search strategies.
- Develop a network of professional relationships in your field.
- Learn the federal and state government application process.

Other

- Develop a broad background that includes other science subjects such as chemistry, physics, math and statistics.

Related Employers By Industry

Agriculture

Inspection	Utah Department of Agriculture and Food (Analytics Lab)	Salt Lake City	UT	ag.utah.gov
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Biotechnology

Biomedical Engineering	CR Bard	Salt Lake City	UT	www.crbard.com
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	Fresenius Medical Care	Ogden	UT	www.freseniusmedicalcare.us
Cellular Engineering	Thermo Fisher Scientific	Logan	UT	www.thermofisher.com
Genetics Engineering	Myriad Genetics	SLC	UT	www.myriad.com
Medical Devices	BD Medical	Sandy	UT	www.bd.com/us
	Biofire Diagnostics	Salt Lake City	UT	www.biofiredx.com
	Merit Medical Systems	South Jordan	UT	www.merit.com
Pharmaceuticals	Merck	Kenilworth	NJ, International	www.merck.com
Business				
Public Relations	U.S. National Science Foundation	Arlington	VA	www.nsf.gov
Shipping/Distribution	Airgas International	SLC	UT	www.airgas.gov
Communications				
Science News	American Association for the Advancement of Science	Washington, DC	National	www.aaas.org
Science Publishing/Illustration	American Association for the Advancement of Science	Washington, DC	National	www.aaas.org
	John Wiley and Sons	Hoboken	New Jersey, Nati	www.wiley.com
	Nature Publishing Group	London	England, Internat	www.nature.com
	Pearson Education	New York	NY, National, Int	www.pearsoned.com
Energy				
Hydro/Solar/Wind	Idaho National Labs	Idaho Falls	Idaho	
	U.S. National Renewable Energy Laboratory (NREL)	Golden	CO	www.nrel.gov
Nuclear	Idaho National Labs	Idaho Falls	Idaho	
Environmental				
Conservation/Research	Friends of the Great Salt Lake	Salt Lake City	UT	www.fogsl.org
	U.S. Environmental Protection Agency (Region 8)	Denver	CO	www2.epa.gov
Monitoring/Analysis	U.S. Environmental Protection Agency (Region 8)	Denver	CO	www2.epa.gov
	Utah Department of Environmental Quality	Salt Lake City	UT	www.deq.utah.gov
Regulation	U.S. Environmental Protection Agency (Region 8)	Denver	CO	www2.epa.gov
	Utah Department of Environmental Quality	Salt Lake City	UT	www.deq.utah.gov
Remediation	Nalco	Draper and Vernal	UT	www.nalco.com
	Utah Division of Environmental Response and Remediation	Salt Lake City	UT	www.deq.utah.gov
Geotechnical				
Consulting/Analysis	Great Basin Laboratory Consultants	Reno	NV	www.greatbasinlabs.com
Government				
City	Salt Lake City Corporation	SLC	UT	www.slcgov.com/jobs
County	Bear-River Health Department	Brigham City, Logan, Randolph	UT	www.brhd.org
	Davis County Health Department	Clearfield	UT	www.co.davis.ut.us/health

	North Davis Sewage Plant	Syracuse	UT	www.ndsd.org
	Salt Lake Valley Health Department	Salt Lake City, Sandy, West Jordan, West Valley	UT	www.slvhealth.org
	Utah County Health Department	Provo, American Fork	UT	www.utahcountyhealth.org
	Weber Basin Water	Layton	UT	www.weberbasin.com
	Weber-Morgan Health Department	Ogden	UT	www.webermorganhealth.org
Federal	Dugway Proving Grounds	Dugway	UT	www.dugway.army.mil
	Sandia National Laboratories	Albuquerque	NM, Other U.S.	www.sandia.gov
	U.S. Centers for Disease Control and Prevention	Atlanta	GA	www.cdc.gov
	U.S. Environmental Protection Agency (Region 8)	Denver	CO	www2.epa.gov
	U.S. Federal Bureau of Investigation (FBI)	Salt Lake City	UT	www.fbi.gov
	U.S. National Renewable Energy Laboratory (NREL)	Golden	CO	www.nrel.gov
	U.S. National Science Foundation	Arlington	VA	www.nsf.gov
	U.S. Secret Service	SLC	UT	www.secretservice.gov
State	Utah Bureau of Forensic Services Laboratory	Salt Lake City	UT	publicsafety.utah.gov/forensicervices
	Utah Department of Agriculture and Food (Analytics Lab)	Salt Lake City	UT	ag.utah.gov
	Utah Department of Environmental Quality	Salt Lake City	UT	www.deq.utah.gov
	Utah Department of Health	SLC	UT	health.utah.gov
	Utah Department of Veterans Affairs	Salt Lake City	UT	veterans.utah.gov
	Utah Division of Environmental Response and Remediation	Salt Lake City	UT	www.deq.utah.gov
	Utah Public Health Laboratory (Div. of Epidemiology & Lab Services)	Talorsville	UT	health.utah.gov/lab
	Utah, State of	Salt Lake City	Utah	dhrm.utah.gov
Manufacturing				
Food and Beverage	Associated Food Stores	SLC	UT	www.afstores.com
	ConAgra Foods	Ogden	UT, National, Int	www.conagrafoods.com
	Gossner Cheese	Logan	UT	www.gossner.com
	Great Lakes Cheese	Fillmore	UT	www.greatlakes.com
	HC Brill Co.	Pleasantview	UT	No Website
	Kroger Dairy	Layton	UT	www.thekrogerco.com
	Leprino Foods	Denver	CO	www.leprinofoods.com
	Lofthouse foods	Ogden	UT	www.lofthousecookies.com
	Malt-O-Meal	Tremonton	UT	www.malt-o-meal.com
	Morinda	Provo	UT	www.morinda.com
	Saputo Cheese	Lincolnshire	IL, Nationwide	www.saputousafoodservice.com
	Schreiber Foods	Smithfield & Logan	UT	www.schreiberfoods.com
Household Products	Procter & Gamble	Bear River City	UT, National	www.pg.com
	Sun Products Corporation	Salt Lake City	UT, Nationwide	www.sunproductscorp.com
Nutraceuticals & Bioactives	Morinda	Provo	UT	www.morinda.com
	Neways International	Springville	UT	www.neways.com
	Nuskin	Ogden	UT	www.nuskin.com

	Nutraceutical	Ogden	UT	www.nutraceutical.com
	Pharmachem	Ogden, National	UT	www.pharmachemlabs.com
	USANA Health Sciences	SLC	UT	www.usana.com
	VMI Nutrition	Salt Lake City	UT	www.vminutrition.com
Other	Nalco	Draper and Vernal	UT	www.nalco.com
	Ultradent	Salt Lake City	UT	www.ultradent.com
Medical				
Hospitals and Clinics	Kaiser Permanente	Various	National	www.kaiserpermanente.org
	Lakeview Hospital	Bountiful	UT	www.lakeviewhospital.com
	McKay-Dee Hospital (IHC)	Ogden	UT	intermountainhealthcare.org/hospitals/mckaydee
	Primary Children's Medical Center	SLC	UT	intermountainhealthcare.org/hospitals/primarychildrens
Insurance	Kaiser Permanente	Various	National	www.kaiserpermanente.org
Other	Intermountain Donor Services	Salt Lake City	UT	www.idslife.org
Public Health	U.S. Centers for Disease Control and Prevention	Atlanta	GA	www.cdc.gov
	U.S. National Institutes of Health	Bethesda	MD	www.nih.gov
	Utah County Health Department	Provo, American Fork	UT	www.utahcountyhealth.org
	Utah Department of Health	SLC	UT	health.utah.gov
	Weber-Morgan Health Department	Ogden	UT	www.webermorganhealth.org
Mining/Exploration				
Metals	Mineral Resource International (MRI)	Ogden	UT	www.minteralresourceint.com
	Rio Tinto	Magna	UT	www.riotinto.com
Natural Resources				
Water	Weber Basin Water	Layton	UT	www.weberbasin.com
Other				
Nonprofit	Church of Jesus Christ of Latter-day Saints	Salt Lake City	UT	www.lds.org
Professional Organizations/Journals	American Association for the Advancement of Science	Washington, DC	National	www.aaas.org
Science Promotion/Education	U.S. National Science Foundation	Arlington	VA	www.nsf.gov
Science Staffing	Aerotek	West Valley City	UT	www.aerotek.com
Research & Development				
Government	Dugway Proving Grounds	Dugway	UT	www.dugway.army.mil
	Los Alamos National Laboratories	Los Alamos	NM	www.lanl.gov
	U.S. National Institutes of Health	Bethesda	MD	www.nih.gov
	U.S. National Science Foundation	Arlington	VA	www.nsf.gov
Industry	Myriad Genetics	SLC	UT	www.myriad.com
Technology				
Educational Software Consulting	Pearson Education	New York	NY, National, Int	www.pearsoned.com
Testing and Analysis				

Forensics Lab	Utah Bureau of Forensic Services Laboratory	Salt Lake City	UT	publicsafety.utah.gov/forensicervices
Industrial	Nalco	Draper and Vernal	UT	www.nalco.com
Inspection	Nelson Laboratories	Salt Lake City	UT	www.nelsonlabs.com
Medical Lab	ARUP Laboratories	SLC	UT	www.aruplab.com
	Myriad Genetics	SLC	UT	www.myriad.com
	Nelson Laboratories	Salt Lake City	UT	www.nelsonlabs.com
	Utah Public Health Laboratory (Div. of Epidemiology & Lab Services)	Talorsville	UT	health.utah.gov/lab

Sources

- Specialty definitions compiled from a variety of public web sources.
- Weber State University Graduate Survey
- What Can I Do With This Degree? Adapted from material prepared by Career Services at the University of Tennessee, Knoxville. (Online; Licensed by WSU)