



AGRICULTURE
& NATURAL
RESOURCE
PROGRAM
GUIDE



AGRICULTURE CENTER
of Excellence



CENTERS OF
EXCELLENCE



WHY AGRICULTURE & NATURAL RESOURCES?

Everyone eats and everyone needs a place to live. All of our food and shelter come from agriculture and natural resources.

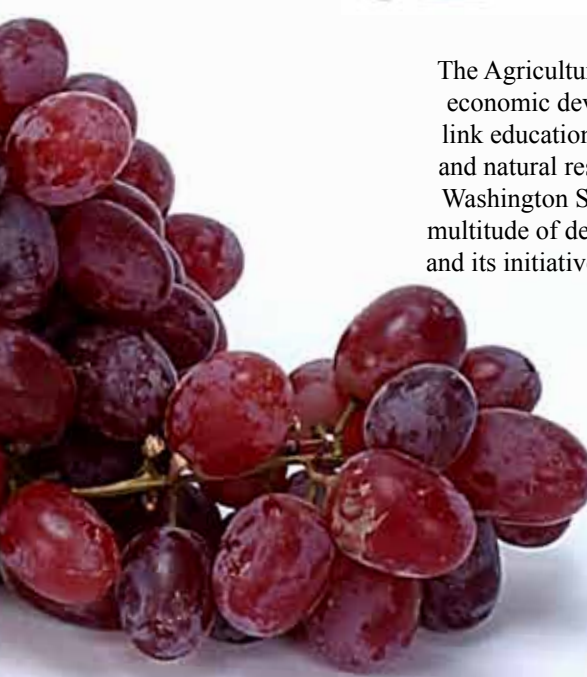
If you are interested in how we interact with the environment and how we use natural resources to meet our basic needs, then consider a career in Agriculture and Natural Resources.

Agriculture in Washington employs an estimated 160,000 workers annually and contributes 12% of the state's economy.*

It is big business, it is important business, and it just might be for you!



The Agriculture Center of Excellence is an organization designed to encourage economic development through collaborative processes and partnerships that link education to the agricultural industry. The Center supports the agriculture and natural resource programs offered by community and technical colleges in Washington State. The Center serves over 20 colleges which currently offer a multitude of degree programs. Funding for the Agriculture Center of Excellence and its initiatives is provided by the Washington State Board for Community and Technical Colleges.



PROGRAM GUIDE

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Cascadia Community College

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Irrigation Technology

Walla Walla Community College

Turf Equipment Mechanics

Walla Walla Community College

20 **Food Processing & Technology Pathway**

Agriculture & Food Products Processing

Yakima Valley Community College

Viticulture & Enology

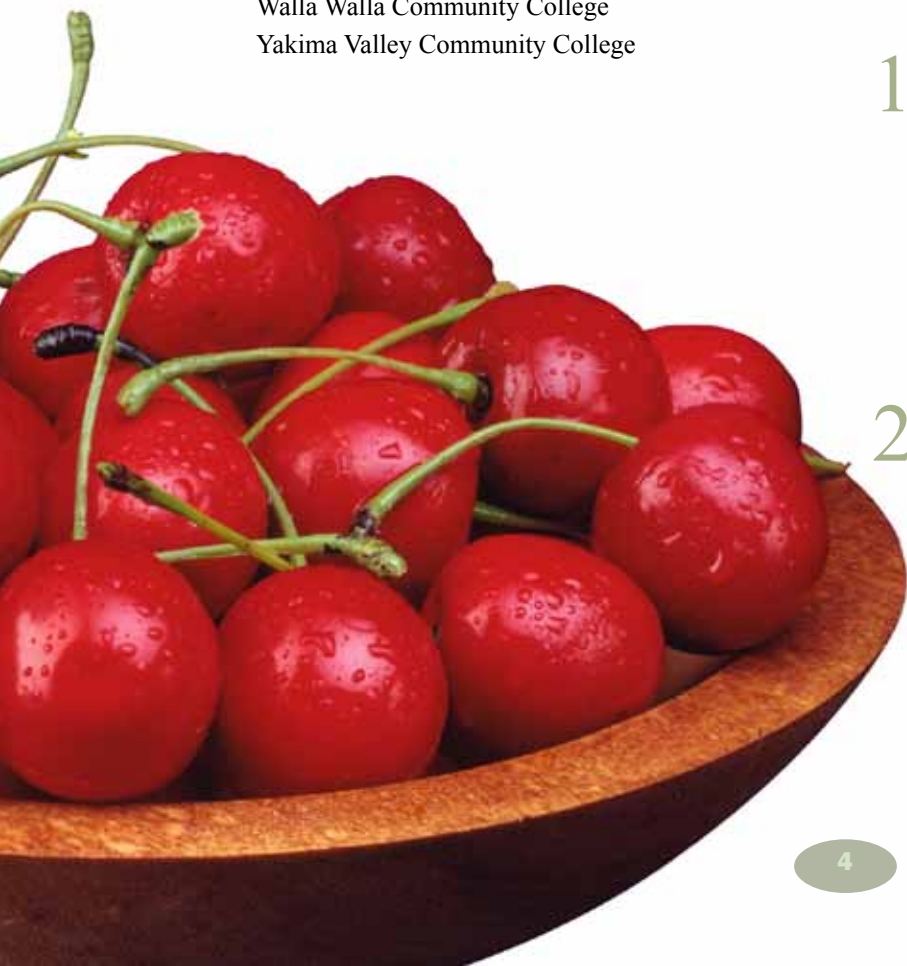
Lake Washington Technical College

South Seattle Community College

Walla Walla Community College

Wenatchee Valley College

Yakima Valley Community College



22 **Natural Resource Pathway**

Fisheries Technology

Bellingham Technical College

Peninsula College

Forestry & Forest Technology

Centralia College

Grays Harbor College

Green River Community College

Spokane Community College

Natural Resources & Conservation

Skagit Valley College

Walla Walla Community College

Wenatchee Valley College

Water, Wetlands & Marine Resources Management

Green River Community College

Skagit Valley College

Spokane Community College

Wildlife, Fish, & Wildlands Science & Management

Spokane Community College

28 **Plant Science Pathway**

Agricultural Production Operations

Big Bend Community College

Walla Walla Community College

Wenatchee Valley College

Yakima Valley Community College

Greenhouse Operations & Management

Spokane Community College

Horticulture Operations

Clark College

Edmonds Community College

Lake Washington Technical College

South Puget Sound Community College

South Seattle Community College

Landscaping & Groundskeeping

Clark College

Clover Park Technical College

Edmonds Community College

South Seattle Community College

Ornamental Horticulture & Floristry

Spokane Community College

Plant Nursery Operations & Management

Clark College

Edmonds Community College

Tree Fruit Production

Yakima Valley Community College

Turf Management

Edmonds Community College

South Seattle Community College

Spokane Community College

Walla Walla Community College

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USING THE PROGRAM GUIDE

The Agriculture & Natural Resource Program Guide is a tool for K-12 students, parents, faculty, guidance counselors, and dislocated workers to identify programs of study at Washington's community and technical colleges.

Agriculture & Natural Resource Career Cluster includes everything that grows in nature – food, fiber, wood products, natural resources, horticulture, plants, and animals.

Career Pathways:

There are seven career pathways in the Agriculture & Natural Resource Career Cluster. The seven pathways are focused on similar industry sub-groups and programs of study.

- › Agribusiness
- › Animal Science
- › Environmental Service
- › Equipment & Technology
- › Food Processing & Technology
- › Natural Resource
- › Plant Science

Certificate & Associate Degree Options:

When choosing a program, the type of credential earned and length of study may influence selection. There are three primary credential offerings for students interested in professional-technical training: Certificate, Associate Degree, or Associate Transfer Degree. For students interested in quickly upgrading their skills there is a fourth option, a Short-Term Certificate.

Short-Term Certificate (ST)

– Less than 20 credits (typically 1 quarter or up to 1 year)
Designed for students who are seeking entry level positions and/or upgrading their skill-set in a particular profession.

Certificate (C)

– More than 20 credits (typically 1 year)
Designed for students who are seeking entry level positions in a technical profession.

Associate Degree (A)

– 90 credits or more (typically 2 years)
Designed for students who plan to enter the workforce in a professional-technical field.

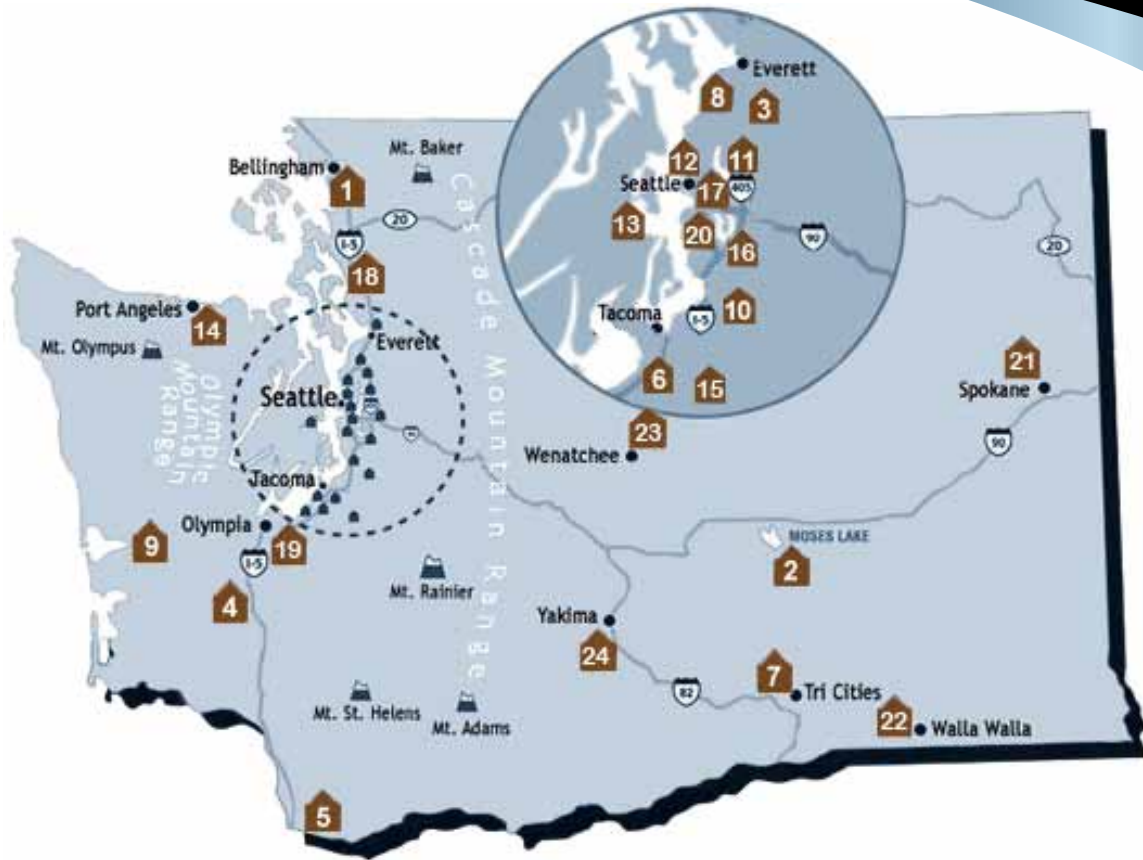
Associate Transfer Degree (AT)

– 90 credits or more (typically 2 years)
Designed for students who plan to transfer to a four-year college/university with an applied science degree in a professional-technical program.

Statement of Clarification & Accuracy

The courses and programs included in this guide are a direct reflection of agriculture and natural resource programs as defined by CIP and provided by the Washington State Board for Community and Technical Colleges. Every effort was made to ensure that this guide is complete and accurate. Despite the Center's best efforts to be inclusive and correct, this publication may contain inaccuracies, which should not reflect negatively on the programs, organizations, or individuals included. To report inaccuracies, please contact the Agriculture Center of Excellence at www.agcenterofexcellence.com.





COMMUNITY & TECHNICAL COLLEGES WITH AGRICULTURE & NATURAL RESOURCE PROGRAMS

- | | |
|---------------------------------------|---|
| 1. Bellingham Technical College | 13. Olympic College |
| 2. Big Bend Community College | 14. Peninsula College |
| 3. Cascadia Community College | 15. Pierce College |
| 4. Centralia College | 16. Renton Technical College |
| 5. Clark College | 17. Seattle Central Community College |
| 6. Clover Park Technical College | 18. Skagit Valley College |
| 7. Columbia Basin College | 19. South Puget Sound Community College |
| 8. Edmonds Community College | 20. South Seattle Community College |
| 9. Grays Harbor College | 21. Spokane Community College |
| 10. Green River Community College | 22. Walla Walla Community College |
| 11. Lake Washington Technical College | 23. Wenatchee Valley College |
| 12. North Seattle Community College | 24. Yakima Valley Community College |

AGRICULTURE & NATURAL RESOURCE PROGRAM MATRIX

Interested in a particular training program? Do you want to know what is offered at your nearby community or technical college? Use this matrix to see which programs are currently being offered at each of the community and technical colleges in Washington State.

Colleges are listed below and programs are listed to the right. If the intersection between a college and program is colored, the college is currently offering a training program in that area of study.

	Agricultural Business & Management	Agriculture & Food Products Processing	Agricultural Mechanization	Agricultural Production Operations	Environmental Technology	Fisheries Technology	Forestry & Forest Technology	Greenhouse Operations & Management	Horseshoeing/Farriery	Horticulture Operations	Irrigation Technology	Landscaping & Groundskeeping	Natural Resources & Conservation	Ornamental Horticulture & Floristry	Plant Nursery Operations & Management	Tree Fruit Production	Turf Equipment Mechanics	Turf Management	Veterinary Technology	Viticulture & Enology	Water/Wetlands Resources Management	Wildlife/Wildlands Management
Bellingham Technical College																						
Big Bend Community College																						
Cascadia Community College																						
Centralia College																						
Clark College																						
Clover Park Technical College																						
Columbia Basin College																						
Edmonds Community College																						
Grays Harbor College																						
Green River Community College																						
Lake Washington Technical College																						
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Skagit Valley College																						
South Puget Sound Community College																						
South Seattle Community College																						
Spokane Community College																						
Walla Walla Community College																						
Wenatchee Valley College																						
Yakima Valley Community College																						

CAREER PATHWAYS

Career clusters identify the knowledge and skills students need as they follow a pathway toward their career goal. The Agriculture & Natural Resource Career Cluster is divided into seven career pathways. Pathways are grouped by common knowledge and skills required of occupations in the agriculture and natural resource career fields.

10-11 **Agribusiness Pathway**

People who work in the agribusiness pathway coordinate activities that contribute to the production, processing, marketing, distribution, financing and development of agricultural commodities and resources.

12-15 **Animal Science Pathway**

People who work in the animal science pathway work to develop better, more efficient ways of producing and processing meat, poultry, eggs, and dairy products.

16 **Environmental Service Pathway**

People who work in the environmental service pathway are involved in water and air pollution control, recycling, waste disposal and public health issues.

17-19 **Equipment & Technology Pathway**

People who work in the equipment and technology pathway apply knowledge of engineering, hydraulics, pneumatics, electronics, power, structures, and controls to the field of agriculture.

20-21 **Food Processing & Technology Pathway**

People who work in the food products and processing pathway discover new food sources, analyze food content and develop ways to process, preserve, package or store food according to industry and government regulations.

22-27 **Natural Resource Pathway**

People who work in the natural resource pathway perform a variety of tasks from helping to develop, maintain, and manage the forest and natural environment, to catching and trapping various types of marine life for human consumption, animal feed, bait, and other uses.

28-37 **Plant Science Pathway**

People who work in the plant science pathway study plants and their growth, helping producers of food, feed, and fiber crops continue to feed a growing population while conserving natural resources and maintaining the environment.

Agribusiness Pathway

AGRICULTURAL BUSINESS & MANAGEMENT

Industry Description:

Individuals in agribusiness apply a wide range of knowledge of markets, products and laws to local, regional, national and international agricultural commerce. Producing and marketing food and fiber products is a vital and important industry.

Job Titles:

- › Agriculture Sales Associate
- › Commodity Broker
- › Farm Advisor
- › Farm Manager
- › Store Manager

Knowledge & Skills:

- › Applied Mathematics
- › Computer Skills
- › Economics
- › Oral and Written Communication Skills



Columbia Basin College

Certificate & Associate Degree Options:

A - Agribusiness
AT - Emphasis in Agribusiness

Transfer Agreements:

Central Washington University
Oregon State University
University of Idaho
Washington State University

Contact Information:

Kerrin Molton, (509) 542-4785
kmolton@columbiabasin.edu

Lisa Toomey, (509) 542-4807
ltoomey@columbiabasin.edu
www.columbiabasin.edu/agriculture

Spokane Community College

Certificate & Associate Degree Options:

C - Agribusiness
C - Spray Technician
A - Agribusiness

Transfer Agreements:

Washington State University

Contact Information:

Bob Peregoy, (509) 533-7258
BPeregoy@scc.spokane.edu
www.scc.spokane.edu/?envsci

Walla Walla Community College

Certificate & Degree Options:

C - Agribusiness
C - Agribusiness-Wine Marketing & Management
A - Agribusiness
A - Agribusiness-Wine Marketing & Management
A - John Deere Ag-Sales
A - John Deere Dealership Management
AT - Emphasis in Agribusiness

Transfer Agreements:

Eastern Oregon University
University of Idaho
Washington State University

Contact Information:

Debbie Frazier, (509) 527-4699
debbie.frazier@wwcc.edu
www.wwcc.edu/agbusiness

Yakima Valley Community College

Certificates & Associate Degree Options:

A - Agribusiness
AT - Agribusiness

Transfer Agreements:

Washington State University

Contact Information:

Trent Ball, (509) 883-7007
tball@yvcc.edu
www.yvcc.edu/ag

ST – Short-Term Certificate / C - Certificate / A – Associate Degree /
AT– Associate Transfer Degree

Animal Science Pathway

AGRICULTURAL PRODUCTION OPERATIONS

Industry Description:

Agricultural production focuses on the general planning, economics, and use of facilities, natural resources, equipment, labor, and capital to produce animal products. Individuals in agricultural production may be employed in farming, ranching, and agribusiness.

Job Titles:

- › Agricultural Sales Representative
- › Agricultural Technician
- › Farm and Ranch Advisor
- › Farm, Ranch, and Other Agricultural Manager
- › Quality Assurance

Knowledge & Skills:

- › Animal Science
- › Applied Mathematics
- › Oral and Written Communication
- › Plant & Soil Science

Walla Walla Community College

Certificate & Associate Degree Options:

- C - Agriculture Science & Technology – Animal Science
- A - Agriculture Science & Technology - Animal Science
- AT - Emphasis in Agriculture Science and Technology

Transfer Agreements:

Eastern Oregon University
University of Idaho
Washington State University

Contact Information:

Michael Moramarco, (509) 527-4223
michael.moramarco@wwcc.edu
www.wwcc.edu/agscience



HORSESHOEING

Industry Description:

Farriers are trained in the art and science of trimming and shoeing horses of all breeds. Individuals in the industry remove old shoes, trim the hoof, and shape shoes to fit the hoof.

Job Title:

- › Farrier

Knowledge & Skills:

- › Applied Mathematics
- › Business Skills
- › Interpersonal Communication Skills
- › Oral and Written Communication

Walla Walla Community College

Certificate & Associate Degree Options:

- ST - Farriery
- C - Farrier Science
- A - Farrier Science

Contact Information:

Jeff Engler, (509) 527-4291

jeff.engler@wwcc.edu

www.wwcc.edu/farrier

ST – Short-Term Certificate / C - Certificate /

A – Associate Degree /

AT– Associate Transfer Degree

Animal Science Pathway

VETERINARY TECHNOLOGY

Industry Description:

Veterinary Technicians typically conduct clinical work in a private practice under the supervision of a veterinarian, performing various medical tests in a laboratory or field setting along with treating and diagnosing medical conditions and diseases in animals.

Job Titles:

- › Animal Drug and Product Sales Position
- › Barn or Kennel Manager
- › Clinical Veterinary Technician
- › Veterinary Technician
- › Zoo Technician

Knowledge & Skills:

- › Animal Science
- › Applied Mathematics
- › Interpersonal Communication Skills
- › Oral and Written Communication



Bellingham Technical College

Certificate & Associate Degree Options:

C - Veterinary Assistant
A - Veterinary Technician

Contact Information:

Dr. Lisa Dzyban, (360) 752-8577
ldzyban@btc.ctc.edu
www.btc.ctc.edu/DegreesCertificates/Programs/PRG-ProgramMain.asp?Program=90

Pierce College

Certificate & Associate Degree Options:

A - Veterinary Technology

Contact Information:

Dr. Salvador Hurtado, (253) 964-6665
shurtado@pierce.ctc.edu
www.pierce.ctc.edu/dept/vettech/

Renton Technical College

Certificate & Associate Degree Options:

ST - Veterinary Assistant

Contact Information:

Louisa Beal, (425) 235-2352x2039
lbeal@rtc.edu
<http://www.rtc.edu/Programs/TrainingPrograms/VeterinaryAssistant/>

Skagit Valley College

Certificate & Associate Degree Options:

C - Veterinary Assistant

Contact Information:

Laura Cailloux, (360) 416-7729
laura.cailloux@skagit.edu
http://www.skagit.edu/directory.asp_Q_pagenumber_E_469

Yakima Valley Community College

Certificate & Associate Degree Options:

A - Veterinary Technology

Contact Information:

Dr. Sue Wedam, (509) 574-4759
swedam@yvcc.edu
www.yvcc.edu/VetTech

ST – Short-Term Certificate / C - Certificate / A – Associate Degree /
AT – Associate Transfer Degree

Environmental Service Pathway

ENVIRONMENTAL TECHNOLOGY

Industry Description:

The environmental technology and sustainable practices field focuses on the studies and activities relating to the natural environment and its conservation, use, and improvement. The industry includes areas of interest such as air, climate, and energy with basic principles of environmental science and economic uses of renewable resources.

Job Titles:

- › Conservation Scientist
- › Energy Technician
- › Environmental Science Technician
- › Research Assistant
- › Wind Technician

Knowledge & Skills:

- › Applied Mathematics
- › Electricity & Power
- › Oral and Written Communication
- › Sustainable Practices

Cascadia Community College

Certificate & Associate Degree Options:

C - Energy Audit Specialist
C - Energy Management Specialist
C - Solar PV System Specialist
AT - Environmental Techs & Sustainable Practices-Business
AT - Degree in Environmental Techs & Sustainable Practices-Technology

Contact Information:

Mel Oyler, (425) 352-8389
moyler@cascadia.edu

http://www.cascadia.edu/programs/professional_technical_transfer_degrees/environmental_technologies_sustainable_practices.aspx

Lake Washington Technical College

Certificate & Associate Degree Options:

ST - Industrial/Laboratory

Contact Information:

Grace Lasker, (425) 739-8100x660
grace.lasker@lwtc.edu

http://www.lwtc.edu/Academics/Programs_of_Study/Energy_and_Science_Technician/Energy_and_Science_technician_program_Outline.xml

Walla Walla Community College

Certificate & Associate Degree Options:

ST - Principles of Controls
ST - Principles of Electricity
C - Wind Energy Technology
A - Wind Turbine Technology

Contact Information:

James Bradshaw, (509) 524-5186
james.bradshaw@wwcc.edu
www.wwcc.edu/wind

ST – Short-Term Certificate / C - Certificate / A – Associate Degree / AT– Associate Transfer Degree

Equipment & Technology Pathway

AGRICULTURAL MECHANIZATION

Industry Description:

Agricultural mechanization and equipment maintenance technicians diagnose, adjust, repair, and overhaul farm machinery and vehicles, such as tractors, harvesters, dairy equipment, and irrigation systems. Mechanics and technicians may work on agriculture and construction equipment, such as AGCO, CASE IH, Caterpillar, John Deere, Kubota, and New Holland products.

Job Titles:

- › Agriculture Diesel Mechanic
- › Farm Equipment Mechanic
- › John Deere Maintenance Technician
- › John Deere Mechanic
- › Mobile Heavy Equipment Mechanic

Knowledge & Skills:

- › Applied Mathematics
- › Hand-Eye Coordination
- › Oral and Written Communication
- › Technical Skills

Walla Walla Community College

Certificate & Associate Degree Options:

- ST – John Deere ProTech
- A - Diesel Equipment Mechanics
- A - John Deere Technology

Contact Information:

Les Echtenkamp, (509) 529-4449
les.echtenkamp@wwcc.edu

David Bailey, (509) 529-2600
david.bailey@wwcc.edu

Richard Hellie, (509) 529-5200
richard.hellie@wwcc.edu
www.wwcc.edu/johndeere

ST – Short-Term Certificate / C - Certificate / A – Associate Degree /
AT– Associate Transfer Degree



Equipment & Technology Pathway

IRRIGATION TECHNOLOGY

Industry Description:

The farm irrigation technology field involves surveying, planning, layout, construction, and maintenance of irrigation, drainage, and run-off systems. Technicians have expertise in water management techniques.

Job Titles:

- › Conservation District Personnel
- › Designer
- › Irrigation Manager
- › Service Technician
- › Water Auditor

Knowledge & Skills:

- › Applied Mathematics
- › Electrical Knowledge
- › Oral and Written Communication
- › Plant & Soil Science

Walla Walla Community College

Certificate & Associate Degree Options:

- ST – Water Conservation
- C - Irrigation Technology
- A - Irrigation Technology
- A - Water Resources Technology

Transfer Agreements:

Washington State University

Contact Information:

Greg Farrens, (509) 527-4250

greg.farrens@wwcc.edu

Gerald Anhorn, (509) 524-4809

gerald.anhorn@wwcc.edu

www.wwcc.edu/water

ST – Short-Term Certificate / C - Certificate / A – Associate Degree / AT – Associate Transfer Degree

TURF EQUIPMENT MECHANICS

Industry Description:

Industry professionals assemble, install, service, maintain, and repair various agricultural turf equipment. Individuals may work on gas, diesel, and electric power units; knowledge includes welding and hydraulic systems.

Job Titles:

- › Engine Repair Technician
- › Outdoor Power Mechanic
- › Service Technician
- › Small Engine Mechanic
- › Turf Equipment Mechanic

Knowledge & Skills:

- › Applied Mathematics
- › Hand-Eye Coordination
- › Oral and Written Communication
- › Technical Skills

Walla Walla Community College

Certificate & Associate Degree Options:

C - Outdoor Power and Turf Equipment

Contact Information:

George Klein, (509) 527-3673

george.klein@wwcc.edu

<http://www.wwcc.edu/outdoorpower>

ST – Short-Term Certificate / C - Certificate / A – Associate Degree /

AT– Associate Transfer Degree

Food Processing & Technology Pathway

AGRICULTURE & FOOD PRODUCTS PROCESSING

Industry Description:

The agriculture and food products processing industry applies principles and technology associated with the postharvest care of fresh horticultural commodities in order to maintain product quality from harvest through consumer purchase and use. Food commodities are converted into quality food products using appropriate production, processing, preservation, and safety methods.

Job Titles:

- › Agriculture Inspector
- › Crop/Orchard Production Manager
- › Food Technician
- › Plant Operations Supervisor
- › Quality Control Specialist

Knowledge & Skills:

- › Applied Mathematics
- › Oral and Written Communication
- › Safety and Health Management Methods
- › Technical Skills

Yakima Valley Community College

Certificate & Associate Degree Options:

A - Food Technology

Contact Information:

Trent Ball, (509) 882-7007

tball@yvcc.edu

www.yvcc.edu/ag

ST – Short-Term Certificate / C - Certificate / A – Associate Degree / AT– Associate Transfer Degree



VITICULTURE & ENOLOGY

Industry Description:

The viticulture and fermentation industry involves the scientific management of grapevines and grape products. This includes the propagation, irrigation, maintenance of grapevines, and wine production.

Job Titles:

- › Pruner
- › Viticulturalist
- › Wine Maker
- › Wine Marketer
- › Wine Sales

Knowledge & Skills:

- › Applied Mathematics
- › Enology
- › Oral and Written Communication
- › Plant and Soil Science

Lake Washington Technical College

Certificate & Associate Degree Options:

A - Wine Technology

Contact Information:

David Coan, (435) 739-8100 x630
David.Coan@lwtc.edu
www.lwtc.edu/wine

South Seattle Community College

Certificate & Degree Options:

C - Wine Making
A - Wine Making
A - Wine Making

Contact Information:

Regina Daigneault, (206) 764-7942
RDaigneault@sccd.ctc.edu
nwwineacademy.southseattle.edu/

Walla Walla Community College

Certificate & Degree Options:

C - Fermentation Science
C - Viticulture Science
A - Enology & Viticulture

Contact Information:

Wanda Williams, (509) 524-5170
wanda.williams@wwcc.edu
www.wwcc.edu/wine

Wenatchee Valley College

Certificate & Associate Degree Options:

ST – Hispanic Orchard Employee Education Program V/
Intro to Viticulture
ST – Hispanic Orchard Employee Education Program VI/
Advanced Viticulture

Contact Information:

Francisco Sarmiento, (509) 682-6622
fsarmiento@wvc.edu
www.wvc.edu/ag

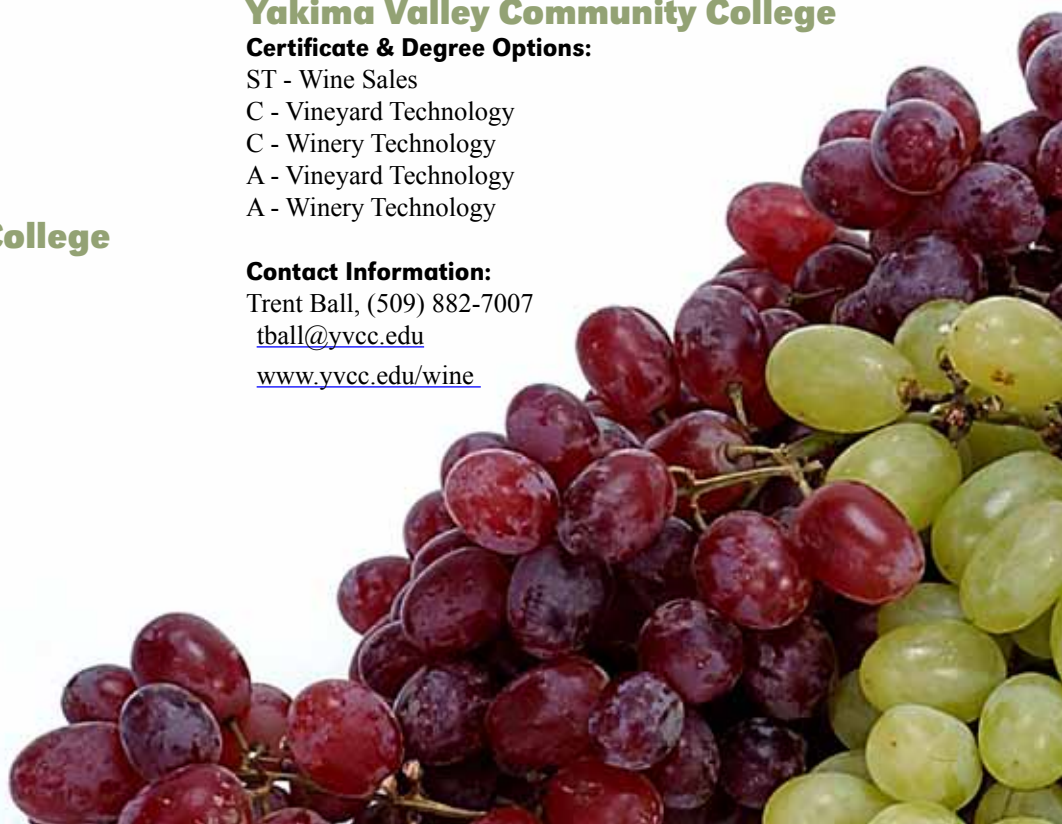
Yakima Valley Community College

Certificate & Degree Options:

ST - Wine Sales
C - Vineyard Technology
C - Winery Technology
A - Vineyard Technology
A - Winery Technology

Contact Information:

Trent Ball, (509) 882-7007
tbball@yvcc.edu
www.yvcc.edu/wine



Natural Resource Pathway

FISHERIES TECHNOLOGY

Industry Description:

The fisheries management industry focuses on husbandry and production of non-domesticated fish populations for recreational and commercial purposes and the management of fishing and marine/aquatic product processing to ensure adequate conservation and efficient utilization. The industry includes marine/aquatic biology, freshwater and saltwater ecosystems, fishing production operations and management, fishing policy and regulations, and the management of recreational and commercial fishing activities.

Job Titles:

- › Commercial Fisherman
- › Fish and Game Warden
- › Fisheries Technician
- › Fishers and Related Fish Worker
- › Hatchery Technician

Knowledge & Skills:

- › Applied Mathematics
- › Aquaculture
- › Fisheries
- › Oral and Written Communication

Bellingham Technical College

Certificate & Associate Degree Options:

- C - Fisheries Resources
- A - Fisheries Technology
- AT - Fisheries Technology

Transfer Agreements:

Western Washington University

Contact Information:

Earl Steele, (360) 752-8352
esteele@btc.ctc.edu
fisheries.btc.ctc.edu

Peninsula College

Certificate & Associate Degree Options:

- C - Aquaculture
- C - Fisheries & Aquaculture
- AT – Emphasis in Fisheries & Aquaculture

Transfer Agreements:

University of Idaho
University of Washington

Contact Information:

Jack Ganzhorn, (360) 417-6493
jackg@pencol.edu
pcfiseries.ctc.edu

ST – Short-Term Certificate / C - Certificate / A – Associate Degree / AT– Associate Transfer Degree



FORESTRY & FOREST TECHNOLOGY

Industry Description:

Forestry includes individuals who manage and develop forest areas for economic, recreational, and ecological purposes. Individuals in this industry are skilled in natural sciences, mapping, statistics, harvesting and production methods, resource protection, management and economics, as well as administration and public relations.

Job Titles:

- › Assistant Fire Manager
- › Forest Technician
- › Natural Resource Technician
- › Survey Crew Leader
- › Urban Forest Technician

Knowledge & Skills:

- › Applied Mathematics
- › Forestry Practices
- › Oral and Written Communication
- › Plant and Soil Science

Centralia College

Certificate & Associate Degree Options:

C - Forestry Technician (collaboration with Grays Harbor College)

A - Natural Resources-Forestry Tech (collaboration with Grays Harbor College)

Transfer Agreements:

Evergreen State College

Contact Information:

Lynn Schinnell, (360) 736-9391x380

lschinnell@centralia.edu

www.centralia.edu/academics/forestry/index.html

Grays Harbor College

Certificate & Associate Degree Options:

C - Forestry Technician

A - Natural Resources-Forestry Technician

Transfer Agreements:

Evergreen State College

Contact Information:

Todd Bates, (360) 538-2517

tbates@ghc.edu

www.ghc.edu/voc/nr.pdf

Green River Community College

Certificate & Associate Degree Options:

C - Community Forestry

A - Natural Resources

Contact Information:

Dick Hopkins, (253) 833-9111

dhopkins@greenriver.edu

www.naturalresourceseducation.com

Spokane Community College

Certificate & Associate Degree Options:

A - Natural Resource Management

Transfer Agreements:

Oregon State University

University of Idaho

University of Montana, Western

University of Washington

Contact Information:

Monica Spicker, (509) 533-7265

mspicker@scc.spokane.edu

www.scc.spokane.edu/?natres

ST – Short-Term Certificate / C - Certificate / A – Associate Degree /
AT – Associate Transfer Degree



Natural Resource Pathway

NATURAL RESOURCES & CONSERVATION

Industry Description:

The natural resources and conservation industry focuses on the natural environment and its conservation, use, and improvement. The industry involves the conservation of air quality, soil, water, land, fish, wildlife, and plant resources for environmental science and natural resources management.

Job Titles:

- › Biological Technicians
- › Environmental Science Technician
- › Natural Resource Technician
- › Watershed Technician
- › Wildlife Technician

Knowledge & Skills:

- › Applied Mathematics
- › Ecology
- › Oral and Written Communication
- › Plant and Soil Science

Skagit Valley College

Certificate & Associate Degree Options:

C - Environmental Conservation Studies
A - Environmental Conservation-Parks Resource Management
AT - Environmental Conservation
AT - Environmental Conservation – Aquatic/Terrestrial

Transfer Agreements:

Evergreen State College
University of Washington, College of Forest Resources
University of Idaho, College of Natural Resources
Western Washington University, Fairhaven College

Contact Information:

Claus Svendsen, (360) 416-7816
claus.svendsen@skagit.edu
http://www.skagit.edu/directory.asp_Q_pagenumber_E_202

Walla Walla Community College

Certificate & Associate Degree Options:

C - Watershed Ecology
A - Watershed Ecology

Contact Information:

Gerald Anhorn, (509) 524-4809
gerald.anhorn@wwcc.edu
www.wwcc.edu/watershedecology

Wenatchee Valley College

Certificate & Associate Degree Options:

C - Natural Resources Technician
A - Natural Resources

Contact Information:

Bob Gillespie, (509) 682-6624
bgillespie@wvc.edu
http://www.wvc.edu/directory/departments/nr_tech/default.asp

ST – Short-Term Certificate / C - Certificate / A – Associate Degree /
AT– Associate Transfer Degree



Natural Resource Pathway

WATER, WETLANDS & MARINE RESOURCES MANAGEMENT

Industry Description:

The water resources industry is concerned with the physical, chemical, and biological composition of flowing and still water. Individuals in the industry measure stream flows, monitor and sample water quality, and engage in stream restoration projects.

Job Titles:

- › Biological Technician
- › Environmental Science Technician
- › Fisheries Technician
- › Hydraulic Technician
- › Water Quality Technician

Knowledge & Skills:

- › Applied Mathematics
- › Ecology
- › Oral and Written Communication
- › Plant and Soil Science

Green River Community College

Certificate & Associate Degree Options:

A - Natural Resources - Water Quality

Contact Information:

Dick Hopkins, (253) 833-9111x4509
dhopkins@greenriver.edu

Rob Sjogren, (253) 833-9111x4582
rsjogren@greenriver.edu

www.naturalresourceseducation.com/

Skagit Valley College

Certificate & Associate Degree Options:

ST - Advanced Wetland Delineation

ST - Basic Wetland Delineation

AT - Environmental Conservation – Marine Emphasis

Transfer Options:

Evergreen State College

University of Washington, College of Forest Resources

University of Idaho, College of Natural Resources

Western Washington University, Fairhaven College

Contact Information:

Claus Svendsen, (360) 416-7816

claus.svendsen@skagit.edu

www.skagit.edu/directory.asp_O_pagenumber_E_202

Spokane Community College

Certificate & Associate Degree Options:

A - Water Resources Tech

Contact Information:

Erin Rudders, (509) 533-7266

erudders@scc.spokane.edu

David Stasney, (509) 533-7278

dstasney@scc.spokane.edu

www.scc.spokane.edu/?envsci

ST – Short-Term Certificate / C - Certificate / A – Associate Degree /
AT– Associate Transfer Degree



WILDLIFE, FISH & WILDLANDS SCIENCE & MANAGEMENT

Industry Description:

The wildlife and wildlands management industry is concerned with the conservation and management of wilderness areas and the flora, marine, and aquatic life therein. Individuals in the industry measure and manage wildlife reservations and zoological/aquarium facilities for recreational, commercial, and ecological purposes.

Job Titles:

- › Environmental Science Technician
- › Habitat Technician
- › Hatchery Technician
- › Outdoor Recreation Manager
- › Wildlife Technician

Knowledge & Skills:

- › Animal Science
- › Applied Mathematics
- › Ecology
- › Oral and Written Communication

Spokane Community College

Certificate & Associate Degree Options:

A - Wildlife/Fisheries

Transfer Agreements:

Oregon State University
University of Idaho
University of Montana, Western
University of Washington

Contact Information:

Brian Gilbert, (509) 533-7271
bgilbert@scc.spokane.edu
www.scc.spokane.edu/?envsci

ST – Short-Term Certificate / C - Certificate / A – Associate Degree /
AT– Associate Transfer Degree

Plant Science Pathway

AGRICULTURAL PRODUCTION OPERATIONS

Industry Description:

Agricultural production focuses on the general planning, economics, and use of facilities, natural resources, equipment, labor, and capital to produce plant products. Individuals in agricultural production may be employed in farming, ranching, and agribusiness.

Job Titles:

- › Farm and Ranch Advisor
- › Farm, Ranch, and Other Agricultural Manager
- › Farm Worker and Laborer for Crops, Nurseries, and Greenhouses
- › Field Consultant
- › Grower Representative

Knowledge & Skills:

- › Applied Mathematics
- › Oral and Written Communication
- › Plant & Soil Science
- › Technical Skills

Big Bend Community College

Certificate & Associate Degree Options:

A - Agriculture

Transfer Agreements:

Washington State University

Contact Information:

Mary Shannon, (509) 793-2056

MaryS@bigbend.edu

<http://academics.bigbend.edu/programs/ag/Pages/default.aspx>

Walla Walla Community College

Certificate & Associate Degree Options:

C - Agriculture Science & Technology – Plant & Soil Science

A - Agriculture Science & Technology - Plant and Soil Science

AT - Emphasis in Agriculture Science and Technology

Transfer Agreements:

Eastern Oregon University

University of Idaho

Washington State University

Contact Information:

Jerry Kjack, (509) 527-4225

jerry.kjack@wwcc.edu

www.wwcc.edu/agscience

Wenatchee Valley College

Certificate & Associate Degree Options:

ST – Advanced Hispanic Orchard Employee Education Program

ST – Beginning Hispanic Orchard Employee Education Program

ST – Hispanic Orchard Employee Education Program IV/ Farm Management

ST – Integrated Pest Management Program

A - Sustainable Agriculture & Resource Systems (Emphasis areas in Agribusiness, Horticulture, Sustainable and Organic, and Tree Fruit Production)

Transfer Agreements:

Washington State University

Contact Information:

George Ruddell, (509) 860-2108

gruddell@wvc.edu

Bob Gillespie, (509) 682-6624

bgillespie@wvc.edu

Leo Garcia, (509) 682-6628

lgarcia@wvc.edu

www.wvc.edu/ag

Yakima Valley Community College

Certificate & Associate Degree Options:

A – Agriculture Production/Pest Management

Transfer Agreements:

Washington State University

Contact Information:

Trent Ball, (509) 882-7007

tball@yvcc.edu

www.yvcc.edu/ag

ST – Short-Term Certificate / C - Certificate / A – Associate Degree / AT– Associate Transfer Degree





Plant Science Pathway

GREENHOUSE OPERATIONS & MANAGEMENT

Industry Description:

The greenhouse operations and management industry focuses on the production, storage, and delivery of plant species in controlled indoor environments for wholesale, commercial, research, or other purposes. Individuals in the industry are well versed in plant propagation, harvesting, and transplantation as well as plant science, irrigation, nutrition control, equipment operations, and inventory control.

Job Titles:

- › Garden Center Sales/Manager
- › Greenhouse Grower/Manager
- › Horticulture Consultant
- › Park Manager
- › Plant Propagator

Knowledge & Skills:

- › Applied Mathematics
- › Business Skills
- › Oral and Written Communication
- › Plant & Soil Science

Spokane Community College

Certificate & Associate Degree Options:

- C - Greenhouse/Nursery
- A - Greenhouse/Nursery

Contact Information:

Cindy Deffe, (509) 533-7260
CDeffe@scc.spokane.edu

Brian Green, (509) 533-7259
BGreen@scc.spokane.edu

www.scc.spokane.edu/?envsci

ST – Short-Term Certificate / C - Certificate / A – Associate Degree /
AT– Associate Transfer Degree

HORTICULTURE OPERATIONS

Industry Description:

The horticulture operations industry focuses on the general production and processing of domesticated plants, shrubs, flowers, foliage, trees, groundcovers, and related plant materials. Individuals in the industry are concerned with basic scientific principles needed to understand plants and manage their care, as well as business operations connected with horticultural services.

Job Titles:

- › Arborist
- › Garden Center Sales/Manager
- › Groundskeeper
- › Habitat Restoration Technician
- › Plant Propagator

Knowledge & Skills:

- › Applied Mathematics
- › Business Skills
- › Oral and Written Communication
- › Plant & Soil Science

Clark College

Certificate & Associate Degree Options:

A - Agriculture - Horticulture

Contact Information:

Herbert Orange, (360) 992-2302
horange@clark.edu

Tim Carper, (360) 992-2025
tcarper@clark.edu

www.clark.edu/academics/programs/agriculture_horticulture/index.php

Edmonds Community College

Certificate & Associate Degree Options:

ST – Irrigation

ST - Perennial Gardening

ST – Pest Management

ST – Plant Identification

C – Ornamental Horticulture

C – Ornamental Horticulture - Nursery Growers

A - Restoration Horticulture

AT - Restoration Horticulture

Contact Information:

Polly Hankin, (425) 640-1709
phankin@edcc.edu

www.edcc.edu/hort/

Tim Hohn, (425) 640-1454
thohn@edcc.edu

Lake Washington Technical College

Certificate & Associate Degree Options:

C - Environmental Horticulture

A - Environmental Horticulture

Contact Information:

Don Marshall, (425) 739-8356
don.marshall@lwtc.edu

Chris Smith, (425) 739-8424
chris.smith@lwtc.edu

www.lwtechort.com

South Puget Sound Community College

Certificate & Associate Degree Options:

C - Landscape Horticulture

C - Sustainable Plant Production

A - Horticulture Technology

Transfer Agreements:

Evergreen State College

Contact Information:

Peter Punzi, (360) 596-5473
ppunzi@spscc.ctc.edu
hort.spscc.edu

South Seattle Community College

Certificate & Associate Degree Options:

C - Design & Construction

C - Horticulture

A - Horticulture

A - Landscape Design & Construction

AT – Landscape Design & Construction

AT - Landscape - Horticulture

Contact Information:

Van Bobbitt, (206) 768-6717
vbobbitt@sccd.ctc.edu

Sarah Skamser, (206) 768-6717
sskamser@sccd.ctc.edu

www.southseattle.edu/programs/proftech/land.htm

ST – Short-Term Certificate / C - Certificate / A – Associate Degree /
AT – Associate Transfer Degree

Plant Science Pathway

LANDSCAPING & GROUNDSKEEPING

Industry Description:

An industry that manages and maintains ornamental plants, recreational plants, groundcovers, and related conceptual designs established by landscape architects, interior designers, and individual clients. This industry includes horticulture, gardening, plant and soil irrigation and nutrition, turf maintenance, equipment operation, personnel supervision, and purchasing.

Job Titles:

- › Garden Coach
- › Habitat Restoration Technician
- › Landscape Construction
- › Landscape Designer
- › Landscape Management

Knowledge & Skills:

- › Applied Mathematics
- › Business Skills
- › Oral and Written Communication
- › Plant & Soil Science

Clark College

Certificate & Associate Degree Options:

- C - Landscape Maintenance
- A - Landscape Technology

Contact Information:

Herbert Orange, (360) 992-2302

horange@clark.edu

Tim Carper, (360) 992-2025

tcarper@clark.edu

www.clark.edu/academics/programs/agriculture_horticulture/index.php

Clover Park Technical College

Certificates & Associate Degree Options:

ST – Ornamental Plant Materials

ST – Production Horticulture

A - Landscape Management

Contact Information:

Dan Roberts, (253) 589-5743

dan.roberts@cptc.edu

http://www.cptc.edu/index.php/programs/degrees_certificates/landscape_management/

Edmonds Community College

Certificate & Associate Degree Options:

ST – Garden Skills

A - Landscape Design

A - Landscape Management & Installation

Contact Information:

Polly Hankin, (425) 640-1709

phankin@edcc.edu

Tim Hohn, (425) 640-1454

thohn@edcc.edu

www.edcc.edu/hort/

South Seattle Community College

Certificate & Associate Degree Options:

C - Landscape Management

A - Landscape Management

AT - Landscape Management

Contact Information:

Van Bobbitt, (206) 768-6717

vbobbitt@sccd.ctc.edu

Sarah Skamser, (206) 768-6717

sskamser@sccd.ctc.edu

www.southseattle.edu/programs/proftech/land.htm

ST – Short-Term Certificate / C - Certificate / A – Associate Degree /
AT – Associate Transfer Degree

ORNAMENTAL HORTICULTURE & FLORISTRY

Industry Description:

Floristry management is an industry where individuals operate commercial and contract florist enterprises, supply and delivery services, and flower catering services. The industry includes plant science, purchasing, storage, and delivery systems, as well as floral design and arranging.

Job Titles:

- › First-line Supervisor/Manager of Retail Sales Worker
- › Floral Designer
- › Florist
- › Florist Manager
- › Retail Salesperson

Knowledge & Skills:

- › Applied Mathematics
- › Business Skills
- › Oral and Written Communication
- › Plant & Soil Science

Spokane Community College

Certificate & Associate Degree Options:

C - Florist

A - Florist

Contact Information:

Loretta Etchison, (509) 533-7277

LEtchison@scc.spokane.edu

www.scc.spokane.edu/?envsci

ST – Short-Term Certificate / C - Certificate / A – Associate Degree /
AT– Associate Transfer Degree



Plant Science Pathway

PLANT NURSERY OPERATIONS & MANAGEMENT

Industry Description:

The plant nursery operations and management industry focuses on the production, storage, and delivery of plant species in controlled outdoor environments for wholesale, commercial, research, or other purposes. Individuals in the industry are well versed in plant propagation, harvesting, and transplantation as well as irrigation and nutrition control.

Job Titles:

- › Garden Center Sales/Manager
- › Greenhouse Grower/Manager
- › Park Manager
- › Plant Propagator
- › Nursery Manager

Knowledge & Skills:

- › Applied Mathematics
- › Business Skills
- › Oral and Written Communication
- › Plant & Soil Science

Clark College

Certificate & Associate Degree Options:

C - Nursery Operations

Contact Information:

Herbert Orange, (360) 992-2302
horange@clark.edu

Tim Carper, (360) 992-2025
tcarper@clark.edu

www.clark.edu/academics/programs/agriculture_horticulture/index.php

Edmonds Community College

Certificate & Associate Degree Options:

A - Nursery/Greenhouse Specialist

Contact Information:

Polly Hankin, (425) 640-1709
phankin@edcc.edu

Tim Hohn, (425) 640-1454
thohn@edcc.edu

www.edcc.edu/hort/

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AT– Associate Transfer Degree



TREE FRUIT PRODUCTION

Industry Description:

Individuals in the tree fruit production industry, produce, process, and market fruit grown on trees. Tree fruit production professionals work with machinery and equipment used in the production of fruit, pruning, grafting, fertilization, irrigation, thinning, harvesting, and the application of chemicals.

Job Titles:

- › Fruit Marketer
- › Fruit Processor
- › Harvest Worker
- › Orchardist
- › Production Specialist

Knowledge & Skills:

- › Applied Mathematics
- › Oral and Written Communication
- › Plant & Soil Science
- › Pruning

Yakima Valley Community College

Certificate & Associate Degree Options:

C - Tree Fruit Production

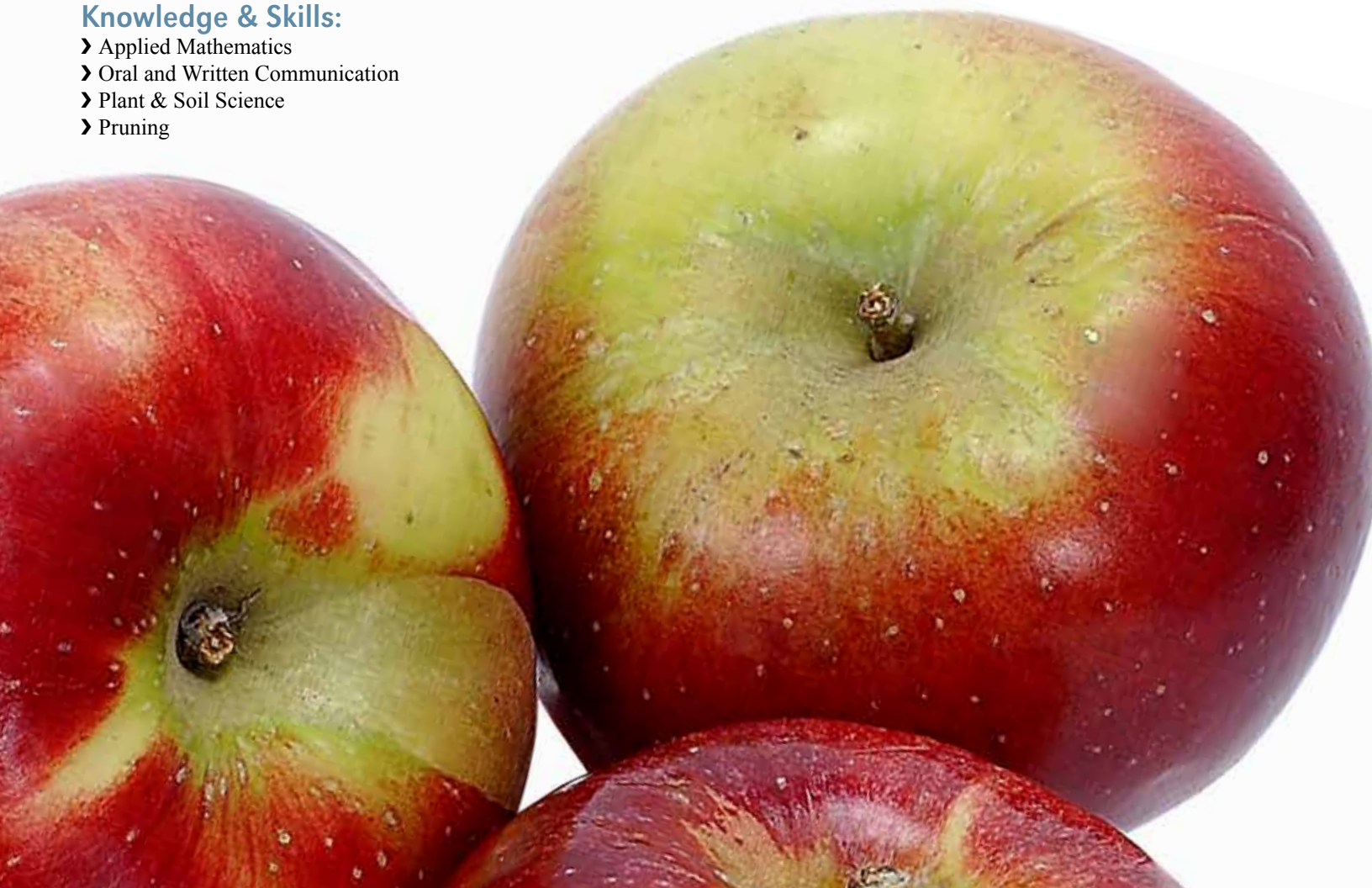
Contact Information:

Trent Ball, (509) 883-7007

tball@yvcc.edu

www.yvcc.edu/ag

ST – Short-Term Certificate / C - Certificate / A – Associate Degree /
AT– Associate Transfer Degree



Plant Science Pathway

TURF MANAGEMENT

Industry Description:

The industry focuses on turfgrasses and related groundcover plants. Individuals in the industry develop ornamental or recreational grasses and related products, including planting, transplanting, and managing grassed areas.

Job Titles:

- › Golf Course Maintenance
- › Golf Course Superintendent
- › Lawn Care Technician
- › Sports Field Manager
- › Turfgrass Specialist

Knowledge & Skills:

- › Applied Mathematics
- › Oral and Written Communication
- › Plant & Soil Science
- › Turf Grass Equipment Knowledge

Edmonds Community College

Certificate & Associate Degree Options:

ST – Turf

Contact Information:

Polly Hankin, (425) 640-1709

phankin@edcc.edu

Tim Hohn, (425) 640-1454

thohn@edcc.edu

www.edcc.edu/hort/

South Seattle Community College

Certificate & Associate Degree Options:

ST – Sports Turf Management Training Level 1

Contact Information:

Van Bobbitt, (206) 768-6717
vbobbitt@sccd.ctc.edu

Sarah Skamser, (206) 768-6717
sskamser@sccd.ctc.edu

www.southseattle.edu/programs/proftech/land.htm

Spokane Community College

Certificate & Associate Degree Options:

C - Landscape/Turf
A - Landscape/Turf

Transfer Agreements:

Washington State University

Contact Information:

Bob Peregoy, (509) 533-7258
BPeregoy@scc.spokane.edu
www.scc.spokane.edu/?envsci

Walla Walla Community College

Certificate & Associate Degree Options:

C - Turf Management
A - Turf Management

Transfer Agreements:

Washington State University

Contact Information:

Bill Griffith, (509) 527-4269
bill.griffith@wwcc.edu

www.wwcc.edu/turfmanagement

ST – Short-Term Certificate / C - Certificate / A – Associate Degree /
AT– Associate Transfer Degree



IN-DEMAND AGRICULTURE & NATURAL RESOURCE OCCUPATIONS

Projected Growth for mid-2011 and 2018

Projected Growth, 2011 & 2018
Education/Training Requirement

Hourly Average

Projected Growth, 2011 & 2018
Education/Training Requirement

Hourly Average

Agricultural Workers

2011 0.8%	2018 5.8%	\$16.75
<i>Short-term on the job training</i>		

Biological Technicians

2011 0.8%	2018 12.7%	\$19.68
<i>Associate Degree</i>		

Bookkeeping & Accounting Clerks

2011 0.0%	2018 5.6%	\$18.08
<i>Certificate</i>		

Computer Support Specialists

2011 1.0%	2018 14.7%	\$24.07
<i>Associate Degree</i>		

Environmental Science & Protection Technicians

2011 1.1%	2018 16.1%	\$22.26
<i>Associate Degree</i>		

Farm & Home Management Advisors

2011 1.2%	2018 20.1%	\$23.98
<i>Bachelor Degree</i>		

Farm Worker & Laborers

2011 1.3%	2018 8.6%	\$11.65
<i>Short-term on the job training</i>		

First-Line Landscaping Supervisors

2011 2.2%	2018 26.8%	\$23.77
<i>Associate Degree and/or related experience</i>		

Landscaping & Groundskeeping Workers

2011 2.4%	2018 26.9%	\$14.57
<i>Short-term on the job training</i>		

Veterinary Technicians

2011 3.2%	2018 35.2%	\$15.00
<i>Associate Degree</i>		

Data used to develop the In-Demand Agriculture & Natural Resource Occupations was retrieved in August 2010 from Qualifying Occupations, www.wilma.org/wdclists/ and Workforce Explorer, www.workforceexplorer.com



WORKFORCE RESOURCES

For more information on careers
in agriculture and natural resources,
visit these sites:

Career Bridge

www.careerbridge.wa.gov

Qualifying Occupations

www.wilma.org/wdclists/

Washington State Dept. of Agriculture

www.agr.wa.gov

Workforce College

www.workforcecollege.com

Workforce Explorer

www.workforceexplorer.com

WorkSource Washington

www.Go2WorkSource.com



**500 Tausick Way
Walla Walla, WA 99362
www.agcenterofexcellence.com**

**Jaime Clarke, Director
(509) 524-5192
jaime.clarke@wwcc.edu**

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