

**BOARD OF EDUCATION
UMPQUA COMMUNITY COLLEGE
DOUGLAS COUNTY, OREGON**

_____ Information Item

 X Action Item

Subject: New Programs

Date: March 8, 2023

Packet Board approval is requested for six new certificates and two new degrees.

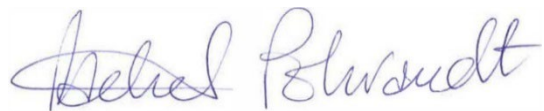
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- 1 • **Phlebotomy Certificate:** This, 7 credit, two term certificate is designed to teach students to work as phlebotomists in the field making \$16 to \$19 p/hour. This certificate has been highly requested by our healthcare industry and is a great way to enter the allied healthcare field. Students will perform live sticks at clinical sites throughout our community.
- 2 – 3 • **Medical Assistant Certificate:** This, 45 credit, one year certificate is designed to get students working in the field of medical assisting making \$30,000 to \$43,500 p/year. This certificate has also been widely requested by our healthcare partners, leads to certification as a Certified Medical Assistant, and works into the Associate of Applied Science in Healthcare Office.
- 4 – 5 • **Practical Nurse Certificate:** This certificate, equivalent to the first year of the Registered Nursing program, is 30 credits in length and leads to a job as a Licensed Practical Nurse making between \$48,000 to \$50,000 per year to start. This certificate fills a huge need in our community as we will be able to put 64 students to work each year. Students will be able to work as LPN's while they continue in their second year of the Registered Nursing program. Students will still have to apply and complete licensure requirements. This certificate is in direct response to healthcare partners request and may start as soon as next spring.
- 6 • **Mechatronics Certificate:** This is UCC's first foray into Mechatronics. We are eager to turn this certificate into a two-year degree should the student and industry interest prove as high as we expect it to be. We are starting with a 42-46 credit certificate which is the first year of the two-year degree. Students will get a solid grounding in the fundamentals of robotics, electrical systems, and advanced manufacturing. This certificate, and degree, has the support of multiple community partners including 7 Robotics, Convey, Roseburg Wood Products and many more.
- 7 – 8 • **Associate of Science, Exercise Science:** This rigorous transfer degree will pave the way for our students to transfer to university and pursue careers as coaches, athletic trainers, exercise scientists, nutritionists, physical therapists, pre-med and more. This degree has been highly requested by our students. The first classes in this degree started this year and were completely full.
- 9 - 26 • **Water Quality Treatment Pathways Certificate (15 CR), Water Quality Treatment Certificate (27 CR), and the Associate of Applied Science, Water Quality Treatment (91 CR):** This pathway prepares students to enter the field of Water Quality and progress through to water operator certification. All community water and wastewater systems must be operated under the supervision of certified operators. This is a desirable career with low turnover, benefits, and opportunities for advancement. The median annual salary is \$62,900 in Oregon. In 2020 there were 1,144 operators in Oregon and 125,200 operators nationwide. Annual openings are projected at about 97 jobs in Oregon and 10,800 jobs nationwide as many experienced operators reach retirement age.

The advising guides are attached. All programs are scheduled to start next academic year in varying terms.

Recommendation by:

Approved for Consideration:





Phlebotomy Certificate
2023-2024

Allied Health

7 Credits

Date of update: 01/23/2023

Executive Director of Nursing
and Allied Health

Chelsea Gillespie-Towne RN, MSN

chelsea.gillespietowne@umpqua.edu

Possible Term Plan	Course Number	Course Title	Credits	Terms	Prerequisites/Notes
Term 1	PHLB 101	Phlebotomy I	4	F, W	
Term 2	PHLB 102	Phlebotomy II	3	W, SP	
	All phlebotomy students must successfully pass a drug screening test at the time of admission into the Phlebotomy Program and are subject to random drug screening throughout the program.				
	All accepted phlebotomy students will be required to undergo a background check prior to entering the program.				
	All accepted phlebotomy students will be required to have current BLS card via the American Heart Association.				
	All accepted phlebotomy students will be required to provide evidence of their current immunization status for Hep B, MMR, Tdap, Varicella, TB, COVID and influenza.				
Required/ Recommended Equipment and Software	Reliable Internet Access				
	PC with MS Word 2013 or newer				
	Cellphone with texting capabilities				



**Medical Assisting
Certificate
2023-2024**

45 credits

Allied Health

Date of update: 01/23/2023

Executive Director of Nursing and Allied Health

Chelsea
Gillespie-Towne
RN, MSN

chelsea.gillespietowne@umpqua.edu

Program Prerequisites: See requirements needed for first term classes.

Possible Term Plan	Course Number	Course Title	Credits	Terms	Prerequisites/Notes
Term 1	MED 60	Math for Medical Assistants	3	F	
	MED 111	Medical Terminology I	3	F	
	WR115	Introduction to Expository Writing	4	F	
	PSY 101	Psychology of Human Relations	3	F	
			13		
Term 2	MED 112	Medical Terminology II	3	W	Prerequisite: MED 111 with a grade of "C" or better
	MED 115	Anatomy and Physiology for Medical Assistant	3	W	Prerequisites: Acceptance into the Medical Assisting Program, Completion of WR115 with a "C" or better or higher.
	MED 120	Clinical Procedures I	3	W	Prerequisites: Acceptance into the Medical Assisting Program, Completion of WR115 with a "C" or better or higher. MED 60
	MED 220	Medical Office Procedures I	3	W	Prerequisites: Acceptance into the Medical Assisting Program, Completion of WR115 with a "C" or better or higher.
			12		
Term 3	MED 117	Pharmacology for Medical Assistants	4	S	Prerequisites: MED 112,115,120,220. CoRequisites: MED 124, 221, 122.
	MED 124	Medical Assistant Practicum I	4	S	Prerequisites: MED 112,115,120,220. CoRequisites: MED 117, 221, 122.
	MED 221	Medical Office Procedures II	3	S	Prerequisites: MED 112,115,120,220. CoRequisites: MED 124, 117, 122.
	MED 122	Clinical Procedures II	3	S	Prerequisites: MED 112,115,120,220. CoRequisites: MED 124, 221, 117.
			14		
Term 4	MED 126	Medical Assistant Practicum II	6	Su	Prerequisite: All Medical Assistant Program courses and Prerequisites.
			45 Credits		

All required prerequisite courses must be passed with a C or better.

	All medical assisting students must successfully pass a drug screening test at the time of admission into the Medical Assistant Program and are subject to random drug screening throughout the program.
	All accepted medical assisting students will be required to undergo a background check as directed by AH Executive Director
	All accepted medical assisting students will be required to have current BLS card via the American Heart Association
	All accepted medical assisting students will be required to provide evidence of their current immunization status for Hep B, MMR, Tdap, Varicella, TB, COVID and influenza.

Required/ Recommended Equipment and Software	Reliable Internet Access
	PC with MS Word 2013 or newer
	Cellphone with texting capabilities



AAS

**Nursing
2024-2025**
**Practical Nursing Certificate
80 credits**

Date of update: 01/09/2023

 Executive Director of Nursing
and Allied Health

 Chelsea Gillespie-
Towne MSN, RN

chelsea.gillespietowne@umpqua.edu

Program Prerequisites: See requirements needed for first term classes.

Possible Term Plan	Course Number	Course Title	Credits	Terms	Prerequisites/Notes
Term 1*	NRS110	Foundations of Nursing - Health Promotion	9	F	Prerequisites: Acceptance into the nursing program, BI231,232,233, Anatomy & Physiology sequence.
	NRS232	Pathophysiological Processes I	3	W	Prerequisites: Acceptance into the nursing program, BI231,232,233, Anatomy & Physiology sequence. Corequisites: NRS110,

Term 2	NRS111	Foundations of Nursing in Chronic Illness	6	W	Prerequisites: NRS110, NRS 232. Corequisites: NRS230
	NRS230	Clinical Pharmacology	3	W	Prerequisites: NRS110, NRS 232. Corequisites: NRS111

Term 3	NRS112	Foundations of Nursing Acute Care I	6	S	Prerequisites: NRS110, NRS111, NRS230, NRS232. Corequisites: NRS231, NRS233
	NRS231	Clinical Pharmacology II	3	S	Prerequisites: NRS110, NRS111, NRS230, NRS232. Corequisites: NRS112, NRS233
	NRS233	Pathophysiological Processes II	3	S	Prerequisites: NRS110, NRS111, NRS230, NRS232. Corequisites: NRS112, NRS231

Total First Year Credits: 33

Required Prerequisite Courses	Course Number	Course Number/Title	Credits	Terms	Prerequisites/Notes
	MTH 095	Intermediate Algebra (or above)	4	F,W,S	Prerequisite: MTH065
	BI231	Human Anatomy & Physiology	4	F,W	Prerequisite: CH104 or CH112
	BI232	Human Anatomy & Physiology	4	W,S	Prerequisite: BI231
	BI233	Human Anatomy & Physiology	4	S,Su	Prerequisite: BI232
	WR121	Academic Composition	4	F,W,S,Su	Prerequisite: WR115, RD90
	WR122 OR WR 227	Argument, Research, and Multimodal Composition	4	F,W,S,Su	Prerequisite: WR121
		Technical Writing	4	F,W,S,Su	Prerequisite: WR121 and encouragement to complete WR122 as well, but it is not required.
	HDFS 201	Individual and Family Development	3	F,W,S	Prerequisite: WR115 or placement into/completion of WR121
	FN225	Human Nutrition	4	F,W,S	Basic biology and chemistry preferred
	BI234	Microbiology	4	F,W,S	Prerequisite: CH104, CH112, CH221 and a previous course in biology recommended.
	BI222	Intro to Genetics	3	F,W,S	Prerequisite: CH104, CH112, CH221 and a previous course in biology recommended.

	College level courses (numbered 100 and above) to include one Psychology and two Social Sciences AND/OR Arts & Letters electives (9 credits) One of these courses MUST meet the Human relations requirements for graduation listed under AAS in the catalog.
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All required prerequisite courses must be passed with a C or better.

Advising Notes	All Required Prerequisite Courses credits must be completed before starting the Nursing (NRS) courses. Total credits: 47
	All nursing students must successfully pass a drug screening test at the time of admission into the Nursing Program and are subject to random drug screening throughout the program.
	All accepted nursing students will be required to undergo a background check prior to entering the program.
	All accepted nursing students will be required to have current BLS card via the American Heart Association.
	All accepted nursing students will be required to provide evidence of their current immunization status for Hep B, MMR, Tdap, Varicella, TB, COVID and influenza.

Required/ Recommended Equipment and Software	Reliable Internet Access
	PC with MS Word 2013 or newer
	Cellphone with texting capabilities



Department: STEM
Year: Starting 2023

Degree: Mechatronics

90 credits

Date of update: 1/12/2023

Contact Person and Phone Number: Jeremy Thorn 541-440-7787

Prerequisites:

	Course Number/Title	Credits	Terms	Prerequisites/Notes
Term 1	MEC102	3	F	
	MEC151	5	F	
	MEC120	3	F	
	Human Relations Course	3	All	One of: HD136, PSY101, SDP113, SP105, SP218, SP219
Term 2	MTH52	4	W	PreReq: MTH20 or placement
	WR115	4	All	Placement
	WLD140	3	W	
	MEC121	5	W	MEC102
Term 3	MEC123	5	S	
	MEC118	4	S	
	WLD101	4	FWS	
	ENGR245	3	S	
Term 4	MEC222	5	F	MEC102
	MEC224	5	F	MEC102&123
	WLD131	3	F	Co/Pre Req WLD101
Term 5	MEC201	5	W	MEC102&120
	MFG111	3	W	Co/Pre Req MFG108
	MFG108	2	FWS	
	MEC219	5	W	MEC151&224
Term 6	MEC280/CWE	5	S	
	MFG112	3	S	MFG111
	MEC225	5	S	MEC123 & MEC151
	MEC229	5	S	MEC201 & MEC219



Department: HPE
Year: 2023-2024

Degree: AS in Exercise Science
92-93 credits Date of update:
Contact Person and Phone Number:

	Course Number/Title	Credits	Terms	Prerequisites/Corequisite/Notes
Term 1	HPE 295 Wellness-Health Assessment	3	F,W,S, Su	None
	CH 104 Intro to Chemistry	4	F, Su	MTH 65 or higher
	COM 111Z Fund of Public Speaking	4	F,W,S, Su	None
	BI 211 Principles of Biology	5	F	CH 104, CH 112 or CH 221
Term 2	BI 212 Principles of Biology	5	W	BI 211
	MTH 111Z College Algebra	5	F,W,S, Su	MTH 95, placement test or instructor approval
	HPE 131 Intro to HPE	3	W	None
	WR 121Z Academic Composition	4	F,W,S, Su	WR 115, RD 115 or placement test and basic computer for word processing skills.
Term 3	BI 213 Principles of Biology	5	S	BI 212
	WR 122Z Arg-Research Multimodal Comp	4	F, W, S	WR 121
	PSY 201 or 202 General Psychology	4	F,W,S, Su	None
	HE 252 First Aid	3	F,W,S, Su	None
Term 4	CH 221 General Chemistry	5	F	MTH 111, CH 104, CH 112, GS 105 or instructor approval
	BI 231 Anatomy and Physiology	4	F, W	CH 104 or CH 112
	SOC 208 Sociology of Sport	3	F	None
	Approved Art & Letter Elective	3 or 4		
Term 5	CH 222 General Chemistry	5	W	CH 221
	BI 232 Anatomy and Physiology	4	W, S	BI 231
	FN 225 Human Nutrition	4	F, W, S	None
Term 6	CH 223 General Chemistry	5	S	CH 222
	BI 233 Anatomy and Physiology	4	S, Su	BI 232
	HPE 184 Prevention & Care of Athletic Injuries	3	S	None
	PSY 270 Psychology of Sport	3	S	Recommended: PSY 201 & PSY 202

**Approved
Electives**

Course Number/Title	Credits	Terms	Prerequisites/Notes
ART 101 Intro to Visual Arts	4	F	None
ART 120 Artists Books	3	W	None
ART 134 Illustrating Nature	3	F	None
ART 204 History of Western Art I	4	F	None
ART 205 History of Western Art II	4	F	None
ART 206 History of Western Art III	4	F	None
ENG 104 Intro to Literature	4	F	WR 95 and RD 90 or placement test
ENG 105 Intro to Literature	4	S	WR 95 and RD 90 or placement test
ENG 106 Intro to Literature	4	W	WR 95 and RD 90 or placement test
ENG 107 World Literature	4	F	WR 95 and RD 90 or placement test
ENG 108 World Literature	4	W	WR 95 and RD 90 or placement test
ENG 109 World Literature	4	S	WR 95 and RD 90 or placement test
ENG 201 Shakespeare	4	F, Su	WR 95 and RD 90 or placement test
ENG 202 Shakespeare	4	F, Su	WR 95 and RD 90 or placement test
ENG 204 Survey of English Lit	4	F	WR 95 and RD 90 or placement test
ENG 205 Survey of English Lit	4	W	WR 95 and RD 90 or placement test
ENG 206 Survey of English Lit	4	S	WR 95 and RD 90 or placement test
ENG 230 Environmental Lit	4	W	WR 95 and RD 90 or placement test
ENG 250 Intro to Mythology	4	Su	WR 95 and RD 90 or placement test
ENG 253 Survey of American Lit	4	F	WR 95 and RD 90 or placement test
ENG 254 Survey of American Lit	4	W	WR 95 and RD 90 or placement test
ENG 255 Survey of American Lit	4	S	WR 95 and RD 90 or placement test
ENG 260 Intro to Women's Literature	4	Su	WR 95 and RD 90 or placement test
ENG 288 Cultural Diversity in Amer Lit	4	Su	WR 95 and RD 90 or placement test
FA 256 American Film History	4	F	None
FN 103 Sports Nutrition	3	F	None
MUS 105 Intro to Rock Music	3	F,W,S, Su	None
MUS 161 Jazz Improvisation	3	Su	None
MUS 201 Intro to Music and Its Lit	3	F, W, S	None
MUS 202 Intro to Music and Its Lit	3	F, W, S	None
MUS 203 Intro to Music and Its Lit	3	F, W, S	None
MUS 204 Music of the World	3	W, S	None
MUS 205 Intro to Jazz History	3	F, W, S	None
TA 209 Stagecraft 1	3	W	None
TA 210 Intro to Theatrical Design	4	S	None
TA 212 Stagecraft 2	3	S	None
TA 256 Musical Theatre Workshop	3	W	None
TA 271 Introduction to Theatre	4	F	None

**REGIONAL WATER QUALITY TECHNOLOGY (WQT) PROGRAM
COMMON PROGRAM CONTENT
February 13, 2023**

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CORE WQT COURSES, COURSE LEARNING OUTCOMES (CLOs) and CORE COMPETENCY CROSSWALK

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Water Quality Technology, Pathway Certificate

Program Mission

The Water Quality Technology Pathway Certificate prepares students through introductory courses in water and wastewater operations with foundational knowledge in Water Quality Operations for occupational skills and operator certification enhancement.

Program Description

The Water Quality Pathway Certificate provides foundational coursework that offers pathways to enter the work force at entry level positions as water and wastewater operators advance in job placement, or to continue with additional education and training. Pathway certificate course work alone will not provide sufficient education and/or experience to become certified as Level I operator. The five core water quality technology classes in the certificate are found in the Water Quality Technology, Completion Certificate and Water Quality Technology, AAS degree.

Program Outcomes

Students who successfully complete the Pathway Certificate in Water Quality will:

1. Apply the terms and concepts, including the mathematical skills necessary to pass the Level I water and wastewater certification examinations.
2. Explain the maintenance and operation of water treatment, water distribution, wastewater treatment, and wastewater collection systems relative to operator job responsibilities.

Career Considerations

All community water and wastewater systems must be operated under the supervision of certified operators. This is desirable career with low turnover, benefits, and opportunities for advancement. The median annual salary is \$62,900 in Oregon. In 2020 there were 1,144 operators in Oregon and 125,200 operators nationwide. Annual openings are projected at about 97 jobs in Oregon and 10,800 jobs nationwide. Also, many experienced operators are reaching retirement age. Employment information is from Oregon Employment Department and US Bureau of Labor Statistics.

Program Course Requirements

First Year

Water Quality Technology Core

WQT 226	Wastewater Treatment I – Liquids	3
WQT 227	Wastewater Treatment II – Solids	3
WQT 228	Wastewater Collections	3
WQT 260	Water Treatment	3
WQT 261	Water Distribution	3
	Credits	15
	Total Minimum Credits	15

Water Quality Technology, Completion Certificate

Program Mission

The Water Quality Technology, Completion Certificate, prepares students with foundational knowledge of water quality operations through combination of courses and work-based learning.

Program Description

The one-year Water Quality Technology, Completion Certificate, provides both classes and hands on, work-based learning. The certificate includes five introductory courses in water and wastewater operations, 12 credit hours of related cooperative work, and foundational courses in math and science. The coursework prepares students to take the Level I Certification exams. The cooperative work experience is hands on training and is equivalent to approximately 2.5 months of full-time work experience. This certificate is the first year of coursework for the AAS degree in Water Quality Technology.

Program Outcomes

1. Apply the terms and concepts, including the mathematical skills necessary to pass the Level I water and wastewater certification examinations.
2. Apply the maintenance and operation of water treatment, water distribution, wastewater treatment, and wastewater collection systems relative to operator job responsibilities.
3. Express concepts, ideas, technical principles, and feedback in a manner that promotes understanding and encourages cooperation and collaboration.
4. Apply laboratory sampling and testing methods approved by regulatory agencies to water quality and treatment process performance reporting.

Career Considerations

All community water and wastewater systems must be operated under the supervision of certified operators. This is desirable career with low turnover, benefits, and opportunities for advancement. The median annual salary is \$62,900 in Oregon. In 2020 there were 1,144 operators in Oregon and 125,200 operators nationwide. Annual openings are projected at about 97 jobs in Oregon and 10,800 jobs nationwide. Also, many experienced operators are reaching retirement age. Employment information is from Oregon Employment Department and US Bureau of Labor Statistics.

Program Course Requirements

First Year		Credits
Water Quality Technology Core		
WQT 226	Wastewater Treatment I – Liquids	3
WQT 227	Wastewater Treatment II – Solids	3
WQT 228	Wastewater Collections	3
WQT 260	Water Treatment	3
WQT 261	Water Distribution	3
Work-Based Learning		
WQT 280	Cooperative Work Experience	12

Computation

Math 065 or higher	Elementary Algebra or higher	4
	<i>Note: Confirm pre-reqs for approved electives</i>	

Science With Labs

Biology with Lab	See approved list	4
Chemistry with Lab	See approved list	4

Written Communication

WR121	Academic Composition	4
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Speaking and Listening

Speech	See approved list	3
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Human Relations

Human Relations	See approved list	3
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Total Credits **49**

Approved Program Electives (College Specific)**Biology with Lab**

BI 101	General Biology	4
BI 102	General Biology	4
BI 103	General Biology	4
BI 211	Principals of Biology	4
BI 234	Microbiology	4

Chemistry with Lab

GS 105	Physical Science – Elementary Chemistry	4
CH 104	Intro to Chemistry	4
CH 112	Fundamentals of Chemistry	5
CH 221	General Chemistry	5

Human Relations

HD 136	Strategies for Success	3
PSY 101	Psychology of Human Relations	3
SDP 113	Human Relations for Supervisors	3
SP 105	Listening	3
SP 218	Interpersonal Communication	3
SP 219	Small Group Discussion	3

Speech and Listening

SP 111	Fundamentals of Public Speaking	4
SP 112	Persuasive Speaking	3

Water Quality Technology, AAS

Program Mission

The Water Quality Technology, AAS program prepares students, through education and hands-on training, with the foundation necessary to enter the workforce with a working knowledge of water quality operations and the skill set required to pass the Level I operator certification exams in water and wastewater.

Program Description

The Water Quality Technology, AAS degree, prepares students for a career in water quality operations through an integrated curriculum of core water quality technology courses, STEM elective courses, general education courses, and hands-on work-based learning. The degree includes five introductory courses in water and wastewater operations, 24-credit hours of related cooperative work experience, foundational courses in math and science, and STEM elective courses. The degree prepares students to take the Level I Operator Certification exams for water and wastewater. The cooperative work experience is hands on training and is equivalent to approximately 5 months of full-time work experience.

Program Outcomes

1. Apply the terms and concepts, including the mathematical skills necessary to pass the Level I water and wastewater certification examinations.
2. Demonstrate the maintenance and operation of water treatment, water distribution, wastewater treatment, and wastewater collection systems relative to operator job responsibilities.
3. Express concepts, ideas, technical principles, and feedback in a manner that promotes understanding and encourages cooperation and collaboration.
4. Apply laboratory sampling and testing methods approved by regulatory agencies to water quality and treatment process performance reporting.
5. Analyze quantitative water and wastewater relationships using mathematics, equations, and graphs to determine plans of action consistent with industry protocols.

Career Considerations

All community water and wastewater systems must be operated under the supervision of certified operators. This is desirable career with low turnover, benefits, and opportunities for advancement. The median annual salary is \$62,900 in Oregon. In 2020 there were 1,144 operators in Oregon and 125,200 operators nationwide. Annual openings are projected at about 97 jobs in Oregon and 10,800 jobs nationwide. Also, many experienced operators are reaching retirement age. Employment information is from Oregon Employment Department and US Bureau of Labor Statistics.

Program Course Requirements

First Year		Credits
Water Quality Technology Core		
WQT 226	Wastewater Treatment I – Liquids	3
WQT 227	Wastewater Treatment II – Solids	3
WQT 228	Wastewater Collections	3

WQT 260	Water Treatment	3
WQT 261	Water Distribution	3

Work-Based Learning		
WQT 280	Cooperative Work Experience	12

Computation		
Math 065 or higher	Elementary Algebra or higher	4
	<i>Note: Confirm pre-reqs for approved electives</i>	

Science With Labs		
Biology with Lab	See approved list	4
Chemistry with Lab	See approved list	4

Written Communication		
WR121	Academic Composition	4

Speaking and Listening		
Speech	See approved list	3

Human Relations		
Human Relations	See approved list	3

First-Year Total		49
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Second Year		Credits
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Work-Based Learning		
WQT 280	Cooperative Work Experience	12

Stem Electives		
STEM Electives	See approved list. Minimum of 30 cr.	30

Second-Year Total		42
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Total Minimum Credits		91
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Approved Program Electives (College Specific)

Biology with Lab		
BI 101	General Biology	4
BI 102	General Biology	4
BI 103	General Biology	4
BI 211	Principals of Biology	4
BI 234	Microbiology	4

Chemistry with Lab		
GS 105	Physical Science – Elementary Chemistry	4
CH 104	Intro to Chemistry	4
CH 112	Fundamentals of Chemistry	5
CH 221	General Chemistry	5

Human Relations

HD 136	Strategies for Success	3
PSY 101	Psychology of Human Relations	3
SDP 113	Human Relations for Supervisors	3
SP 105	Listening	3
SP 218	Interpersonal Communication	3
SP 219	Small Group Discussion	3

Speech and Listening

SP 111	Fundamentals of Public Speaking	4
SP 112	Persuasive Speaking	3

STEM Electives (minimum of 30 credits, confirm pre-requisites)

ATS 201	Climate Science	4
CIS 120	Digital Literacy	4
CWE 161	CWE Seminar I	1
ENGR 111	Engineering Orientation	3
ENGR 112	Design Engineering and Problem Solving	3
ENGR 113	Engineering Computation and Algorithmic Thinking	3
GIS 203	Digital Earth – Geospatial	4
GIS 234	GIS I – Introduction to GIS	4
GIS 235	GIS II – Data Analysis, Applications	4
MTH 95	Intermediate Algebra	4
MTH 111	College Algebra	5
MTH 112	Elementary Functions	4
NR 221	Water Resource Science	4
SOIL205	Soil Science Lecture	3
SOIL206	Soil Science Lab	1
SUR 161	Plane Surveying	4

Term x Term Advising Guide, Pathways Certificate, Water Quality Technology

Program Prerequisites: See requirements needed for first term classes.

Possible Term Plan	Course #	Course Title	Cr	Terms	Prerequisites/Notes
Water Quality Technology	WQT226	Wastewater Treatment I	3	F	MTH052 or higher
	WQT261	Water Distribution	3	F	MTH052 or higher
	WQT227	Wastewater Treatment II	3	W	MTH052 or higher
	WQT228	Wastewater Collection	3	W	MTH052 or higher
	WQT260	Water Treatment	3	S	MTH052 or higher

Total Credits 15

Term x Term Advising Guide, Completion Certificate, Water Quality Technology

Program Prerequisites: See requirements needed for first term classes.

Possible Term Plan	Course Number	Course Title	Cr	Terms	Prerequisites/Notes
Term 1 18 cr	WQT226	Wastewater Treatment I	3	F	MTH 52 or higher
	WQT261	Water Distribution	3	F	MTH 52 or higher
	Biology w/ Lab	See approved courses	4	F,W,S,Su	See Advisor
	MTH65 or higher	Elementary Algebra or higher	4	F,W,S,Su	MTH 060 or placement by approved measure, minimum of 4 credits, see Advisor for STEM math pre-requisites
	WQT280	Cooperative Work Experience	4	F,W,S,Su	See Advisor

Term 2 17 cr	WQT227	Wastewater Treatment II	3	W	WQT227 Wastewater Treatment I
	WQT228	Wastewater Collection	3	W	MTH 52 Elementary Algebra
	Chemistry w/ Lab	See approved courses	4	W	See Advisor, Minimum of 4 credits
	Human Relations	See approved courses	3	F,W,S,Su	See Advisor
	WQT280	Cooperative Work Experience	4	F,W,S,Su	See Advisor

Term 3 14 cr	WQT260	Water Treatment	3	S	MTH 52 or higher
	Speaking & Listening	See approved courses	3	F,W,S,Su	See Advisor, Minimum Credits
	WR 121	Academic Composition	4	F,W,S,Su	WR115 and RD090 or appropriate placement ; and basic computer word processing skills
	WQT280	Cooperative Work Experience	4	F,W,S,Su	See Advisor

Total Credits 49

Note: See following page for approved elective courses

College Specific: Approved Elective Courses, Completion Certificate

Competency	Course Number	Course Title	Cr	Terms	Prerequisites/Notes
Human Relations Minimum 3 cr	HD136	Strategies for Success	3	F,W,S	No prerequisite
	PSY101	Psychology of Human Relations	3	F,W,S,Su	No prerequisite
	SDP113	Human Relations for Supervisors	3	F	No prerequisite
	SP105	Listening	3	W,S,Su	No prerequisite
	SP218	Interpersonal Communication	3	W,S	WR 095 and RD 090 or placement
	SP219	Small Group Discussion	3	S	No prerequisite
Speaking and Listening Minimum 3 cr	SP111	Fund of Public Speaking	4	F,W,S,Su	WR 095 and RD 090 or placement
	SP112	Persuasive Speech	3	W	No prerequisite
Biology w/ Lab Minimum 4 cr	BI101	General Biology	4	F	No prerequisite, see course description
	BI102	General Biology	4	W	No prerequisite, see course description
	BI103	General Biology	4	S	No prerequisite, see course description
	BI211	Principles of Biology	4	F	CH 104, CH 112, or CH 221
	BI234	Microbiology	4	F,W,S,Su	CH 104, CH 112, or CH 221
Chemistry w/Lab Minimum 4 cr	GS105	Physical Science: Elementary Chemistry	4	F,W,S	MTH 060 or higher
	CH104	Intro to Chemistry	4	F,Su	MTH 065 or higher
	CH112	Fundamentals of Chemistry	5	F,W,S,Su	MTH 065 or higher
	CH221	General Chemistry	5	F	MTH 111 or higher and CH 104, CH 112, GS 105, or instructor approval

Term x Term Advising Guide, AAS, Water Quality Technology

Program Prerequisites: See requirements needed for first term classes.

Possible Term Plan	Course Number	Course Title	Cr	Terms	Prerequisites/Notes
Term 1 18 cr	WQT226	Wastewater Treatment I	3	F	MTH 52 or higher
	WQT261	Water Distribution	3	F	MTH 52 or higher
	Biology w/ Lab	See approved courses	4	F,W,S,Su	See Advisor
	MTH65 or higher	Elementary Algebra or higher	4	F,W,S,Su	MTH 060 or placement by approved measure, minimum of 4 credits, see Advisor for STEM math pre-requisites
	WQT280	Cooperative Work Experience	4	F,W,S,Su	See Advisor
Term 2 17 cr	WQT227	Wastewater Treatment II	3	W	WQT227 Wastewater Treatment I
	WQT228	Wastewater Collection	3	W	MTH 52 Elementary Algebra
	Chemistry w/ Lab	See approved courses	4	W	See Advisor, Minimum of 4 credits
	Human Relations	See approved courses	3	F,W,S,Su	See Advisor
	WQT280	Cooperative Work Experience	4	F,W,S,Su	See Advisor
Term 3 14 cr	WQT260	Water Treatment	3	S	MTH 52 or higher
	Speaking & Listening	See approved courses	3	F,W,S,Su	See Advisor, Minimum Credits
	WR 121	Academic Composition	4	F,W,S,Su	WR115 and RD090 or appropriate placement ; and basic computer word processing skills
	WQT280	Cooperative Work Experience	4	F,W,S,Su	See Advisor
Summer	WQT280	Coop. Work Experience	---	F,W,S, Su	See Advisor
Term 4 14 cr	WQT280	Coop. Work Experience	4	F,W,S,Su	See Advisor
	STEM Electives	See approved courses	10	F	See Advisor, minimum 10 credits
Term 5 14 cr	WQT280	Coop. Work Experience	4	F,W,S,Su	See Advisor
	STEM Electives	See approved courses	10	W	See Advisor, minimum 10 credits
Term 6 14 cr	WQT 280	Coop. Work Experience	4	F,W,S,Su	See Advisor
	STEM Electives	See approved courses	10	S	See Advisor, minimum 10 credits
Total Credits			91		

Note: See following page for approved elective courses

College Specific: Approved Elective Courses, AAS

Competency	Course Number	Course Title	Cr	Terms	Prerequisites/Notes
Human Relations Minimum 3 cr	HD136	Strategies for Success	3	F,W,S	No prerequisite
	PSY101	Psychology of Human Relations	3	F,W,S,Su	No prerequisite
	SDP113	Human Relations for Supervisors	3	F	No prerequisite
	SP105	Listening	3	W,S,Su	No prerequisite
	SP218	Interpersonal Communication	3	W,S	WR 095 and RD 090 or placement
	SP219	Small Group Discussion	3	S	No prerequisite
Speech Minimum 3 cr	SP111	Fund of Public Speaking	4	F,W,S,Su	WR 095 and RD 090 or placement
	SP112	Persuasive Speech	3	W	No prerequisite
Biology w/ Lab Minimum 4 cr	BI101	General Biology	4	F	No prerequisite, see course description
	BI102	General Biology	4	W	No prerequisite, see course description
	BI103	General Biology	4	S	No prerequisite, see course description
	BI211	Principles of Biology	4	F	CH 104, CH 112, or CH 221
	BI234	Microbiology	4	F,W,S,Su	CH 104, CH 112, or CH 221
Chemistry w/Lab Minimum 4 cr	GS105	Physical Science: Elementary Chemistry	4	F,W,S	MTH 060 or higher
	CH104	Intro to Chemistry	4	F,Su	MTH 065 or higher
	CH112	Fundamentals of Chemistry	5	F,W,S,Su	MTH 065 or higher
	CH221	General Chemistry	5	F	MTH 111 or higher and CH 104, CH 112, GS 105, or instructor approval
STEM Minimum 30 cr	ATS201	Climate Science	4	W	MTH 095 or higher
	CIS120	Digital Literacy	4	F,W,S,Su	No prerequisite
	CWE161	CWE Seminar I	1	F,W,S	No prerequisite. Recommended course. Career prep skills, resume writing
	ENGR111	Engineering Orientation	3	F	MTH 065 or higher
	ENGR112	Design Engineering & Problem Solving	3	W	ENGR 111
	ENGR113	Engineering Computation and Algorithmic Thinking	3	S	ENGR 112
	GIS203	Digital Earth-Geospatial	4	F	No prerequisite
	GIS234	GIS I-Introduction to GIS	4	W	No prerequisite
	GIS235	GIS II-Data Analysis-Applications	4	S	No prerequisite
	MTH95	Intermediate Algebra	4	F,W,S	MTH 065 or placement by approved measure
	MTH111	College Algebra	5	F,W,S,Su	MTH 095 or placement by approved measure
	MTH112	Elementary Functions	4	F,W,S,Su	MTH 111 or placement by approved measure
	NR221	Water Resource Science	4	W	MTH 111 or higher
	SOIL205	Soil Science Lecture	3	S	No prerequisite
	SOIL206	Soil Science Lab	1	S	Take in combination with SOIL 205
	SUR161	Plane Surveying	4	S	MTH 112 or higher

Foundational Competencies, Regional WQT Program

Pathways Certificate Water Quality Technology	
Foundational Competency	Credits
Water Quality Technology Core	15
Total Credits	15

Completion Certificate Water Quality Technology	
Foundational Competency	Credits
Water Quality Technology Core	15
Work Based Learning	12
Computation (Math)	4
Science with Lab	8
Written Communication	4
Speaking and Listening	3
Human Relations	3
Total Credits	49

Associate of Applied Science Water Quality Technology	
Foundational Competency	Credits
Water Quality Technology Core	15
Work Based Learning	24
Computation (Math)	4
Science with Lab	8
Written Communication	4
Speaking and Listening	3
Human Relations	3
STEM Electives	30
Total Credits	91

Core Competencies, Regional WQT Program

1) Professional Ethics

Ability to follow and enforce policies, procedures, and perform job duties in an ethical manner

2) Customer Service

Ability to provide activities and behaviors that maximize all aspects of the customer experience

3) Knowledge Assimilation

Ability to learn and retain information on a variety of technical subjects

4) Technical Reading

Ability to read and comprehend Operation & Maintenance Manuals, plans and specifications, and other utility-related documents

5) Task Completion

Ability to prioritize and manage time to complete tasks within established deadlines

6) Systems Management

Ability to establish relevant goals and implement appropriate decisions necessary to achieve those goals

7) Teamwork

Ability to collaborate and cooperate within a team structure and facilitate achievement of shared goals

8) Oral Communication

Ability to interpret oral instructions and communicate to a variety of diverse audiences

9) Interpersonal Skills

Ability to interact with professional contacts in an appropriate manner while accepting and delivering constructive feedback

10) Technical Writing

Ability to compose basic and technical documents

11) Laboratory Skills

Ability to perform basic laboratory analyses in conformance with established methods

12) Technology

Ability to utilize relevant technology-based equipment and applications

13) Decision Making

Ability to identify and apply relevant information needed to set goals, perform job-related tasks, and make appropriate decisions

14) Adaptability

Ability to adopt and lead change, re-focus and prioritize actions in the professional environment

15) Analytical Skills

Ability to mathematically integrate data from a variety of sources and draw appropriate relevant conclusions

16) Complex Process Understanding

Ability to comprehend physical, chemical, and biological systems function and control

Program Learning Outcomes and Core Competency Crosswalks

Regional WQT Program

Pathways Certificate, Water Quality Technology		
#	Program Learning Outcomes	Competencies
PLO 1	Apply the terms and concepts, including the mathematical skills necessary to pass the Level I water and wastewater certification examinations	1,2,3,4
PLO 2	Explain the maintenance and operation of water treatment, water distribution, wastewater treatment, and wastewater collection systems relative to operator job responsibilities	4,5,6,8,10

Completion Certificate, Water Quality Technology		
#	Program Learning Outcomes	Competencies Covered
PLO 1	Apply the terms and concepts, including the mathematical skills necessary to pass the Level I water and wastewater certification examinations	1,2,3,4,15
PLO 2	Apply the maintenance and operation of water treatment, water distribution, wastewater treatment, and wastewater collection systems relative to operator job responsibilities.	4,5,6,8,10,16
PLO 3	Express concepts, ideas, technical principles, and feedback in a manner that promotes understanding and encourages cooperation and collaboration.	7,8,9,10,16
PLO 4	Apply laboratory sampling and testing methods approved by regulatory agencies to water quality and treatment process performance reporting	11,12,13

AAS, Water Quality Technology		
#	Program Learning Outcomes	Competencies Covered
PLO 1	Apply the terms and concepts, including the mathematical skills necessary to pass the Level I water and wastewater certification examinations	1,2,3,4,10,15
PLO 2	Demonstrate the maintenance and operation of water treatment, water distribution, wastewater treatment, and wastewater collection systems relative to operator job responsibilities	4,5,6,8,10,12,13,16
PLO 3	Express concepts, ideas, technical principles, and feedback in a manner that promotes understanding and encourages cooperation and collaboration.	2,7,8,9,10,13,15,16
PLO 4	Apply laboratory sampling and testing methods approved by regulatory agencies to water quality and treatment process performance reporting	11,12,13,15,16
PLO 5	Analyze quantitative water and wastewater relationships using mathematics, equations, and graphs to determine plans of action consistent with industry protocols	8,9,10,11,13,14,15,16

Course Learning Outcomes and Core Competency Crosswalks
Core WQT Courses

Pathways Certificate Core Course Outcomes	Competency Crosswalk
<u>Wastewater Treatment I - Liquid</u>	<u>Competencies Covered</u>
1) Explain physical/chemical treatment processes commonly used in wastewater treatment including the monitoring systems used to measure process performance.	3, 4, 5, 6, 8, 9, 10, 12, 13, 15, 16
2) Summarize biological treatment processes commonly used in wastewater treatment including the monitoring systems used to measure process performance.	3, 4, 5, 6, 8, 9, 10, 12, 13, 15, 16
3) Evaluate process performance based on available laboratory data, field observations, and process control mathematical calculations.	5, 11, 12, 13, 15, 16
<u>Wastewater Treatment II - Solids</u>	<u>Competencies Covered</u>
1) Describe the basics of solids handling in wastewater treatment.	3, 4, 5, 8, 10, 16
2) Explain the purpose and processes of solids thickening and solids dewatering including the monitoring systems used to measure process performance.	3, 4, 5, 6, 8, 10, 12, 13, 15, 16
3) Describe the purpose and processes of solids digestion in wastewater treatment including the monitoring systems used to measure process performance.	3, 4, 5, 6, 8, 10, 12, 13, 15, 16
4) Summarize purpose and function of auxiliary systems, including pumps and pump stations, aeration systems, electrical and electronics systems, and laboratory testing.	3, 4, 5, 6, 8, 10, 12, 16
<u>Wastewater Collection</u>	<u>Competencies Covered</u>
1) Describe the purpose and function of wastewater collection systems and ancillary devices and equipment.	3, 4, 5, 8, 10, 12, 15, 16
2) Apply the concepts and principals of hydraulic computations as they relate to gravity flow systems.	5, 15, 16
3) Explain sources and symptoms of collection system defects and failures and potential corrective actions.	3, 4, 5, 8, 10, 12, 13, 14, 16
4) Describe collection system maintenance activities and the safety procedures necessary to properly complete these.	3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 16
<u>Water Treatment</u>	<u>Competencies Covered</u>
1) Describe management, operation, and maintenance of water treatment systems including source waters, water intakes, treatment processes, and treated water retention.	3, 4, 5, 6, 8, 10, 12, 16
2) Identify the regulatory basis for mandated treatment methods and the regulatory bodies responsible for enforcement.	3, 4, 5, 8, 10, 13, 15, 16
3) Evaluate process performance based on available laboratory data, field observations, and process control mathematical calculations.	3, 4, 5, 8, 10, 11, 12, 15, 16
4) Describe causes of abnormal operating conditions and necessary remedial actions.	3, 4, 5, 6, 10, 13, 14, 16

Continued following page

Pathways Certificate Core Course Outcomes Continued	Competency Crosswalk
<u>Water Distribution</u>	<i>Competencies Covered</i>
1) Identify the need for water storage in operating a water distribution system, the typical types of storage devices, and the routine operation and maintenance activities required for each device type.	3, 4, 5, 6, 8, 10, 12, 16
2) Identify piping, valving, and appurtenances common to water distribution systems and routine operations and maintenance required.	3, 4, 5, 6, 8, 10, 12, 16
3) Explain the control, range, and measurement of water pressures in distribution systems including the mathematical calculations necessary to verify accuracy of measurements.	3, 4, 8, 10, 12, 15, 16
4) Explain corrosion monitoring, disinfection residuals and by-products in distribution systems, methods of measurement, and appropriate responses to information obtained.	3, 4, 5, 8, 10, 12, 15, 16