

# Assessment: Program Review Update

## Program (AG) - Natural Resources AS.1495

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**Program Catalog Summary:** Associate in Science:

SC Program: AS.1495

**PROGRAM DESCRIPTION:** This curriculum is designed to provide technician-level training for students interested in working in such employers include local, county, and U.S. Government agencies, as well as private companies. Particular attention should be paid to course prerequisites and to whether a class is taught during the fall or spring semester, or both.

This degree is approved through the California Community College Chancellor's Office. Upon satisfactory completion of all degree requirements and filing an application for graduation with Admissions and Records, the student's transcript will reflect completion of this degree.

### PROGRAM LEARNING OUTCOMES:

Upon successful completion of this degree, the student will:

1. Have sufficient coursework and field experience to pursue seasonal technician jobs or to transfer to a University in a Natural Resources-related field.
2. Be able to use a taxonomic key or field guide to correctly identify unknown species of plants, birds, mammals, and aquatic invertebrates to the level of genus.
3. Be able to select and use an appropriate protocol following the scientific method to collect, statistically analyze, evaluate, and document original research data.
4. Be able to accurately navigate in the field using maps, compass, a Global Positioning System (GPS). Students will also be able to use GPS for field data collection and Geographic Information Systems (GIS) for data mapping and display.
5. Be able to evaluate basic theory, concepts, and ecological principles as they apply to Forestry, Wildlife, Water Resources, and Ecosystem Restoration and will use his/her cumulative skills to think critically and to work out possible solutions to address problems facing Natural Resources managers today and in the future.

### DEGREE REQUIREMENTS:

#### CORE COURSES:

AGNR 1\* Introduction to Natural Resources 3  
AGNR 6 Native Plant Identification 3  
AGNR 12 Environmental Policy and Law 2  
AGNR 50 Natural Resource Measurements 4  
AGNR 52 Computers in Agriculture/Natural Resources 3  
AGNR 60\* Environmental Science (GE-Natural Science) 3  
AGNR 64\* Watershed Management and Ecology 3  
AGNR 65 Forest Ecology 3  
AGNR 66A Watershed Restoration Practicum I 1  
AGNR 70 Wildlife Management and Conservation 3  
AGNR 94 Natural Resources Worksite Learning 1  
AGMA 44 Intro. to Const. Skills for Ag/Natural Resources 3  
AGPS 24\* Soils 3  
GEOG 9 Map and Geospatial Principles 3

\*May be used to fulfill General Education requirements. See a counselor.

#### ASSOCIATE IN SCIENCE DEGREE REQUIREMENTS:

Major	38
Additional General Education	18
General Electives	4
Degree Total	60*

\*Note: Calculation assumes a student will double-count the Multicultural graduation requirement with either a social science or humanities G.E. requirement and that the student will fulfill computer literacy through a test. If students plan well and see a counselor, they may be able to double count the Multicultural and Computer Literacy units. If these graduation requirements are added, the number of units is increased by 6 units.

### *Fall 2018*

#### **PRIOR PROGRAM REVIEW REFLECTION (If applicable)**

**Term and Year of Previous Review:** Fall 2016

**Discuss any changes to the program as a result of the previous program review:** In March 2017 the PRC recommended this program continue without qualification.

**Resources Received or Requested:** Since the 2016 program review, the program received microscopes and GPS enabled tablets through Perkins funding.

#### **CURRENT PROGRAM REVIEW**

**Who completed this form?:** Melissa Markee, Forestry and Natural Resource Instructor

**Participation in completing this report:** Area Faculty (list in the next box)

**Discuss some of the program successes and benefits to the students and/or community:** Our curriculum and industry contacts put us in a great position to allow our students to take advantage of the growing job market in forestry and natural resources. According to the U.S. Bureau of Labor Statistics Employment Projections program, jobs for forestry and conservation technicians are expected to increase by 3.8% between 2016 and 2026. Additionally, employment for the closely related field of environmental science and protection technicians is expected to increase by 12.1% for the same time period.

Students have been successful at obtaining seasonal and permanent employment after acquiring an A.S. degree or upon completion of a B.S. degree. In March 2018, the Natural Resources program received special recognition from the Chancellor's Office for its strong workforce outcomes. The program receives a Bronze Star award for demonstrating a 86% increase in earnings for students who were last enrolled in 2015-2016.

Natural Resources Club has grown and evolved over the past 10 years. Currently, our students are heavily involved in campus activities, community service, and professional development.

**List each PLO and write a brief narrative summary analysis discussing outcomes for each of them:**

1) Upon successful completion of this degree, the student should be able to have sufficient coursework and field experience to pursue seasonal technician jobs or to transfer to a University in a Natural Resources-related field

- This PLO is addressed in all of the classes that are part of the Natural Resources AS curriculum. Students completing the courses with passing grades satisfy this objective.

2) Upon successful completion of this degree, the student should be able to use a taxonomic key or field guide to correctly identify unknown species of plants, birds, mammals, and aquatic invertebrates to the level of genus.

- This PLO is addressed through the completion of Native Plant Identification (AGNR 6) and Wildlife Conservation and Management (AGNR 70) and reinforced in other courses, including Natural Resource Measurements (AGNR 50 and Forest Ecology (AGNR 65)

3) Upon successful completion of this degree, the student should be able to select and use an appropriate protocol following the scientific method to collect, statistically analyze, evaluate, and document original research data

- This PLO is addressed in all courses that are part of the Natural Resources AS degree.

4) Upon successful completion of this degree, the student should be able to accurately navigate in the field using maps, compass, a Global Positioning System (GPS). Students will also be able to use GPS for field data collection and Geographic Information Systems (GIS) for data mapping and display.

- This PLO is addressed through the completion of Maps and Geospatial Principals (GEOG 9) and Natural Resource Measurements (AGNR 50).

5) Upon successful completion of this degree, the student should be able to evaluate basic theory, concepts, and ecological principles as they apply to Forestry, Wildlife, Water Resources, and Ecosystem Restoration and will use his/her cumulative skills to think critically and to work out possible solutions to address problems facing Natural Resources managers today and in the future.

- This PLO is addressed in all courses that are part of the Natural Resources AS degree.

**Describe how this program supports a transfer pathway to CSU or UC:** Anecdotal evidence (personal observations) indicates few students in the Natural Resources AS program choose to pursue a baccalaureate degree. Those who do have been transferring have gone to out-of-state schools, including the University of Idaho and Oregon State. Students planning to transfer in the fields of natural resources or environmental science are directed towards a degree in University Studies with a Natural Sciences emphasis.

**Specify Labor Market Demand (for CTE programs):** According to the U.S. Bureau of Labor Statistics Employment Projections program, jobs for forestry and conservation technicians are expected to increase by 3.8% between 2016 and 2026. This data coupled with an aging work force in the discipline suggest a good demand for employees. Student with the Natural Resources AS degree would be well prepared to work as a technician. Additionally, with additional experience and/or educations, students may qualify to work as an environmental scientist or natural resource manager.

## **PROGRAM DATA ANALYSIS**

**Program Effectiveness:** While the number of Natural Resources AS degrees awarded by Shasta College remains low, students are consistently completing the program with 6 awards in 2015-2016, 3 awards in 2016-2017, and 1 award in 2017-2018. It is anticipated that 6-10 students will be awarded a degree for the 2018-2019 academic year.

**Program Effectiveness (CTE):** Students have been successful in gaining both seasonal and permanent employment. Students have recently been kept on by employers following summer positions. Students are currently working with both private and public companies. Transfer students who have gone on to complete BS degrees have also been successful in gaining permanent employment. In addition to the job board maintained in the 1200 building, positions are posted electronically through the Forestry and Natural Resources Club Canvas page and the AGNR & Heavy Equipment Resource Center to assist students in finding openings.

**Course Success Rates:** The average success rates for courses within the forestry and natural resources program are 72.40, 74.72, 73.41% during the past 3 academic years.

**Course Retention Rates:** The average retention rates for courses within the forestry and natural resources program are 83.44, 85.75, 83.99% during the past 3 academic years.

**Course Enrollments:** The average census date enrollments for courses within the forestry and natural resources program are 22.6, 21.3, and 21.3 during the past 3 academic years.

**Equity:** The average percentage of male and female enrollments for courses within the forestry and natural resources program has been 56.79% and 42.62% respectively for the past three academic years. The average percentage of ethnicity for categories presented in area planning data for the past 3 years is as follows: 3.10% American Indian, 2.05% Asian, 0.85% black or African American, 0.08% Hawaiian/Pacific Islander, 13.53% Hispanic, 69.75% white, 0.86% non-resident alien, 5.83% two or more races, and 3.94% unknown. The average percentage for age categories presented in area planning data for the past 3 years is as follows: 29.56% 19 or less, 31.64% 20 to 24, 13.23% 25 to 29, 8.56% 30 to 34, 6.37% 35 to 39, 5.38% 40 to 49, and 5.56% 50 and older.

## **CURRICULUM**

**Review of courses with prerequisites:** Courses offered in the Ag-Natural Resources area and required to the Natural Resources AS degree to not have prerequisites.

**Challenges to offering key courses:** No courses are recommended to be removed from the program at this time. Courses struggle to meet the minimum enrollment of 20 students per unit often requested by administration. It would be helpful if courses only offered once per year or once every other year were exempt from the same enrollment requirements of general education classes that are offered multiple times each semester.

**Course changes:** No changes have been made to the titles of any of the program related courses. The addition of new courses to the degree or certificate are not recommended at this time.

## **SUMMARY**

**Changes or improvements needed based on the analysis above:** No changes or improvements to the program are needed at this time. This may be reevaluated if the program does not continue to have awards given on an annual basis.

**Note any resources you intend to request through the Area Planning process to improve the program:** A computer cart is being requested for to improve the program. With the removal of the 1200 building computer lab in fall 2017, students have less access to computer resources that are important for students to apply computer skills using Forestry-related software.

**Other information/reflections on the program:** None.

**Conclusion:** The Natural Resources AS program is a unique program to Shasta College. Given our local resources and the importance of natural resource management, the program is valuable to our community and environment. The program appears to be in a growth period and additional awards are anticipated in the coming academic years.

**\*\*BELOW TO BE COMPLETED BY THE PROGRAM REVIEW COMMITTEE\*\***

## PROGRAM AWARDS

Award Type	Program Type	2012-13	2013-14	2014-15	2015-16	2016-17
Associate of Arts Degree	Political Science	8	5	3	4	6
Grand Total		8	5	3	4	6

## COURSE STATISTICS

		Academic Year				
Course Name		2012-13	2013-14	2014-15	2015-16	2016-17
AGMA-44	# of Sections	2	2	3	3	5
	Enrollment	45	50	62	73	105
	FTES	9.0	10.0	11.3	13.9	19.8
	FTEF	0.65	0.65	0.65	0.65	0.98
	WSCH	270	300	338	385	586
	Avg Enrl/Section	23	25	21	24	21
	Avg FTES FTEF	13.85	15.38	16.00	19.08	17.23
	Avg WSCH FTEF	415	462	480	572	517
AGNR-1	# of Sections	2	2	1	1	2
	Enrollment	49	47	20	23	44
	FTES	7.7	7.5	3.0	3.2	6.5
	FTEF	0.57	0.57	0.28	0.28	0.28
	WSCH	230	225	90	95	193
	Avg Enrl/Section	25	24	20	23	22
	Avg FTES FTEF	13.54	13.24	10.59	11.19	14.12
	Avg WSCH FTEF	406	397	318	335	424
AGNR-6	# of Sections	1	1	1	1	1
	Enrollment	25	27	26	25	22
	FTES	4.0	3.8	3.8	3.7	3.5
	FTEF	0.28	0.28	0.28	0.28	0.28
	WSCH	120	115	115	110	105
	Avg Enrl/Section	25	27	26	25	22
	Avg FTES FTEF	14.12	13.52	13.52	12.95	12.35
	Avg WSCH FTEF	424	406	406	388	371
AGNR-12	# of Sections	1	1	1	1	1
	Enrollment	20	22	18	22	12
	FTES	1.4	1.3	1.1	1.3	0.9
	FTEF	0.13	0.13	0.13	0.13	0.13
	WSCH	41	37	34	38	26
	Avg Enrl/Section	20	22	18	22	12
	Avg FTES FTEF	9.98	9.97	8.48	9.53	6.53
	Avg WSCH FTEF	308	277	255	285	195
AGNR-50	# of Sections	1	1	1	1	1
	Enrollment	25	19	13	20	19
	FTES	6.4	4.5	3.5	4.3	5.1
	FTEF	0.43	0.43	0.43	0.43	0.43
	WSCH	192	136	104	128	152
	Avg Enrl/Section	25	19	13	20	19
	Avg FTES FTEF	14.77	10.45	8.01	9.85	11.70
	Avg WSCH FTEF	443	314	240	295	351
AGNR-52	# of Sections	2	2	3	2	2
	Enrollment	44	38	53	51	38
	FTES	7.5	5.5	8.8	7.5	5.2

	FTEF	0.57	0.57	0.85	0.57	0.57
	WSCH	225	165	265	225	155
	Avg Enrl/Section	22	19	18	26	19
	Avg FTES FTEF	13.24	9.71	10.40	13.24	9.11
	Avg WSCH FTEF	397	291	312	397	274
AGNR-60	# of Sections	16	11	11	7	10
	Enrollment	367	267	288	257	254
	FTES	34.4	26.8	26.6	24.1	23.9
	FTEF	1.97	1.60	1.60	1.40	1.40
	WSCH	1,049	819	813	738	728
	Avg Enrl/Section	23	24	26	37	25
	Avg FTES FTEF	15.40	16.00	16.13	17.21	16.00
	Avg WSCH FTEF	471	489	493	527	488
AGNR-64	# of Sections	1	1	1	1	1
	Enrollment	25	17	23	21	14
	FTES	4.1	2.7	3.3	3.4	2.3
	FTEF	0.28	0.28	0.28	0.28	0.28
	WSCH	123	82	98	103	69
	Avg Enrl/Section	25	17	23	21	14
	Avg FTES FTEF	14.12	9.42	11.19	11.75	7.87
	Avg WSCH FTEF	434	289	346	364	244
AGNR-65	# of Sections	1	1	1		1
	Enrollment	24	17	26		19
	FTES	4.1	2.9	4.3		3.3
	FTEF	0.28	0.28	0.28		0.28
	WSCH	123	87	129		98
	Avg Enrl/Section	24	17	26		19
	Avg FTES FTEF	14.12	9.99	14.72		11.19
	Avg WSCH FTEF	434	307	455		346
AGNR-66A	# of Sections		1	2	2	1
	Enrollment		34	48	57	38
	FTES		2.2	3.1	3.2	2.3
	FTEF		0.11	0.22	0.22	0.11
	WSCH		67	93	97	69
	Avg Enrl/Section		34	24	29	38
	Avg FTES FTEF		20.04	13.99	14.45	20.59
	Avg WSCH FTEF		619	429	448	637
AGNR-70	# of Sections	1	1	1	1	1
	Enrollment	27	22	19	23	16
	FTES	4.5	3.3	3.2	3.5	2.5
	FTEF	0.28	0.28	0.28	0.28	0.28
	WSCH	135	100	95	105	75
	Avg Enrl/Section	27	22	19	23	16
	Avg FTES FTEF	15.88	11.75	11.19	12.35	8.82
	Avg WSCH FTEF	477	353	335	371	265
AGNR-94	# of Sections	12	8	9	4	3
	Enrollment	16	12	16	16	3

	FTES	1.0	0.7	1.2	1.0	0.2
	FTEF	0.00	0.00	0.00	0.00	0.00
	WSCH	132	91	158	129	30
	Avg Enrl/Section	1	2	2	4	1
	Avg FTES FTEF					
	Avg WSCH FTEF					
AGPS-24	# of Sections	2	3	3	3	3
	Enrollment	61	65	76	70	69
	FTES	9.1	8.9	10.8	9.4	8.5
	FTEF	0.57	0.69	0.85	0.85	0.80
	WSCH	262	255	308	257	235
	Avg Enrl/Section	31	22	25	23	23
	Avg FTES FTEF	15.99	13.71	12.71	11.11	10.56
	Avg WSCH FTEF	462	393	362	302	294
GEOG-9	# of Sections		2	2	1	1
	Enrollment		49	39	31	24
	FTES		6.8	4.2	2.9	4.0
	FTEF		0.57	0.57	0.28	0.28
	WSCH		205	157	144	120
	Avg Enrl/Section		25	20	31	24
	Avg FTES FTEF		12.05	7.36	10.24	14.12
	Avg WSCH FTEF		362	277	508	424
Grand Total	# of Sections	42	37	40	28	33
	Enrollment	568	482	510	509	533
	FTES	93.1	87.1	88.2	81.4	87.9
	FTEF	6.02	6.45	6.71	5.66	6.12
	WSCH	2,902	2,684	2,797	2,554	2,641
	Avg Enrl/Section	14	13	13	18	16
	Avg FTES FTEF	14.59	13.66	12.99	14.14	13.37
	Avg WSCH FTEF	441	411	396	434	402