Montana University System

2014-2020 PROGRAM REVIEW

Institution: **Montana State University**

Program Years: **AY2014-AY2020**

List of the programs reviewed:

Department of Agricultural and Technology Education

- BS Agricultural Education
- BS Technology Education
- MS Agricultural Education
- Minor Technology Education Teaching

Department of Political Science

- BA Political Science
- Masters of Public Administration
- Minor Political Science

Department of Psychology

- BS Psychology
- MS Psychological Science
- PhD Psychological Science
- Minor Psychology

Department of Sociology and Anthropology

- BS Anthropology
- BS Sociology
- Minor Anthropology
- Minor Sociology

Department of Agricultural Economics and Economics

- BS Agricultural Business
- BS Economics
- BS Financial Engineering
- MS Applied Economics
- Minor Agricultural Business
- Minor Economics
- Minor Economics Teaching
- Minor Financial Engineering

Gallatin College: Associate Degrees

- Associate of Arts
- Associate of Science

Department of Chemistry and Biochemistry *(GRANTED EXTENSION FROM 2019/20 AY)*

- BS Chemistry
- MS Biochemistry
- MS Chemistry
- PhD Biochemistry
- PhD Chemistry
- PhD Materials Science
- Minor Astrobiology
- Minor Biochemistry
- Minor Chemistry

Department of Animal and Range Science (*GRANTED EXTENSION FROM 2019/20 AY*)

- BS Animal Science
- BS Natural Resources and Rangeland Ecology
- BS Ranching Systems
- BS Sustainable Food and Bioenergy
- MS Animal and Range Sciences
- PhD Animal and Range Sciences
- PhD Ecology and Environmental Sciences
- Minor Animal Science
- Minor Genetics
- Minor Natural Resources and Rangeland Ecology

Department of Plant Sciences/Plant Pathology (*GRANTED EXTENSION FROM 2019/20 AY)*

- BS Biotechnology
- BS Environmental Horticulture
- BS Plant Science
- BS Sustainable Food and Bioenergy
- MS Plant Pathology
- MS Plant Science
- PhD Plant Science
- Minor Environmental Horticulture Science
- Minor Genetics

Decision(s) concerning the future of the program(s), based on the program review criteria established at the campus:

See decisions by department/program below.

Rationale or justification for the decision based on the program review process established at the campus. Include graduation numbers and student majors for each of the last seven (7) years for every program under review.

See rationale by department/program below.

Department of Agricultural and Technology Education

- BS Agricultural Education
- BS Technology Education
- MS Agricultural Education
- Minor Technology Education Teaching

Decision(s) concerning the future of the program(s), based on the program review criteria established at the campus:

The department offers two undergraduate B.S. degrees. The first is in Agricultural Education, with options in either Broadfield Teaching or Communications, Leadership & Extension. The second B.S degree is in Technology Education, with options in either Broadfield Teaching or Industrial Technology. An M.S. in Agricultural Education is offered at the graduate level. **All degrees and options will be retained.**

Rationale or justification for the decision based on the program review process established at the campus. Include graduation numbers and student majors for each of the last seven (7) years for every program under review.

The review team included Professor Rebecca Lawver (Agricultural Systems Technology & Education, Utah State University), Associate Professor Jennifer Thomson (Animal and Range Sciences, MSU), and Associate Professor Kevin Amende (Mechanical and Industrial Engineering, MSU).

The Department of Agricultural and Technology Education (DATE) is regionally and nationally recognized for integration of teaching, scholarship and service that leads to successful careers for graduates in agriculture, technology, innovation and related businesses. The department aspires to meet the career-building needs of students while also serving the continuing education needs of alumni and providing technically and pedagogically prepared graduates for potential employers across Montana and the inter-mountain west.

Undergraduate agricultural education major enrollment have increased overall from 46 students in 2014 to 77 students in 2020. The growth in the agricultural education programs is, in part, due to strategic recruiting efforts, at numerous 4-H and FFA events by departmental faculty. The establishment of the Pre-Professionals Agricultural Education Club has provided opportunities for students to obtain industry experience and career skills in agriculture teaching and relations professions, and is thought to be contributing to student retention.

The two concentrations within the Technology Education major are Broadfield Teaching and Industrial Technology. Both programs were brought into the Department at the start of the 2019-2020 academic year by mutual agreement of the former department home (Education), former college (Education, Health and Human Development), the Agricultural Education Department and the College of Agriculture. Almost concurrently to the assimilation of the technology education programs was the hiring of a tenure-track faculty member to lead both program options. Due to these changes, the scope of the current review for this program is two years. Reviewers noted that progress is being made post-transition and that time and

current efforts will result in positive outcomes. Montana currently has a shortage of licensed teachers to fill secondary teaching positions in Technology Education, making this program vital and addressing an industry need.

Following the 2013 program review recommendations, M.S. in Agricultural Education was significantly revised. The degree moved to a cohort model, thereby allowing students to start in the fall and move through the courses and research components with their cohort group. The degree was also modified to provide a fully online option. The self-study indicates that the program is currently at maximum capacity.

ENROLLMENT										
DEGREE	MAJOR 1, 2, 2nd DEGREE	CONCENTRATION	CONC	2014	2015	2016	2017	2018`	2019	2020
BS	Agricultural Education	Agricultural Education	ACLE				12	18	27	21
BS	Agricultural Education	Agricultural Relations	ARLN	18	21	22	10	6	1	
BS	Agricultural Education	Broadfield Teaching	BRDT	28	30	41	40	41	52	50
BS	Agricultural Education	No Concentration Identified					7	6	5	6
BS	Technology Education	Broadfield Teaching	BRDT	16	11	13	13	13	11	1
BS	Technology Education	Industrial Technology	ITEC	10	7	7	10	11	8	
BS	Technology Education	No Concentration Identified							1	1
TOTAL UNDERGRADUATE ENROLLMENT:				***72***	***69***	***83***	***92***	***95***	***105***	***79***
DEGREE	MAJOR	CONCENTRATION	conc1	2014	2015	2016	2017	2018	2019	2020
MS	Agricultural Education			6	6	4	10	10	9	11
TOTAL GRADUATE ENROLLMENT:				***6***	***6***	***4***	***10***	***10***	***9***	***11***
TOTAL ENROLLED:				***78***	***75***	***87***	***102***	***105***	***114***	***90***
	MINOR DESCRIPTION		CONC	2014	2015	2016	2017	2018`	2019	2020
BS	Technology Education Teaching		TTCH	1	1					
TOTAL MINOR ENROLLED:				***1***	***1***	***0***	***0***	***0***	***0***	***0***
AWARDED DEGREES										
DEGREE	MAJOR	CONCENTRATION	CONC	2014	2015	2016	2017	2018	2019	2020
BS	Agricultural Education	Agricultural Education	ACLE						1	8
BS	Agricultural Education	Agricultural Relations	ARLN	9	5	7	3	4	6	1
BS	Agricultural Education	Broadfield Teaching	BRDT	8	4	7	6	7	10	8
MS	Agricultural Education			7	3	2	1		4	3
BS	Technology Education	No Concentration Identified							2	1
BS	Technology Education	Broadfield Teaching	BRDT	7	4	4	4	1	2	
BS	Technology Education	Industrial Technology	ITEC	3	3	5		1	4	2
TOTAL DEGREES AWARDED:				***34***	***19***	***25***	***14***	***13***	***29***	***23***

AWARDED MINORS										
	MINOR DESCRIPTION		CONC	2014	2015	2016	2017	2018`	2019	2020
BS	Technology Education Teaching	TTCH		1					1	
TOTAL MINORS AWARDED:				***1***	***0***	***0***	***0***	***0***	***1***	***0***

Department of Political Science

- BA Political Science
- Masters of Public Administration
- Minor Political Science

Decision(s) concerning the future of the program(s), based on the program review criteria established at the campus:

The department offers an undergraduate B.A. in Political Science as well as a Masters of Public Administration (MPA) graduate degree. **All degrees and options will be retained**.

Rationale or justification for the decision based on the program review process established at the campus. Include graduation numbers and student majors for each of the last seven (7) years for every program under review.

The review team included Professor Brent Steel (School of Public Policy, Oregon State University), Associate Professor Julia Haggerty (Earth Sciences, MSU), and Professor Joel Cahoon (Civil Engineering, MSU).

The department of Political Science serves the research, education, and engagement mission at Montana State University. The department provides a high-quality undergraduate education to students while also offering a successful MPA program. The review of the department was positive and reflective of the commitment of the faculty to their programs. The number of majors is healthy and there are myriad indicators that the faculty are delivering a high-quality undergraduate education, an observation that is reinforced by the complimentary words from students about the teaching and mentoring that they received from faculty.

The department has considered the addition of a Ph.D. program in Public Policy Analysis and Administration. Key aspects of this discussion were included in the self-study and feedback was solicited from the review team. Based on these review assessments, the proposal has been placed on hold as other opportunities for growth in graduate education are being developed.

With respect to undergraduate education, the department has taken the feedback from the review and will work to better balance the distribution of lower and upper division course offerings. The department is also considering how the delivery of their undergraduate curriculum with existing faculty resources affects their ability to deliver the existing MPA curriculum. The department is looking at ways to enhance the marketable skills for the workforce for their undergraduate students. Required courses in the undergraduate degree as well as sequencing are being revised as a result of the program review.

Based on these review assessments, the restructuring of the MPA curriculum to make it a largely course-only, non-thesis/professional paper degree is also being considered. However, students who desire a thesis option will still be provided this route. A “4+1” curriculum that requires no new courses being added to the current curriculum is also under development for the MPA program.

ENROLLMENT										
DEGREE	MAJOR 1, 2, 2nd DEGREE	CONCENTRATION	CONC	2014	2015	2016	2017	2018`	2019	2020
BA	Political Science	International Relations	INTR	67	66	78	63	33	12	1
BA	Political Science	No Concentration Identified		3	3	1	59	137	176	175
BA	Political Science	Policy and Analysis	PANA	38	38	43	26	10	3	1
BA	Political Science	Political Institutions	POIS	17	23	29	22	6	1	
BA	Political Science	Political Science	POLS					1		
BA	Political Science	Political Theory	POTH	18	18	24	20	2	1	
TOTAL UNDERGRADUATE ENROLLMENT:				***143***	***148***	***175***	***190***	***189***	***193***	***177***
DEGREE	MAJOR	CONCENTRATION	CONC	2014	2015	2016	2017	2018	2019	2020
M	Public Administration			20	22	31	24	19	18	25
TOTAL GRADUATE ENROLLMENT:				***20***	***22***	***31***	***24***	***19***	***18***	***25***
TOTAL ENROLLED:				***163***	***170***	***206***	***214***	***208***	***211***	***202***
	MINOR DESCRIPTION		CONC	2014	2015	2016	2017	2018`	2019	2020
BA	Political Science		PSCI	12	23	22	22	26	20	23
TOTAL MINOR ENROLLED:				***12***	***23***	***22***	***22***	***26***	***20***	***23***
AWARDED DEGREES										
DEGREE	MAJOR	CONCENTRATION	CONC	2014	2015	2016	2017	2018	2019	2020
BA	Political Science	No Concentration Identified		2	2	4		2	20	43
BA	Political Science	International Relations	INTR	30	21	17	20	22	19	9
BA	Political Science	Policy and Analysis	PANA	11	8	8	14	6	1	1
BA	Political Science	Political Institutions	POIS	4	2	6	8	5	8	1
BA	Political Science	Political Theory	POTH	5	8	6	7	7	2	2
M	Public Administration			15	9	8	13	13	11	6
TOTAL DEGREES AWARDED:				***67***	***50***	***49***	***62***	***55***	***61***	***62***
AWARDED MINORS										
	MINOR DESCRIPTION		CONC	2014	2015	2016	2017	2018`	2019	2020
BA	Political Science	POLS		9	6	7	11	7	7	2
TOTAL MINORS AWARDED:				***9***	***6***	***7***	***11***	***7***	***7***	***2***

Department of Psychology

- BS Psychology
- MS Psychological Science
- PhD Psychological Science
- Minor Psychology

Decision(s) concerning the future of the program(s), based on the program review criteria established at the campus:

The Department of Psychology offers a B.S. degree in Psychological Science. At the graduate level, a Ph.D. in Psychological Science**.** During the review period, but not currently, an M.S. in Psychological Science was offered. **All degrees and options will be retained**.

Rationale or justification for the decision based on the program review process established at the campus. Include graduation numbers and student majors for each of the last seven (7) years for every program under review.

The review team included Professor Michele Brumley (Department of Psychology, Idaho State University), Professor Aaron Benjamin (Department of Psychology, University of Illinois), and Professor Mary Cloninger (Department of Chemistry and Biochemistry, MSU).

The number of undergraduate majors has grown over the review period: the number ranged from 352 – 369 students from 2014 – 2016 and has experienced marked linear growth since 2017. In s 2020, 505 majors were enrolled in the department, making psychology the second largest major in the College of Letters and Science (CLS) and the 9th largest major at MSU. The department contributions to the general education curriculum have also grown over the review period. In terms of graduates, during the review period, the department has graduated 586 students – the most in the College of Letters and Science.

The program review committee recommend that the department ensure that growth in curriculum offerings at the undergraduate level is goal-oriented and strategic. The reviewers also recommend that the department synchronize learning outcomes across the research methods and senior research capstone courses so that there is better uniformity amongst the instructors. Finally, it was suggested that the department could consider whether there are alternative ways to structure the senior research capstone course to better prepare students for employment after graduation. A new method of assessing program learning outcomes is being implemented by the department starting this academic year.

The department offered a terminal master's degree until 2016, at which point a Ph.D. program was established. The size of their graduate program has been heavily dependent on the number of graduate teaching assistantships available, which was 11 from 2014 – 2017, and 13 from 2018 – present. Since 2017, the Ph.D. program has had 17 students. Consequently, this is the first program review where the Ph.D. program is being assessed.

Thus far the Ph.D. program has graduated a total of three students, with an anticipated graduation of five more students in AY2021. The Ph.D. program is now in its fifth year, consequently it is expected that the number of graduates of the program will remain steady or increase as the number of students with GRA funding increases. Graduate students offered high praise to the faculty for supporting their diverse research interests, supporting them with resources, supporting collaborative efforts between labs, and generally being supportive and helpful to their professional development.

The department's 5-year strategic plan is currently in its final year with a focus on assessing the department's ability to attract and retain the highest-quality students and prepare them for jobs after graduation. The results of this assessment, independent of the program review process, will inform future areas of emphasis. Reviewers suggested the department should pursue opportunities for curriculum collaboration with other departments and units on campus; focus new course development to foster applied skills and training, such as a course in Professional Writing and Grant Development, that also may be of interest to allied disciplines; and to increase exposure and applied skills to non-academic careers for graduate students.

ENROLLMENT										
DEGREE	MAJOR 1, 2, 2nd DEGREE	CONCENTRATION	CONC	2014	2015	2016	2017	2018`	2019	2020
BS	Psychology	Applied Psychology	APSY	274	255	245	276	301	252	259
BS	Psychology	No Concentration Identified		7	7	6	5	3	117	294
BS	Psychology	Psychological Science	PSYS	88	96	101	96	113	91	52
TOTAL UNDERGRADUATE ENROLLMENT:				***369***	***358***	***352***	***377***	***417***	***460***	***605***
DEGREE	MAJOR	CONCENTRATION	CONC	2014	2015	2016	2017	2018	2019	2020
MS	Psychological Science			12	13	6		1		
PHD	Psychological Science					6	12	12	14	16
TOTAL GRADUATE ENROLLMENT:				***12***	***13***	***12***	***12***	***13***	***14***	***16***
TOTAL ENROLLED:				***381***	***747***	***364***	***389***	***430***	***474***	***621***
	MINOR DESCRIPTION		CONC	2014	2015	2016	2017	2018`	2019	2020
BS	Psychology		PSY	64	80	84	85	77	91	85
TOTAL MINOR ENROLLED:				***64***	***80***	***84***	***85***	***77***	***91***	***85***
AWARDED DEGREES										
DEGREE	MAJOR	CONCENTRATION	CONC	2014	2015	2016	2017	2018	2019	2020
BS	Psychology	No Concentration Identified			4	3		2	4	2
BS	Psychology	Applied Psychology	APSY	43	65	62	64	60	72	89

BS	Psychology	Psychological Science	PSYS	35	30	27	28	15	16	32
MS	Psychological Science			7	4	8	7	3	3	3
PHD	Psychological Science								1	
TOTAL DEGREES AWARDED:				***85***	***103***	***100***	***99***	***80***	***96***	***126***
AWARDED MINORS										
	MINOR DESCRIPTION		CONC	2014	2015	2016	2017	2018`	2019	2020
BS	Psychology	PSY		15	24	15	25	28	19	24
TOTAL MINORS AWARDED:				***15***	***24***	***15***	***25***	***28***	***19***	***24***

Department of Sociology and Anthropology

- BS Anthropology
- BS Sociology
- Minor Anthropology
- Minor Sociology

Decision(s) concerning the future of the program(s), based on the program review criteria established at the campus:

The Department of Sociology and Anthropology offers B.S. degrees in Sociology, with options in either General Sociology or in Criminology. A B.S. in Anthropology is also offered. **All degrees and options will be retained**.

Rationale or justification for the decision based on the program review process established at the campus. Include graduation numbers and student majors for each of the last seven (7) years for every program under review.

The review team included Professor Brian Wolf (Department of Culture, Society, and Justice, University of Idaho), Professor Theo Lipfert (School of Film and Photography, MSU), and Professor Kregg Aytes (Jake Jabs College of Business and Entrepreneurship, MSU).

There has been significant growth in the department's programs since the last review in 2014, with enrollment growing from 295 majors to 384 majors in 2020 (30% growth). This makes it one of the fastest-growing departments in the College of Letters and Science and is a good indication of a healthy, vibrant program. Beyond enrollment, the number of graduates per year has grown over the review period, with 88 graduates in 2020 (60% growth since 2014).

The department emphasizes the value of an accessible curriculum that allows students to progress towards graduation at an efficient pace. Without a graduate degree option in the department, undergraduate students have significant opportunities available to work with faculty on research projects, often co-authoring papers and participating in professional presentation opportunities.

In the self-study, faculty requested suggestions on how to improve student writing through curricular revisions. The reviewers suggested sequencing of writing-intensive courses in the discipline as a pathway for the faculty to explore. The department is also working on curricular modifications in the sequence of required coursework that will ensure all majors take timely coursework in the areas of race, gender, and social class-based inequalities as these areas of focus are central to the disciplines. The faculty are exploring the utility of cross-listing courses across their two B.S. degrees to more widely expose students to both disciplines represented in the department. The integration of the existing internship program more seamlessly into the requirements for majors is being explored.

ENROLLMENT										
DEGREE	MAJOR 1, 2, 2nd DEGREE	CONCENTRATION	CONC	2014	2015	2016	2017	2018`	2019	2020
BS	Anthropology	Anthropology	ANTH	67	65	63	61	74	76	51
BS	Sociology	Criminology	CRIM	142	155	178	180	220	211	190
BS	Sociology	No Concentration Identified		8	6	4	7	5	9	10
BS	Sociology	Sociology	SOC	63	58	66	74	68	63	64
TOTAL UNDERGRADUATE ENROLLMENT:				***280***	***284***	***311***	***322***	***367***	***359***	***315***
DEGREE	MAJOR	CONCENTRATION	CONC	2014	2015	2016	2017	2018	2019	2020
	No Graduate Programs									
TOTAL GRADUATE ENROLLMENT:				***0***	***0***	***0***	***0***	***0***	***0***	***0***
TOTAL ENROLLED:				***280***	***284***	***311***	***322***	***367***	***359***	***315***
	MINOR DESCRIPTION		CONC	2014	2015	2016	2017	2018`	2019	2020
BS	Anthropology		ANTH	9	10	9	14	12	14	17
BS	Sociology		SOC	25	37	37	42	39	47	52
TOTAL MINOR ENROLLED:				***34***	***47***	***46***	***56***	***51***	***61***	***69***
AWARDED DEGREES										
DEGREE	MAJOR	CONCENTRATION	CONC	2014	2015	2016	2017	2018	2019	2020
BS	Anthropology	No Concentration Identified		12	21	21	10	9	13	23
BS	Anthropology	Criminology	CRIM					1		
BS	Sociology	No Concentration Identified		6	5	8	1	2	6	2
BS	Sociology	Criminology	CRIM	24	35	37	39	39	47	56
BS	Sociology	Sociology	SOC	25	22	17	17	18	12	17
TOTAL DEGREES AWARDED:				***67***	***83***	***83***	***67***	***69***	***78***	***98***
AWARDED MINORS										
	MINOR DESCRIPTION		CONC	2014	2015	2016	2017	2018`	2019	2020
BS	Anthropology	ANTH		2	6	3	3	6	9	5
BS	Sociology	SOC		8	12	16	19	14	8	18
TOTAL MINORS AWARDED:				***10***	***18***	***19***	***22***	***20***	***17***	***23***

Department of Agricultural Economics and Economics

- BS Agricultural Business
- BS Economics
- BS Financial Engineering
- MS Applied Economics
- Minor Agricultural Business
- Minor Economics
- Minor Economics Teaching
- Minor Financial Engineering

Decision(s) concerning the future of the program(s), based on the program review criteria established at the campus:

The Department of Agricultural Economics and Economics offers B.S. degrees in Agricultural Business, Economics, and Financial Engineering. An M.S. in Applied Economics is offered at the graduate-level. **All degrees and options will be retained**.

Rationale or justification for the decision based on the program review process established at the campus. Include graduation numbers and student majors for each of the last seven (7) years for every program under review.

The review team included Professor Joshua Rosenbloom (Department of Economics, Iowa State University), Professor Tracy Sterling (Land Resources and Environmental Sciences, MSU), and Professor Mark Greenwood (Mathematical Sciences, MSU).

The department offers successful, popular and rigorous undergraduate programs in Economics and Agricultural Business Management, as well as serving general education requirements of the university. The undergraduate degrees in Agricultural Business and Economics have up-to-date curriculum with a relatively broad range of elective choices appropriate to diverse student interests. Enrollment in the Agricultural Business Management and Farm and Ranch Management majors has fluctuated over the last few years, dropping by about 30% from its high in 2016. This decline reflects broader national trends, however, and has been offset to some extent by growing numbers of students pursuing the Agricultural Business and Economics minors and Financial Engineering majors. Introductory economics is required by many other majors and generates a high number of student credit hours. Enrollment in the Economics major has remained quite strong. Department faculty have been responsive to changes in the field by incorporating more hands-on data analyses throughout the curriculum.

This is the first review cycle for the Financial Engineering degree. This program attracts highly qualified and motivated students who might otherwise not study economics. Enrollment has reached around 60 students and the program appears to be highly successful as judged by student placement examples in the self-study. The department is considering approaches to increase student recruitment into the major by addressing the curricular gap between the first course (which occurs in the first year) and subsequent courses that begin in

year three. Another idea being considered is to invest greater efforts in further developing student clubs focused on topics related to economics.

The department offers a highly regarded M.S. in Applied Economics. Evidence from recent placements of its graduates show that it is successful in preparing students to pursue careers in business and government or to enter selective Ph.D. programs. There are no plans to add a Ph.D. option to the curricular offerings. The department was encouraged by the review teams to more actively recruit students in other undergraduate programs such as Mathematics, Engineering and Computer Sciences, Honors, and Statistics into the M.S. program.

ENROLLMENT										
DEGREE	MAJOR 1, 2, 2nd DEGREE	OPTION	CONC	2014	2015	2016	2017	2018`	2019	2020
BS	Agricultural Business	Agribusiness Management	AGBM	97	105	104	104	104	80	65
BS	Agricultural Business	Farm & Ranch Management	FARM	36	50	69	70	68	57	58
BS	Agricultural Business	No Concentration Identified				1				
BS	Economics	Economics	ECON	85	81	91	86	89	93	94
BS	Financial Engineering	Financial Engineering	EFIN	15	32	42	58	62	62	58
TOTAL UNDERGRADUATE ENROLLMENT:				***233***	***268***	***307***	***318***	***323***	***292***	***275***
MS	Applied Economics			20	16	16	14	16	15	18
TOTAL GRADUATE ENROLLMENT:				***20***	***16***	***16***	***14***	***16***	***15***	***18***
TOTAL ENROLLED:				***253***	***284***	***323***	***332***	***339***	***307***	***293***
	MINOR DESCRIPTION		CONC	2014	2015	2016	2017	2018`	2019	2020
	Agricultural Business		AGBU	9	7	6	8	10	11	21
	Economics		ECON	28	18	19	30	29	37	39
	Financial Engineering		EFIN		2	2	6	5	4	2
TOTAL MINOR ENROLLED:				***37***	***27***	***27***	***44***	***44***	***52***	***62***
AWARDED DEGREES										
DEGREE	MAJOR 1, 2, 2nd DEGREE	OPTION	CONC	2014	2015	2016	2017	2018	2019	2020
BS	Agricultural Business	No Concentration Identified		1			1			1
BS	Agricultural Business	Agribusiness Management	AGBM	18	16	16	17	21	24	18
BS	Agricultural Business	Farm & Ranch Management	FARM	9	8	4	6	9	12	14
BS	Economics			30	29	33	38	23	31	39
BS	Financial Engineering					2	2	10	6	12
TOTAL UNDERGRADUATE DEGREES AWARDED:				***58***	***53***	***55***	***64***	***63***	***73***	***84***
MS	Applied Economics			6	9	9	3	10	7	9
TOTAL GRADUATE DEGREES AWARDED:				***6***	***9***	***9***	***3***	***10***	***7***	***9***
TOTAL DEGREES AWARDED:				***64***	***62***	***64***	***67***	***73***	***80***	***93***

AWARDED MINORS										
	MINOR DESCRIPTION		CONC	2014	2015	2016	2017	2018	2019	2020
	Agricultural Business		AGBU	3	3	1		2		2
	Economics		ECON	10	12	11	7	17	20	18
	Economics Teaching		TECN	1			1			
	Financial Engineering		EFIN					1		
TOTAL MINORS AWARDED:				***14***	***15***	***12***	***8***	***20***	***20***	***20***

Gallatin College: Associate Degrees

- Associate of Arts
- Associate of Science

Decision(s) concerning the future of the program(s), based on the program review criteria established at the campus:

Gallatin College offers an Associate of Arts and an Associate of Science degree. Both degrees require the full MUS Core, as well as elective credits, for completion. **All degrees and options will be retained.**

Rationale or justification for the decision based on the program review process established at the campus. Include graduation numbers and student majors for each of the last seven (7) years for every program under review.

The review team included Dean Vicki Trier (City College, MSU-Billings), Professor Bridget Kevane (Modern Languages and Literature, MSU), and Associate Professor Brian Rossmann (Library, MSU).

The Gallatin College (GC) program review is focused on the Associate of Arts and an Associate of Science degrees offered by the college. This is the first time these degrees have been reviewed as part of the seven-year program review process. Gallatin College also offers coursework in dual enrollment and workforce readiness programs that have either been reviewed recently or are on an annual review and assessment cycle. The A.A. and A.S. degrees both require 60 credits of college-level credit for completion.

The program reviewers were very impressed with the overall quality of the Associate of Arts/Science degree programs. Significant strengths cited were the small class sizes and affordability, the positive relationships between staff/faculty and students, the student-centered curricula, and strong academic advising. The GC faculty are engaged and academically qualified with terminal doctoral and master's degrees as appropriate for their respective disciplines.

The reviewers recommended that GC purposely consider approaches to strengthen their partnerships with MSU departments in order to broaden course offerings in the A.A./A.S. degrees. It was also suggested by reviewers that a mechanism to track students that transfer to MSU after completing courses at GC be developed. This would allow them to better assess and quantify retention and graduation rates of GC transfers compared to the general MSU population. Gallatin College has expressed interested in actively marketing and recruiting from the growing LatinX community in the region. An assessment of how best to enhance and grow transfer pathways between MUS schools, and MSU departments, is under consideration.

An Associates of Science degree with a Pre-Healthcare concentration is currently under development as a new degree proposal. The reviewers recommended that marketing of this degree should convey that it is designed to prepare students for entry into other healthcare programs such as nursing (at MSU) or programs at other institutions in the MUS (surgical tech, radiologic technology, etc.).

ENROLLMENT								
DEGREE	MAJOR 1, 2, 2nd DEGREE	F2014	2015	2016	2017	2018	2019	2020
AA	Associate of Arts	67	69	58	56	80	81	73
AS	Associate of Science	45	92	103	99	145	130	137
TOTAL ASSOCIATE ENROLLMENT:		***112***	***161***	***161***	***155***	***225***	***211***	***210***
AWARDED DEGREES ASSOCIATE								
DEGREE	MAJOR 1, 2, 2nd DEGREE	2014	2015	2016	2017	2018	2019	2020
AA	Associate of Arts	4	12	21	21	19	22	31
AS	Associate of Science	3	17	20	26	38	38	41
TOTAL ASSOCIATE DEGREES AWARDED:		***7***	***29***	***41***	***47***	***57***	***60***	***72***

Department of Chemistry and Biochemistry *(GRANTED EXTENSION FROM 2019/20 AY)*

- BS Chemistry
- MS Biochemistry
- MS Chemistry
- PhD Biochemistry
- PhD Chemistry
- PhD Materials Science
- Minor Astrobiology
- Minor Biochemistry
- Minor Chemistry

Decision(s) concerning the future of the program(s), based on the program review criteria established at the campus:

The department offers undergraduate students the opportunity to major or minor in Chemistry with a Professional Option, Biochemistry Option, or a Teaching Option. Most graduate students are in the Ph.D. track. Of the 66 Ph.D. students, 30 are on track to earn a Ph.D. in Biochemistry and 36 are on track to earn a Ph.D. in Chemistry. In addition, the department is integral to interdisciplinary graduate programs in Materials Science. **All degrees and options will be retained**.

Rationale or justification for the decision based on the program review process established at the campus. Include graduation numbers and student majors for each of the last seven (7) years for every program under review.

The review team included Professor John Straub (Department of Chemistry, Boston University), Professor Matthew Fields, Department of Microbiology and Immunology, MSU), and Professor Jovanka Voyich (Department of Microbiology and Immunology, MSU).

The self-study identified several thoughtful and well-justified goals. The growth of the tenure-track faculty from 20 to 22 was a result of the increase of undergraduate student majors and a large service teaching contribution. Growth of the doctoral program to 90 graduate students is proposed to address a strategic goal of the university and help meet the significant demand of large and growing undergraduate enrollments. The chemistry department serves an essential role in a number of interdisciplinary initiatives. The department also provides resources through their core research facilities that represent an exceptional resource for research and student training.

The past decade has been transformative for the Department. Faculty turnover has occurred in the midst of enrollment growth withj active innovative new faculty hires who have expanded the Department's expertise, breadth, and interdisciplinary reach. With respect to undergraduate programs, the department will explore enhanced math training to increase student success as well as conducting exit interviews with graduates to further assess outcomes. At the graduate level, the review team suggested working to both expand the pool of graduate applicants and enhance the number of Ph.D. candidates admitted.

Overall, the Chemistry and Biochemistry department contributes to the strategic mission of MSU through education, research, and outreach. The quality of teaching and scholarship compares favorably with national programs. The recent growth of the undergraduate program, the delivery of quality core courses to the university, and strong graduate program and the faculty commitment to teaching, research and service are all acknowledged as a result of the program review.

ENROLLMENT										
DEGREE	MAJOR 1, 2, 2nd DEGREE	CONCENTRATION	CONC	2012	2013	2014	2015	2016	2017	2018
BS	Chemistry	Biochemistry	CHBC	81	99	88	89	89	114	141
BS	Chemistry	Chem-Professional	CHCP	39	33	39	43	42	34	37
BS	Chemistry	Teaching	CHCT	2	4	3	4	3	3	4
BS	Chemistry	Concentration not identified	CHBC	1	2	1	4		3	7
TOTAL UNDERGRADUATE ENROLLMENT:				***123***	***138***	***131***	***140***	***134***	***154***	***189***
MS	Biochemistry	Biochemistry	BCHM		2		2	1	1	1
MS	Chemistry	Chemistry	CHEM	1	3	3	4	5	1	2
PHD	Biochemistry	Biochemistry	BCHM	33	30	33	28	27	25	30
PHD	Chemistry	Chemistry	CHEM	42	45	42	33	34	37	36
PHD	Materials Science	Materials Science	MTSI			2	7	6	6	9
TOTAL GRADUATE ENROLLMENT:				***76***	***80***	***80***	***74***	***73***	***70***	***78***
TOTAL ENROLLED:				***199***	***218***	***211***	***214***	***207***	***224***	***267***
	MINOR DESCRIPTION		CONC	2012	2013	2014	2015	2016	2017	2018
	Astrobiology		ASBO	1	2	5	7	15	15	14
	Biochemistry		BCHM	3	5	6	2	2	5	7
	Chemistry		CHEM	4	5	2	8	12	10	13
TOTAL MINOR ENROLLED:				***8***	***12***	***13***	***17***	***29***	***30***	***34***
AWARDED DEGREES										
DEGREE	MAJOR	CONCENTRATION	CONC	2012	2013	2014	2015	2016	2017	2018
BS	Chemistry	Concentration not identified	CHBC							1
BS	Chemistry	Biochemistry	CHBC	15	10	21	9	12	22	16
BS	Chemistry	Chem-Professional	CHCP	2	15	4	4	8	9	5
BS	Chemistry	Teaching	CHCT		1		1	1		
MS	Biochemistry		BCHM	6	1	2	3	2	1	1
MS	Chemistry		CHEM	5	2	1		6	4	2
PHD	Biochemistry		BCHM	2	5	13	8	5	6	1
PHD	Chemistry		CHEM	4	1	2	12	9	6	8

TOTAL DEGREES AWARDED:				***34***	***35***	***43***	***37***	***43***	***48***	***34***
AWARDED MINORS										
	MINOR DESCRIPTION		CONC	2012	2013	2014	2015	2016	2017	2018
	Astrobiology		ASBO			2	1		5	5
	Biochemistry		BCHM	1	6	3	1	1	3	
	Chemistry		CHEM			1	2	2	2	1
TOTAL MINORS AWARDED:				***1***	***6***	***6***	***4***	***3***	***10***	***6***

Department of Animal and Range Science (*GRANTED EXTENSION FROM 2019/20 AY*)

- BS Animal Science
- BS Natural Resources and Rangeland Ecology
- BS Ranching Systems
- BS Sustainable Food and Bioenergy (Sustainable Livestock Production)
- MS Animal and Range Sciences
- PhD Animal and Range Sciences
- PhD Ecology and Environmental Sciences
- Minor Animal Science
- Minor Genetics
- Minor Natural Resources and Rangeland Ecology

Decision(s) concerning the future of the program(s), based on the program review criteria established at the campus:

The department offers three undergraduate degree programs (BS Animal Science with three options, and BS Natural Resources and Rangeland Ecology with two options, and a new B.S. program in ranching systems), and three graduate programs (MS and Ph.D.). **All degrees and options will be retained**.

Rationale or justification for the decision based on the program review process established at the campus. Include graduation numbers and student majors for each of the last seven (7) years for every program under review.

The review team included Professor Robert Collier (Animal and Comparative Sciences, The University of Arizona), Associate Professor Eric Belasco (Department of Agricultural Economics and Economics, MSU), Professor Diane Debinski (Department of Ecology, MSU), and Professor Jeff Heys (Department of Chemical and Biological Engineering, MSU).

A comprehensive review of the Department of Animal and Range Sciences was conducted in October 2020. The department identified valuable opportunities for updating their course offerings. Enrollment in undergraduate degree programs grew by 11 percent over the review period while graduate enrollments were flat over the same period. The internship program was frequently cited as a strength.

Graduate students are well-placed in desired career positions associated with their training, such as university professors and state and federal natural resource agencies. There was no shortage of jobs for graduates. The department was encouraged by reviewers to consider changes to graduate programs that could simplify the pursuit of graduate degrees by self-funded students. The current PhD program is poised for opportunities to grow and enhanced diversity.

Overall, the review committee was encouraged by improvements implemented by the department over the 7-year review period. For example, the department has implemented a rigorous process for assessment and continuous improvement of its degree programs. Graduates are highly regarded and sought after by many

employers. The department has excellent leadership, engaged faculty, a strong record of hiring high quality new faculty, well- prepared graduates, and modern, relevant laboratory facilities.

ENROLLMENT											
DEGREE	MAJOR 1, 2, 2nd DEGREE		CONC	2012	2013	2014	2015	2016	2017	2018	2019
BS	Animal Science	Equine Science	ASEQ	84	87	83	91	91	87	87	77
BS	Animal Science	Livestock Mgmt & Industry	ASLV	71	90	90	101	103	87	83	96
BS	Animal Science	Animal Science-Science	ASSE	71	68	69	73	99	83	103	107
BS	Nat Resource & Rnglnd Ecology	Rangeland Ecology/Mgmt	RGEM	53	42	33	37	41	38	33	35
BS	Nat Resources/Rangeland Ecol	Wildlife Habitat Ecol/Mgmt	WHEM	47	37	43	52	45	38	35	46
BS	Ranching Systems		RSMG								1
BS	Sustainable Food and Bioenergy	Sustainable Livestock Product	SFLP	3	3	3	4	5	5	6	3
TOTAL UNDERGRADUATE ENROLLMENT:				***329***	***327***	***321***	***358***	***384***	***338***	***347***	***365***
MS	Animal and Range Sciences	Animal and Range Sciences	ANRS	18	11	14	18	20	15	14	15
PHD	Animal and Range Sciences	Animal and Range Sciences	ANRS	3	5	5	5	6	7	6	3
PHD	Ecology & Environment Sciences	Ecology & Environment Sciences	ESEC				1	3	2	4	4
TOTAL GRADUATE ENROLLMENT:				***21***	***16***	***19***	***24***	***29***	***24***	***24***	***22***
TOTAL ENROLLED:				***350***	***343***	***340***	***382***	***413***	***362***	***371***	***387***
AWARDED DEGREES											
DEGREE	MAJOR	OPTION	CONC	2012	2013	2014	2015	2016	2017	2018	2019
BS	Animal Science	Equine Science	ASEQ	16	7	13	14	12	5	10	13
BS	Animal Science	Livestock Mgmt & Industry	ASLV	15	21	16	19	20	28	25	20
BS	Animal Science	Animal Science-Science	ASSE	15	9	25	23	12	21	16	17
BS	Nat Resources/Rangeland Ecol	Rangeland Ecology/Mgmt	RGEM	5	10	14	6	10	6	11	4
BS	Nat Resources/Rangeland Ecol	Wildlife Habitat Ecol/Mgmt	WHEM	8	14	6	8	4	12	9	12
BS	Sustainable Food and Bioenergy	Sustainable Livestock Product	SFLP		1	1	2				1
MS	Animal and Range Sciences	Animal and Range Sciences	ANRS	12	10	5	6	5	7	10	3
PHD	Animal and Range Sciences	Animal and Range Sciences	ANRS				1			1	1
PHD	Ecology & Environment Sciences	Ecology & Environment Sciences	ESEC								1
TOTAL DEGREES AWARDED:				***71***	***72***	***80***	***79***	***63***	***79***	***82***	***72***
AWARDED MINORS											
	MINOR DESCRIPTION		CONC	2012	2013	2014	2015	2016	2017	2018	2019
	Animal Science		ANS	5	5	8	5	1	3	2	2
	Genetics		GNTC	1	1	6	4	7	4	11	17
	Nat Resource & Rnglnd Ecology		NRRE		4	1		2	1	2	
TOTAL MINORS AWARDED:				***6***	***10***	***15***	***9***	***10***	***8***	***15***	***19***

Department of Plant Sciences/Plant Pathology (*GRANTED EXTENSION FROM 2019/20 AY)*

- BS Biotechnology
- BS Environmental Horticulture
- BS Plant Science
- BS Sustainable Food and Bioenergy
- MS Plant Pathology
- MS Plant Science
- PhD Plant Science
- Minor Environmental Horticulture Science
- Minor Genetics

Decision(s) concerning the future of the program(s), based on the program review criteria established at the campus:

The department offers 4 undergraduate degree programs (Plant Science, Environmental Horticulture, Biotechnology, Sustainable Food & Bioenergy Systems), two undergraduate minors (Environmental Horticulture Science, Genetics), and three graduate programs (MS and Ph.D. in Plant Sciences and MS in Plant Pathology). **All degrees and options will be retained**.

Rationale or justification for the decision based on the program review process established at the campus. Include graduation numbers and student majors for each of the last seven (7) years for every program under review.

The review team included Professor Richard T. Koenig (Department of Crop and Soil Sciences, Washington State University), Professor Robert K. D. Peterson (Department of Land Resources and Environmental Sciences, MSU), and Professor Andrew J. Hansen (Department of Ecology, MSU).

The Department of Plant Sciences and Plant Pathology (PSPP) is a relatively large, disciplinarily diverse department, yet to the credit of its faculty and staff it generally functions as a close, cohesive community where collaboration is commonplace. PSPP's teaching, research, and Extension are vital to Montana and the region because of its emphasis on crop species—and consequently a diverse group of external stakeholders strongly support the department. PSPP's teaching, research, and Extension programs have undergone a positive trajectory since its last review in 2012.

The faculty and staff have increased teaching and research productivity levels in recent years. The PSPP department continues to make efforts at setting goals that align with the strategic plan. These efforts led to changes in the department's academic programs, increased enrollment of undergraduate (129 to 165 over 7 years) and graduate students (23 to 35 over 7 years).

The department is working to bring efficiencies into its teaching programs, reevaluating degrees and degree options that have been declining in student interest, as well as exploring new opportunities for need-based professional degrees to increase graduate enrollment. The department has also worked with the Office of Academic Affairs since the review to develop improved program assessment practices.

The PSPP department will continue its efforts to meet the needs of the agriculture industry in the state through its strategic goals, continuous improvement of its teaching/research/outreach programs with input from external stakeholders, and faculty development (particularly for new faculty) to facilitate strong long-term partnerships with stakeholders.

ENROLLMENT										
DEGREE	MAJOR 1, 2, 2nd DEGREE	CONCENTRATION	CONC	2012	2013	2014	2015	2016	2017	2018
BS	Biotechnology	General	BTGL	18	17	14	9	12	8	5
BS	Biotechnology	Plant Systems	BTPL	2	4	4	3	6	11	10
BS	Environmental Horticulture	Environmental Hort Science	ENVH	37	35	44	40	40	42	49
BS	Environmental Horticulture	Landscape Design	ENHD	28	32	19	23	27	26	23
BS	Plant Science	Crop Science	PSCS	9	15	24	28	36	40	37
BS	Plant Science	Plant Biology	PSPB	7	6	9	13	12	18	21
BS	Sustainable Food and Bioenergy	Sustainable Crop Production	SFPS	28	26	25	26	17	22	20
TOTAL UNDERGRADUATE ENROLLED:				***129***	***135***	***139***	***142***	***150***	***167***	***165***
MS	Plant Pathology	Plant Pathology	PLPA		1	3	2	4	3	1
MS	Plant Science	Plant Science	PLNT	10	9	10	13	14	10	6
PHD	Plant Science	Plant Genetics	PLGN	7	7	6	4	8	13	14
PHD	Plant Science	Plant Pathology	PLPA	4	3	3	6	6	8	9
PHD	Plant Science	Plant Science	PLNT	2	2	2	2	3	3	3
TOTAL GRADUATES ENROLLED:				***23***	***22***	***24***	***27***	***35***	***37***	***33***
TOTAL ENROLLED:				***152***	***157***	***163***	***169***	***185***	***204***	***198***
MINOR	MINOR DESCRIPTION		CONC	2012	2013	2014	2015	2016	2017	2018
	Genetics		GNTC	5	16	19	17	24	35	42
TOTAL MINOR ENROLLED:				***5***	***16***	***19***	***17***	***24***	***35***	***42***
AWARDED DEGREES										
DEGREE	MAJOR	CONCENTRATION	CONC	2012	2013	2014	2015	2016	2017	2018
BS	Biotechnology	Plant Systems	BTPL	3	3	2			1	2
BS	Environmental Horticulture	Environmental Hort Science	ENVH	8	7	8	9	8	11	5

BS	Environmental Horticulture	Landscape Design	ENHD	8	3	12	4	2	6	8
BS	Plant Science	Crop Science	PSCS	2	2	4	4	5	5	18
BS	Plant Science	Plant Biology	PSPB	1	1	1	4	1	3	
BS	Sustainable Food and Bioenergy	Sustainable Crop Production	SFPS	2	5	5	7	9	1	3
MS	Plant Pathology	Plant Pathology	PLPA						2	1
MS	Plant Science	Plant Science	PLNT	1	2	3	5	4	5	2
PHD	Plant Science	Plant Science	PLNT			1	1			
PHD	Plant Science	Plant Genetics	PLGN	2			7	1		1
PHD	Plant Science	Plant Pathology	PLPA						1	1
TOTAL DEGREES AWARDED:				***27***	***23***	***36***	***41***	***30***	***35***	***41***
AWARDED MINORS										
	MINOR DESCRIPTION		CONC	2012	2013	2014	2015	2016	2017	2018
	Environmental Horticulture Sci		ENHO	2	1	7	1	5	7	4
	Genetics		GNTC	1	1	6	4	7	4	11
TOTAL MINORS AWARDED:				***3***	***2***	***13***	***5***	***12***	***11***	***15***