Delaware Department of Education
Appendix: Labor Market Information (LMI) Review
Delaware CTE Program of Study Application

Table 1: LEA Information

(see instructions on page 2, LMI Instructions & Guidance Document)

Career Cluster:	Agriculture, Food, and Natural Resources
Career Pathway:	Animal Systems
CTE Program of Study:	*Animal Science and Management*
High School and LEA Name:	
County:	

Table 2: Labor Market Information (LMI) Benchmarks by Geographic Region

(see instructions on page 2, LMI Instructions & Guidance Document)

Region	Employment 2016	Employment Change 2014–24	Employment Growth 2014–24	Avg. Wage 2016
United States	140,400,040	9,788,900	6.5%	$49,630
Delaware	440,760	37,150	8.1%	$50,930
District of Columbia	702,380	46,040	6.0%	$80,950
Maryland	2,640,900	504,540	18.2%	$56,120
New Jersey	3,955,350	275,310	6.5%	$56,030
Pennsylvania	5,747,020	345,920	5.7%	$47,540
Virginia	3,760,550	368,050	9.3%	$53,090

Cluster Code	Cluster/Pathway Title	Middle Skill	High Skill	High Wage	High Demand	Employment 2016	Employment Change 2014-2024	Employment Growth 2014-2024	Average Wage 2016
	Table 3: LMI by Career Cluster & Pathway *(see instructions on page 4, LMI Instructions & Guidance Document)*						**2012-2022**		
1	**Agriculture, Food, and Natural Resources**	**X**				**3533**	**46**	**0.5%**	**$57,142**
	Rank Select Career Cluster by the Following Categories ->					*(15 out of 16)*	*(16 out of 16)*	*(16 out of 16)*	*(6 out of 16)*
1.03	Animal Systems					910	55	2.6%	$23,330
	Rank Select Career Pathway by the Following Categories ->					*(2 out of 7)*	*(2 out of 7)*	*(3 out of 7)*	*(6 out of 7)*
1.03	Animal Systems – Mid-Atlantic States					25,150	3,440	10.4%	$25,419
1.03	Animal Systems – United States					226,770	14,800	3.4%	$25,429
1.01	Food Products and Processing Systems	X		X		225	-19	-6.7%	$34,382
1.02	Plant Systems		X			367	-103	-5.9%	$41,955
1.04	Power, Structural & Technical Systems	X				154	26	6.0%	$35,704
1.05	Natural Resources Systems	X	X	X		422	-15	-2.0%	$193,276
1.06	Environmental Service Systems	X		X		1549	109	8.0%	$46,903
1.07	Agribusiness Systems	X					-7	-.02%	

Table 3: LMI by Career Cluster & Pathway (Questions/Analysis)

(see instructions on page 5, LMI Instructions & Guidance Document)

1. How does the employment, the employment change, the employment growth rate, and the average wage for the identified career cluster compare to LMI for other clusters in the State of Delaware? Is the career cluster rated as high wage and high demand?

   The Agriculture, Food, and Natural Resources Career Clusters rank in the top six (6) for average wage. The career cluster rating is Middle Skill.

2. How does the employment, the employment change, the employment growth rate, and the average wage for the identified career pathway compare to LMI at the cluster level? How does the identified pathway level LMI in Delaware compare to the pathway level LMI in the Mid-

Atlantic and/or the United States? How does the identified pathway level LMI in Delaware compare to the other pathway level LMI in Delaware?

Employment growth rate is significantly higher at the career pathway level than at the cluster level, while the employment and average wage are lower. Salaries, employment growth, and change in employment increase as you move out of the state of Delaware and into the Mid-Atlantic and larger United States region. Related pathways have lower wage potential, but show slightly higher employment, employment change and employment growth numbers within the state of Delaware.

Table 4: LMI by Standard Occupation Code (SOC)
(see instructions on page 6, LMI Instructions & Guidance Document)

SOC Code	Occupation Title	Middle Skill	High Skill	High Wage	High Demand	Employment 2015	Employment Change 2014-2024	Employment Growth 2014-2024	Average Wage 2015
19-1011	*Animal Scientist*		X			70	+10	5.6%	$37,750
19-1012	*Food Scientist + Technologist*		X			70	+10	5.6%	$34,120
19-1023	*Zoologist + Wildlife Biologist*	X				1	1	1%	$40,000
25-1041	*Agriculture Sciences Teacher*		X						
11-9013	*Aquaculture Managers*	X				3140	-10	2%	$37,750
19-4011.01	*Ag & Food Science Tech*	X				70	10	5.6%	N/A
19-4021	*Biological Technicians*		x	X		90		0%	$43,300
29-1131	*Veterinarians*		x	X		290	10	5.6%	$94,440
29-2056	*Vet Tech and Technicians*	x			X	420	60	14.3%	$28,950
19-1029	*Biologist*		x			220	220	2.3%	$82,460

Column header: 2012-2022 spans Employment 2015, Employment Change 2014-2024, Employment Growth 2014-2024, Average Wage 2015.

Table 4: LMI by Standard Occupation Code (SOC) (Questions/Analysis)
(see instructions on page 7, LMI Instructions & Guidance Document)

3. How closely related to the program of study are the identified occupations (SOCs)?

The Animal Science & Management program is a three (3) course hands-on program of study that includes topics covering animal production and management, physical restraint and handling, conducting health exams, evaluation of behavior, principles of genetics and reproduction, animal selection through evaluation, anatomy and physiology, animal nutrition, basic veterinary practices, global food systems, ethics of

food animal production, and current agricultural issues in order to foster an understanding of the steps involved in producing and marketing products for consumers. Students will hone their decision-making and research skills through classroom instruction, laboratory activities, and practical experiences. The program prepares students for a variety of careers including agribusiness, agriscience education, animal genetics, animal nutrition, animal reproduction, extension educator, marine biology, wildlife biology, veterinary medicine, zoology, animal researcher, animal processor, production manager, artificial insemination technician, animal breeder, veterinary assistant/technician, wildlife manager, zoo animal specialist, animal rescue/animal control officer, and producer. The SOCs listed in table 4 are directly related to the program of study.

4. Are there adequate state-level projected job openings or employment growth projections at the occupation level to justify starting a new program of study? Do the occupations related to the program of study rank as high skill, high wage and/or high demand?

   The number of job openings projected for the cluster and pathway as well as the related SOCs will support an animal science program of study. All related SOCs and the cluster and pathway are rated as either middle skill, high skill, or high wage.

Table 5: LMI Supply Indicators by Secondary & Post-Secondary Levels *(see instructions on page 8, LMI Instructions & Guidance Document)*			Program Completion/Enrollment			
Program Code (CIP)	**Program (CIP) Title**	**School**	**2012-13**	**2013-14**	**2014-15**	**2015-16**
Total Secondary Programs of Study			2634	3266	3553	3135
1.03301	Animal Systems	Appoquinimink High School/Appoquinimink	171	214	199	198
1.03301	Animal Systems	Middletown High School/Appoquinimink	152	202	195	219
1.03301	Animal Systems	Caesar Rodney High School/Caesar Rodney	237	229	233	278
1.03301	Animal Systems	Cape Henlopen High School/Cape Henlopen	300	288	310	288
1.03301	Animal Systems	Dover High School/Capital	52	158	175	140
1.03301	Animal Systems	Christiana High School/Christina	178	212	241	213
1.03301	Animal Systems	Glasgow High School/Christina	219	293	434	133
1.03301	Animal Systems	Newark High School/Christina	155	193	188	179

1.03301	Animal Systems	Penn High School/Colonial	0	0	75	66
1.03301	Animal Systems	Delmar High School/Delmar	39	145	144	137
1.03301	Animal Systems	Indian River High School/Indian River	167	181	144	167
1.03301	Animal Systems	Sussex Central High School/Indian River	224	232	288	236
1.03301	Animal Systems	Lake Forest High School/Lake Forest	135	145	147	122
1.03301	Animal Systems	Milford High School/Milford	196	230	243	221
1.03301	Animal Systems	McKean High School/Red Clay	175	163	187	163
1.03301	Animal Systems	Conrad School of Science/Red Clay	97	98	105	89
1.03301	Animal Systems	Seaford High School	0	0	59	50
1.03301	Animal Systems	Smyrna High School/Smyrna	120	169	127	133
1.03301	Animal Systems	Woodbridge High School/Woodbridge	17	114	118	103
Total Post-Secondary Programs of Study			247	264	248	291
1.0301	Agricultural Production Operations, General	DTCC	10	8	6	13
1.0000	Agriculture, General	University of Delaware	20	14	19	9
1.0000	Agriculture, General	Delaware State University	19	21	15	24
1.0901	Animal Sciences, General	University of Delaware	25	41	31	29
1.1001	Food Science	University of Delaware	8	5	12	8
41.0101	Biology Technician/Biology Lab Tech	DTCC	6	6	3	7
51.0808	Veterinary/Animal Health Tech/Vet Assistant	DTCC	11	14	6	13
26.0101	Biology/Biological Sciences	DTCC	6	12	10	17
26.0101	Biology/Biological Sciences	University of Delaware	133	122	124	137
26.0101	Biology/Biological Sciences	Delaware State University	6	20	17	31
26.0101	Biology/Biological Sciences	Wesley College	3	1	5	3

Table 5: LMI Supply Indicators by Secondary & Post-Secondary Levels (Questions/Analysis)

(see instructions on page 9, LMI Instructions & Guidance Document)

5. How is the secondary program of study articulated to or in any way related to the identified post-secondary program(s)?

    The animal science and management program of study is a broad program that connects to various two- and four- year institutions of higher education. Specifically, the animal science and management program of study prepares students for related study in agribusiness, agriscience education, animal genetics, animal nutrition, animal reproduction, extension educator, marine biology, wildlife biology, veterinary medicine, zoology, animal processing, production management, artificial insemination, animal breeding, wildlife management, and animal rescue/animal control as well as animal science post-secondary programs.

6. How does the annual completion data at the secondary and post-secondary level compare to the projected career pathway-related projected job openings in Table 4?

    As illustrated by the number of enrolled students, there is high interest in animal science programs at the postsecondary level. Therefore, an animal science and management program of study at the secondary level will better prepare students with the skills and knowledge to enter post-secondary programs. This work will lead to students achieving articulated credit while in high school and lessening the amount of time required to enter the workforce.

Table 6: Other LMI Data Including Real-Time LMI (Questions/Analysis)

(see instructions on page 10, LMI Instructions & Guidance Document)

7. Are there additional LMI data (demand & supply) at the local, county, state, or Mid-Atlantic region that support starting a new program of study in this pathway? This includes additional occupations for which there is not an SOC, any other analysis of LMI data, and any additional information on demand & supply factors that influence employment which can include real-time labor market information.