

**UNIVERSITY OF WISCONSIN SYSTEM
DEMONSTRATING THE ALIGNMENT OF THE UNIVERSITY
OF WISCONSIN SYSTEM ACADEMIC ARRAY WITH THE
WORKFORCE NEEDS OF WISCONSIN**

A Presentation to the Board of Regents

University of Wisconsin System

By

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February 2, 2017

INTRODUCTION

Meeting the state of Wisconsin's workforce needs is essential for the economic prosperity of its people. This report demonstrates how the University of Wisconsin System's academic array aligns with the workforce needs of the state.

The report uses projected average annual job openings in the state of Wisconsin due to both economic growth and the replacement of current employees as a proxy for future workforce needs. These projected annual openings are assessed for occupations typically requiring associate, baccalaureate, master's, and doctorate/professional degrees. The report then demonstrates how the UW System academic array aligns with the state's workforce needs while concurrently fulfilling its mission to "develop human resources, to discover and disseminate knowledge, to extend knowledge and its application beyond the boundaries of its campuses, and to serve and stimulate society by developing in students heightened intellectual, cultural, humane sensitivities, scientific, professional and technological expertise, and a sense of purpose."

PROJECTED AVERAGE ANNUAL JOB OPENINGS

This report utilized data published by the Wisconsin Department of Workforce Development (WDWD) in 2014 on the projected average annual job openings due to growth in the economy and the replacement of existing employees for the period 2012 through 2022. At the time of this analysis, it was the most extensive and detailed data available.

According to the WDWD data, total employment for all occupations was expected to grow from 3,051,328 to 3,269,173 between 2012 and 2022. This represents the addition of 217,845 jobs over the period – an increase of 7.14 percent.

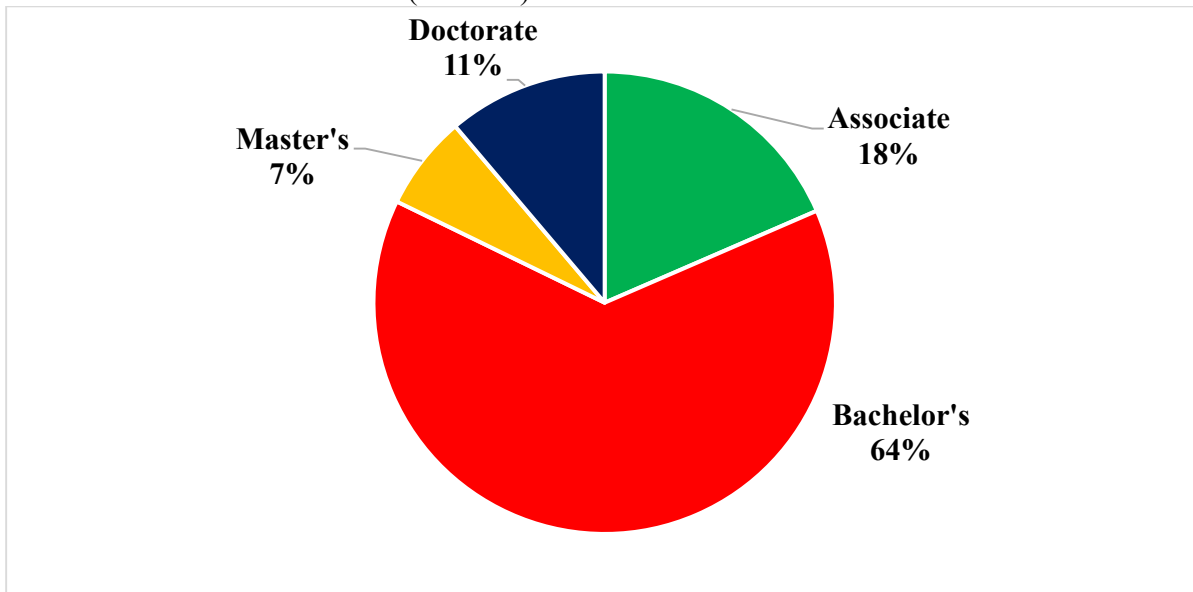
Closer analysis of these employment openings reveals that the Wisconsin economy will need 21,389 persons each year with associate, baccalaureate, master's, and doctorate/professional degrees to fill positions until 2022. For jobs requiring a bachelor's degree, the total average annual job openings were projected at 13,629. Annual openings for

occupations requiring master’s and doctoral/professional degrees were projected at 1,413 and 2,392 respectively. Table 1 shows these projections. Figure 1 shows the distribution of the degrees required to fill the identified occupations.

Table 1: 2012-22 projected average annual openings in Wisconsin for selected occupations requiring college degrees, according to the WDWD

Typical Education Required for Entry	Openings Due to		Total
	Growth	Replacement	
Associate ¹	1,485	2,470	3,955
Bachelor's	3,877	9,752	13,629
Master's	470	943	1,413
Doctorate/Professional	946	1,446	2,392
Totals	6,778	14,611	21,389

Figure 1: Distribution of degrees required for the projected average annual job openings for Wisconsin in 2012-22 (WDWD)

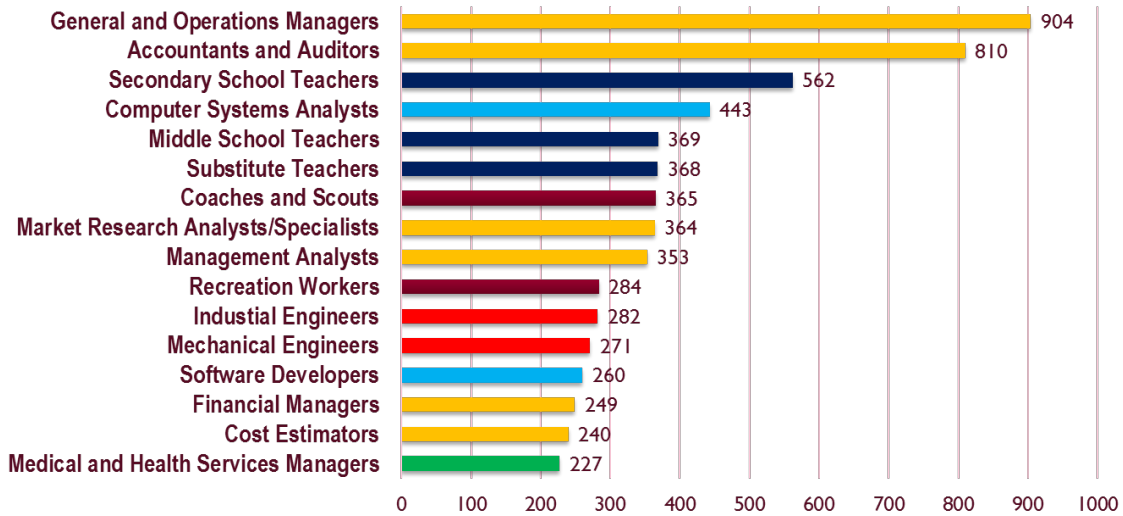


Additional Analysis of the Projected Average Annual Job Openings by Required Degree¹

Analysis of the WDWD data reveals that 155 of the projected occupations require a bachelor’s degree (see Appendix B). The top 16 projected employment opportunities requiring a bachelor’s degree, identified in Figure 2, account for 6,351, or 47%, of the openings each year for the period 2012-2022. Within this array, 46% are business or management related, 20% are in the field of education, 11% are computer science related and 9% are in the engineering field.

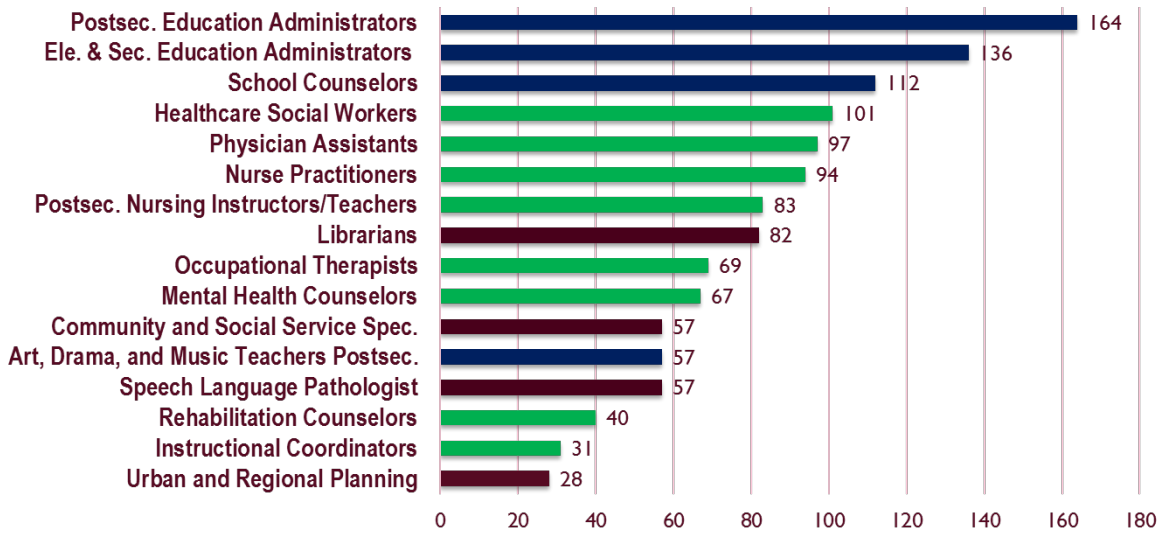
¹ We did not analyze the WDWD data for those occupations needing an associate degree because the data did not provide enough distinctions among the UW System type associate degrees and the Wisconsin Technical College types of associate degrees.

Figure 2: Top projected annual job openings in Wisconsin requiring bachelor's degrees



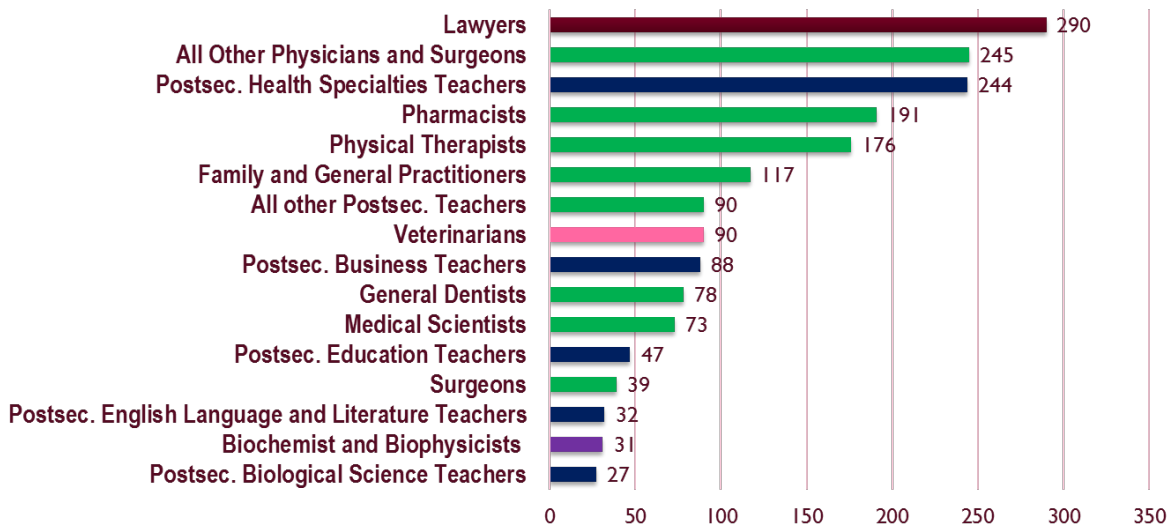
Further analysis of the WDWD data indicates that 35 of the projected in-demand occupations will require a master's degree (see Appendix C). The top 16 projected employment opportunities requiring a master's degree are identified in Figure 3, accounting for 90% of the projected openings. Almost half, 46%, of these job opportunities are projected in the health care field while 37% are in the education field.

Figure 3: Top projected annual job openings in Wisconsin requiring master's degrees



Sixty-one of the projected occupations, according to the WDWD data, will require a doctorate or professional degree (see Appendix D). This means of the top 16 projected employment opportunities, 1,858 or 78%, require one of these degrees (see Figure 4). As illustrated, the distribution of these occupations is: 54% health care, 24% education, 16% lawyers, and 5% veterinarians.

Figure 4: Top projected job openings in Wisconsin requiring doctorates/professional degrees



Alignment of the UW System Academic Array with Wisconsin’s Workforce Needs

A breakdown of the 2015-16 UW System academic array indicates that 26% (326 programs) were STEM-related, 9% (117 programs) were in the health fields, 11% (133 programs) were related to education, and 9% (116 programs) were business-related. Forecasts, based on data already submitted by the institutions, for growth in programs within each of these fields aligns with projected workforce demands: STEM – 18%; health – 18%; education – 6%; and business – 3%. In fact, growth has occurred in each of these fields since the 2007-08 academic year. Specifically, the total number of forecasted program changes, based on data submitted at this time, indicates STEM-related programs will increase to 344 and the total number of programs in the health fields will rise to 135. The total number of projected business programs will increase to 119 while the total number of education programs will rise to 139. Figure 5 displays these data.

Figure 5: Existing STEM, Health, Business, Education programs and forecasts



As shown by the data, the 2015-16 and forecasted UW System academic arrays are aligned with the 2012-2022 WDWD projected employment openings requiring a bachelor's, master's, or doctoral/professional degree (see Appendix E, Appendix F, and Appendix G). (Note: The UW System academic array does not include a degree in General Dentistry.)

Appendix H contains the Program Planning, Review, and Array Management 2015-16 Annual Report.

TAKEAWAYS

1. The UW System academic array is aligned with the projected workforce needs of Wisconsin that will require a bachelor's, master's, or doctoral/professional degree.
2. More than one-third of the UW System academic array are STEM- or health-related programs, which are among the key occupations projected to be needed for the workforce.
3. The UW System provides students with the educational programs that prepare them for a variety of endeavors in life.
4. The academic degree program planning process ensures the relevance of the UW System's offerings to workforce needs, student demand, societal needs.

Special Thanks

<u>Name</u>	<u>Role</u>	<u>Office</u>
Dr. James Henderson	Vice President	ASA
Dr. Barbara Bales	Director of Educational Innovation	APEI
Dr. D. A. Dirks	Senior Academic Planner	APEI
Ms. Yufeng Duan	Senior Institutional Planner	OPAR
Dr. Carmen Faymonville	Former Director of Academic and Faculty Policies	ASA
Dr. Christine Navia	Senior Academic Planner	APEI
Dr. Diane Treis Rusk	Director of Undergraduate Education	APEI
Ms. Ann Fisher	Program Associate	APEI
Provosts and their staffs		All institutions

APPENDIX A

Projections for average annual openings for selected occupations in Wisconsin in 2012-22 requiring an associate degree

	SOC* Code	Occupation Classification Title	Openings Due to		Total
			Growth	Replacements	
1	291141	Registered Nurses	794	1,124	1,918
2	292021	Dental Hygienists	106	118	224
3	252011	Preschool Teachers, Except Special Education	0	220	220
4	232011	Paralegals and Legal Assistants	78	59	137
5	292034	Radiologic Technologists	78	59	137
6	292012	Medical and Clinical Laboratory Technicians	63	67	130
7	151152	Computer Network Support Specialists	0	75	75
8	151134	Web Developers	29	44	73
9	292056	Veterinary Technologists and Technicians	51	18	69
10	194011	Agricultural and Food Science Technicians	4	59	63
11	292031	Cardiovascular Technologists and Technicians	38	20	58
12	292032	Diagnostic Medical Sonographers	43	15	58
13	173023	Electrical and Electronics Engineering Technicians	1	54	55
14	194099	Life, Physical, and Social Science Technicians, All Other	8	46	54
15	291126	Respiratory Therapists	25	29	54
16	312021	Physical Therapist Assistants	23	31	54
17	499062	Medical Equipment Repairers	22	28	50
18	173026	Industrial Engineering Technicians	8	41	49
19	173013	Mechanical Drafters	0	41	41

	SOC* Code	Occupation Classification Title	Openings Due to		Total
			Growth	Replacements	
20	194031	Chemical Technicians	14	26	40
21	312011	Occupational Therapy Assistants	14	23	37
22	194091	Environmental Science and Protection Technicians, Including Health	6	28	34
23	194093	Forest and Conservation Technicians	3	28	31
24	173027	Mechanical Engineering Technicians	7	23	30
25	173022	Civil Engineering Technicians	0	28	28
26	274012	Broadcast Technicians	10	17	27
27	173029	Engineering Technicians, Except Drafters, All Other	4	22	26
28	394031	Morticians, Undertakers, and Funeral Directors	5	15	20
29	173011	Architectural and Civil Drafters	0	19	19
30	194061	Social Science Research Assistants	5	12	17
31	291124	Radiation Therapists	8	8	16
32	292035	Magnetic Resonance Imaging Technologists	8	7	15
33	173012	Electrical and Electronics Drafters	2	10	12
34	173019	Drafters, All Other	5	7	12
35	492021	Radio, Cellular, and Tower Equipment Installers and Repairs	4	7	11
36	292033	Nuclear Medicine Technologists	5	4	9
37	532021	Air Traffic Controllers	1	8	9
38	292051	Dietetic Technicians	3	5	8
39	439031	Desktop Publishers	0	8	8
40	173024	Electro Mechanical Technicians	1	6	7
41	173025	Environmental Engineering Technicians	2	5	7

	SOC* Code	Occupation Classification Title	Openings Due to		Total
			Growth	Replacements	
42	492091	Avionics Technicians	4	2	6
43	292054	Respiratory Therapy Technicians	2	2	4
44	119061	Funeral Service Managers	1	2	3

* Standard Occupational Classification (SOC)

Source: WDWD

APPENDIX B

Projections for average annual openings for selected occupations in Wisconsin in 2012-22 requiring a bachelor's degree

	SOC* Code	Occupation Classification Title	Openings Due to		Total
			Growth	Replacements	
1	111021	General and Operations Managers	283	621	904
2	132011	Accountants and Auditors	161	649	810
3	252031	Secondary School Teachers, Except Special and Career/Technical Education	29	533	562
4	151121	Computer Systems Analysts	259	184	443
5	252022	Middle School Teachers, Except Special and Career/Technical Education	99	270	369
6	253098	Substitute Teachers	58	310	368
7	272022	Coaches and Scouts	96	269	365
8	131161	Market Research Analysts and Marketing Specialists	240	124	364
9	131111	Management Analysts	164	189	353
10	399032	Recreation Workers	113	171	284
11	172112	Industrial Engineers	66	216	282
12	172141	Mechanical Engineers	14	257	271
13	151132	Software Developers, Applications	136	124	260
14	113031	Financial Managers	72	177	249
15	131051	Cost Estimators	78	162	240
16	119111	Medical and Health Services Managers	89	138	227
17	151131	Computer Programmers	15	207	222
18	112022	Sales Managers	50	155	205
19	271024	Graphic Designers	37	165	202

	SOC* Code	Occupation Classification Title	Openings Due to		Total
			Growth	Replacements	
20	131075	Labor Relations Specialists	0	196	196
21	131071	Human Resources Specialists	26	165	191
22	172051	Civil Engineers	64	118	182
23	113021	Computer and Information Systems Managers	87	91	178
24	119021	Construction Managers	80	86	166
25	111011	Chief Executives	23	142	165
26	273031	Public Relations Specialists	59	96	155
27	132051	Financial Analysts	53	100	153
28	132052	Personal Financial Advisors	86	67	153
29	151142	Network and Computer Systems Administrators	36	115	151
30	131151	Training and Development Specialists	53	93	146
31	132072	Loan Officers	23	115	138
32	113011	Administrative Services Managers	49	86	135
33	413031	Securities, Commodities, and Financial Services Sales Agents	27	103	130
34	131041	Compliance Officers	40	86	126
35	113051	Industrial Production Managers	17	106	123
36	112021	Marketing Managers	37	83	120
37	414011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	28	85	113
38	113121	Human Resources Managers	38	73	111
39	292011	Medical and Clinical Laboratory Technologists	29	80	109

	SOC* Code	Occupation Classification Title	Openings Due to		Total
			Growth	Replacements	
40	252012	Kindergarten Teachers, Except Special Education	22	81	103
41	211021	Child, Family, and School Social Workers	16	86	102
42	273091	Interpreters and Translators	78	24	102
43	132053	Insurance Underwriters	0	92	92
44	172071	Electrical Engineers	4	87	91
45	119041	Architectural and Engineering Managers	17	73	90
46	131121	Meeting, Convention, and Event Planners	62	26	88
47	152031	Operations Research Analysts	42	42	84
48	119151	Social and Community Service Managers	16	62	78
49	151133	Software Developers, Systems Software	40	36	76
50	194021	Biological Technicians	19	50	69
51	253099	Teachers and Instructors, All Other	11	58	69
52	172199	Engineers, All Other	14	52	66
53	252052	Special Education Teachers, Kindergarten and Elementary School	4	60	64
54	273043	Writers and Authors	16	48	64
55	151143	Computer Network Architects	19	42	61
56	131081	Logisticians	39	21	60
57	251191	Graduate Teaching Assistants	17	43	60
58	151141	Database Administrators	20	37	57
59	151122	Information Security Analysts	35	21	56
60	111031	Legislators	7	48	55
61	191012	Food Scientists and Technologists	19	36	55
62	211091	Health Educators	18	36	54

	SOC* Code	Occupation Classification Title	Openings Due to		Total
			Growth	Replacements	
63	192031	Chemists	16	36	52
64	251194	Vocational Education Teachers, Postsecondary	17	33	50
65	113061	Purchasing Managers	11	38	49
66	252032	Career/Technical Education Teachers, Secondary School	2	45	47
67	131141	Compensation, Benefits, and Job Analysis Specialists	8	38	46
68	192041	Environmental Scientists and Specialists, Including Health	13	33	46
69	211023	Mental Health and Substance Abuse Social Workers	12	34	46
70	171011	Architects, Except Landscape and Naval	10	35	45
71	273042	Technical Writers	7	38	45
72	132041	Credit Analysts	8	36	44
73	252054	Special Education Teachers, Secondary School	1	41	42
74	152011	Actuaries	21	20	41
75	172072	Electronics Engineers, Except Computer	5	36	41
76	299099	Healthcare Practitioners and Technical Workers, All Other	14	27	41
77	271011	Art Directors	7	33	40
78	272012	Producers and Directors	6	34	40
79	273041	Editors	0	40	40
80	211092	Probation Officers and Correctional Treatment Specialists	1	37	38
81	271014	Multimedia Artists and Animators	15	23	38
82	112031	Public Relations and Fundraising Managers	10	27	37

	SOC* Code	Occupation Classification Title	Openings Due to		Total
			Growth	Replacements	
83	131131	Fundraisers	12	25	37
84	291031	Dietitians and Nutritionists	18	19	37
85	253011	Adult Basic and Secondary Education and Literacy Teachers and Instructors	7	29	36
86	272041	Music Directors and Composers	0	36	36
87	273011	Radio and Television Announcers	10	26	36
88	299011	Occupational Health and Safety Specialists	6	28	34
89	271025	Interior Designers	7	26	33
90	252053	Special Education Teachers, Middle School	2	30	32
91	291129	Therapists, All Other	20	11	31
92	132031	Budget Analysts	5	24	29
93	271021	Commercial and Industrial Designers	5	23	28
94	299091	Athletic Trainers	11	17	28
95	191031	Conservation Scientists	3	24	27
96	273022	Reporters and Correspondents	0	27	27
97	113131	Training and Development Managers	7	19	26
98	119031	Education Administrators, Preschool and Childcare Center/Program	0	26	26
99	119039	Education Administrators, All Other	7	19	26
100	191013	Soil and Plant Scientists	4	22	26
101	172081	Environmental Engineers	6	19	25
102	212011	Clergy	10	15	25
103	132021	Appraisers and Assessors of Real Estate	12	12	24

	SOC* Code	Occupation Classification Title	Openings Due to		Total
			Growth	Replacements	
104	191032	Foresters	4	20	24
105	112011	Advertising and Promotions Managers	3	20	23
106	419031	Sales Engineers	0	21	21
107	452011	Agricultural Inspectors	1	20	21
108	172061	Computer Hardware Engineers	6	13	19
109	191022	Microbiologists	5	14	19
110	119121	Natural Sciences Managers	4	14	18
111	132099	Financial Specialists, All Other	7	11	18
112	172131	Materials Engineers	1	17	18
113	211029	Social Workers, All Other	0	18	18
114	132081	Tax Examiners and Collectors, and Revenue Agents	0	17	17
115	191029	Biological Scientists, All Other	1	16	17
116	113111	Compensation and Benefits Managers	2	14	16
117	171022	Surveyors	0	16	16
118	132061	Financial Examiners	2	11	13
119	191023	Zoologists and Wildlife Biologists	1	12	13
120	172041	Chemical Engineers	2	10	12
121	172111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	3	9	12
122	171012	Landscape Architects	4	7	11
123	252059	Special Education Teachers, All Others	2	9	11
124	271029	Designers, All Others	1	10	11
125	132071	Credit Counselors	3	7	10

	SOC* Code	Occupation Classification Title	Openings Due to		Total
			Growth	Replacements	
126	192042	Geoscientists, Except Hydrologists and Geographers	3	7	10
127	259099	Education, Training, and Library Workers, All Other	3	7	10
128	172031	Biomedical Engineers	4	5	9
129	193099	Social Scientists and Related Workers, All Other	2	7	9
130	535021	Captains, Mates, and Pilots of Water Vessels	2	7	9
131	171021	Cartographers and Photogrammetrists	2	6	8
132	192099	Physical Scientists, All Other	2	6	8
133	271022	Fashion Designers	3	5	8
134	291125	Recreational Therapists	1	7	8
135	192021	Atmospheric and Space Scientists	2	5	7
136	274031	Camera Operators, Television, Video, and Motion Picture	4	3	7
137	131011	Agents and Business Managers of Artists, Performers, and Athletes	0	6	6
138	194092	Forensic Science Technicians	0	6	6
139	231022	Arbitrators, Mediators, and Conciliators	2	3	5
140	439081	Proofreaders and Copy Markers	1	4	5
141	172161	Nuclear Engineers	0	4	4
142	254013	Museum Technicians and Conservators	1	3	4
143	274032	Film and Video Editors	2	2	4
144	291128	Exercise Physiologists	1	3	4
145	439111	Statistical Assistants	1	3	4

	SOC* Code	Occupation Classification Title	Openings Due to		Total
			Growth	Replacements	
146	119161	Emergency Management Directors	1	2	3
147	172121	Marine Engineers and Naval Architects	1	2	3
148	271027	Set and Exhibit Designers	0	3	3
149	532011	Airline Pilots, Copilots, and Flight Engineers	0	3	3
150	152091	Mathematical Technicians	1	1	2
151	172021	Agricultural Engineers	0	2	2
152	259011	Audio Visual and Multimedia Collections Specialists	0	2	2
153	273021	Broadcast News Analysts	0	2	2
154	172011	Aerospace Engineers	1	0	1
155	191099	Life Scientists, All Other	0	1	1
Total			3,877	9,752	13,629

* Standard Occupational Classification (SOC)

Source: WDWD

APPENDIX C

Average annual openings for selected occupations in Wisconsin in 2012-22 requiring a master's degree

	SOC* Code	Occupation Classification Title	Openings Due to		Total
			Growth	Replacements	
1	119033	Education Administrators, Postsecondary	46	118	164
2	119032	Education Administrators, Elementary and Secondary School	8	128	136
3	211012	Educational, Guidance, School, and Vocational Counselors	22	90	112
4	211022	Healthcare Social Workers	36	65	101
5	291071	Physician Assistants	65	32	97
6	291171	Nurse Practitioners	56	38	94
7	251072	Nursing Instructors and Teachers, Postsecondary	55	28	83
8	254021	Librarians	13	69	82
9	291122	Occupational Therapists	28	41	69
10	211014	Mental Health Counselors	23	44	67
11	211099	Community and Social Service Specialists, All Other	8	49	57
12	251121	Art, Drama, and Music Teachers, Postsecondary	25	32	57
13	291127	Speech Language Pathologists	12	45	57
14	211015	Rehabilitation Counselors	2	38	40
15	259031	Instructional Coordinators	13	18	31
16	193051	Urban and Regional Planners	2	26	28
17	211019	Counselors, All Other	7	13	20
18	291151	Nurse Anesthetists	10	9	19
19	152041	Statisticians	6	9	15
20	211013	Marriage and Family Therapists	4	11	15
21	193011	Economists	5	7	12

	SOC* Code	Occupation Classification Title	Openings Due to		Total
			Growth	Replacements	
22	254012	Curators	3	5	8
23	292091	Orthotists and Prosthetists	6	2	8
24	192043	Hydrologists	1	5	6
25	193039	Psychologists, All Other	1	4	5
26	193091	Anthropologists and Archeologists	2	2	4
27	251192	Home Economics Teachers, Postsecondary	1	3	4
28	254011	Archivists	2	2	4
29	259021	Farm and Home Management Advisors	2	2	4
30	291161	Nurse Midwives	2	2	4
31	193022	Survey Researchers	2	1	3
32	193041	Sociologists	1	2	3
33	299092	Genetic Counselors	1	1	2
34	191041	Epidemiologists	0	1	1
35	193093	Historians	0	1	1
Total			470	943	1,413

* Standard Occupational Classification (SOC)

Source: WDWD

APPENDIX D

Projections for average annual openings for selected occupations in Wisconsin in 2012-22 requiring a doctorate or professional degree

	SOC* Code	Occupation Classification Title	Openings Due to		Total
			Growth	Replacements	
1	231011	Lawyers	141	149	290
2	291069	Physicians and Surgeons, All Other	99	146	245
3	251071	Health Specialties Teachers, Postsecondary	164	80	244
4	291051	Pharmacists	62	129	191
5	291123	Physical Therapists	70	106	176
6	291062	Family and General Practitioners	42	75	117
7	193031	Clinical, Counseling, and School Psychologists	9	88	97
8	251199	Postsecondary Teachers, All Other	33	57	90
9	291131	Veterinarians	27	63	90
10	251011	Business Teachers, Postsecondary	36	52	88
11	291021	Dentists, General	20	58	78
12	191042	Medical Scientists, Except Epidemiologists	22	51	73
13	251081	Education Teachers, Postsecondary	19	28	47
14	291067	Surgeons	20	19	39
15	251123	English Language and Literature Teachers, Postsecondary	11	21	32
16	191021	Biochemists and Biophysicists	14	17	31
17	251042	Biological Science Teachers, Postsecondary	13	14	27
18	251022	Mathematical Science Teachers, Postsecondary	8	17	25
19	291011	Chiropractors	0	25	25
20	291041	Optometrists	5	20	25

	SOC* Code	Occupation Classification Title	Openings Due to		Total
			Growth	Replacements	
21	251124	Foreign Language and Literature Teachers, Postsecondary	10	14	24
22	251122	Communications Teachers, Postsecondary	8	15	23
23	291061	Anesthesiologists	10	12	22
24	291063	Internists, General	7	15	22
25	251021	Computer Science Teachers, Postsecondary	6	11	17
26	251032	Engineering Teachers, Postsecondary	6	11	17
27	251066	Psychology Teachers, Postsecondary	6	9	15
28	251126	Philosophy and Religion Teachers, Postsecondary	7	7	14
29	251067	Sociology Teachers, Postsecondary	5	8	13
30	251111	Criminal Justice and Law Enforcement Teachers, Postsecondary	5	8	13
31	251125	History Teachers, Postsecondary	5	8	13
32	251193	Recreation and Fitness Studies Teachers, Postsecondary	4	8	12
33	251052	Chemistry Teachers, Postsecondary	4	7	11
34	291066	Psychiatrists	3	8	11
35	291181	Audiologists	7	4	11
36	192012	Physicists	3	7	10
37	291065	Pediatricians, General	3	6	9
38	251054	Physics Teachers, Postsecondary	3	5	8
39	251063	Economics Teachers, Postsecondary	3	5	8
40	291064	Obstetricians and Gynecologists	3	5	8
41	191011	Animal Scientists	1	6	7

	SOC* Code	Occupation Classification Title	Openings Due to		Total
			Growth	Replacements	
42	251051	Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary	2	5	7
43	251065	Political Science Teachers, Postsecondary	3	4	7
44	251041	Agricultural Sciences Teachers, Postsecondary	1	5	6
45	251113	Social Work Teachers, Postsecondary	2	4	6
46	251061	Anthropology and Archeology Teachers, Postsecondary	2	3	5
47	251062	Area, Ethnic, and Cultural Studies Teachers, Postsecondary	2	3	5
48	291029	Dentists, All Other Specialists	1	4	5
49	291081	Podiatrists	2	3	5
50	251112	Law Teachers, Postsecondary	2	2	4
51	231023	Judges, Magistrate Judges, and Magistrates	0	3	3
51	251031	Architecture Teachers, Postsecondary	1	2	3
53	251053	Environmental Science Teachers, Postsecondary	1	2	3
54	251064	Geography Teachers, Postsecondary	1	2	3
55	251069	Social Sciences Teachers, Postsecondary, All Other	1	2	3
56	231012	Judicial Law Clerks	0	2	2
57	251082	Library Science Teachers, Postsecondary	1	1	2
58	291023	Orthodontists	0	2	2
59	231021	Administrative Law Judges, Adjudicators, and Hearing Officers	0	1	1
60	251043	Forestry and Conservation Science Teachers, Postsecondary	0	1	1

	SOC* Code	Occupation Classification Title	Openings Due to		Total
			Growth	Replacements	
61	291022	Oral and Maxillofacial Surgeons	0	1	1
Total			946	1,446	2,392

* Standard Occupational Classification (SOC)

Source: WDWD

APPENDIX E

Projections for average annual job openings of 50 or more for selected occupations in Wisconsin in 2012-22 requiring a bachelor's degree

	SOC* Code	Occupation Classification Title	Total Annual Openings	Availability of Academic Degree Program at UW Institutions		
				Yes	No	CIP Code
1	111021	General and Operations Managers	904	X		52
2	132011	Accountants and Auditors	810	X		52
3	252031	Secondary School Teachers, Except Special and Career/Technical Education	562	X		13
4	151121	Computer Systems Analysts	443	X		11
5	252022	Middle School Teachers, Except Special and Career/Technical Education	369	X		13
6	253098	Substitute Teachers	368	X		13
7	272022	Coaches and Scouts	365	X		13/31
8	131161	Market Research Analysts and Marketing Specialists	364	X		45/52
9	131111	Management Analysts	353	X		52
10	399032	Recreation Workers	284	X		51
11	172112	Industrial Engineers	282	X		14/15
12	172141	Mechanical Engineers	271	X		14
13	151132	Software Developers, Applications	260	X		11/14
14	113031	Financial Managers	249	X		52
15	131051	Cost Estimators	240	X		15/52
16	119111	Medical and Health Services Managers	227	X		51
17	151131	Computer Programmers	222	X		11/52
18	112022	Sales Managers	205	X		19/52
19	271024	Graphic Designers	202	X		50
20	131075	Labor Relations Specialists	196	X		52
21	131071	Human Resources Specialists	191	X		52

	SOC* Code	Occupation Classification Title	Total Annual Openings	Availability of Academic Degree Program at UW Institutions		
				Yes	No	CIP Code
22	172051	Civil Engineers	182	X		14
23	113021	Computer and Information Systems Managers	178	X		11/52
24	119021	Construction Managers	166	X		15/52
25	111011	Chief Executives	165	X		44/52
26	273031	Public Relations Specialists	155	X		09
27	132051	Financial Analysts	153	X		27/52
28	132052	Personal Financial Advisors	153	X		52
29	151142	Network and Computer Systems Administrators	151	X		11
30	131151	Training and Development Specialists	146	X		52
31	132072	Loan Officers	138	X		52
32	113011	Administrative Services Managers	135	X		51/52
33	413031	Securities, Commodities, and Financial Services Sales Agents	130	X		52
34	131041	Compliance Officers	126		X	
35	113051	Industrial Production Managers	123	X		14/15/52
36	112021	Marketing Managers	120	X		19/52
37	414011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	113	X		19/52
38	113121	Human Resources Managers	111	X		52
39	292011	Medical and Clinical Laboratory Technologists	109	X		51
40	252012	Kindergarten Teachers, Except Special Education	103	X		13
41	211021	Child, Family, and School Social Workers	102	X		44
42	273091	Interpreters and Translators	102	X		05/13/16
43	132053	Insurance Underwriters	92	X		52

	SOC* Code	Occupation Classification Title	Total Annual Openings	Availability of Academic Degree Program at UW Institutions		
				Yes	No	CIP Code
44	172071	Electrical Engineers	91	X		14
45	119041	Architectural and Engineering Managers	90	X		15/40
46	131121	Meeting, Convention, and Event Planners	88	X		19/52
47	152031	Operations Research Analysts	84	X		52
48	119151	Social and Community Service Managers	78	X		52/44
49	151133	Software Developers, Systems Software	76	X		11
50	194021	Biological Technicians	69	X		41
51	253099	Teachers and Instructors, All Other	69	X		13
52	172199	Engineers, All Other	66	X		14
53	252052	Special Education Teachers, Kindergarten and Elementary School	64	X		13
54	273043	Writers and Authors	64	X		23
55	151143	Computer Network Architects	61	X		11
56	131081	Logisticians	60	X		52
57	251191	Graduate Teaching Assistants	60		X	
58	151141	Database Administrators	57	X		11
59	151122	Information Security Analysts	56	X		11/43
60	111031	Legislators	55	X		44
61	191012	Food Scientists and Technologists	55	X		01/12
62	211091	Health Educators	54	X		13/51
63	192031	Chemists	52	X		40
64	251194	Vocational Education Teachers, Postsecondary	50	X		13
Totals			11,719			

* Standard Occupational Classification (SOC)

Sources: WDWD; UWSA CDR (Central Data Request)

APPENDIX F

Projections for average annual jobs openings of 50 or more for selected occupations in Wisconsin in 2012-22 requiring a master's degree

	SOC* Code	Occupation Classification Title	Total Annual Openings	Availability of Academic Degree Program at UW Institutions		
				Yes	No	CIP Code
1	119033	Education Administrators, Postsecondary	164	x		13
2	119032	Education Administrators, Elementary and Secondary School	136	x		13
3	211012	Educational, Guidance, School, and Vocational Counselors	112	x		13
4	211022	Healthcare Social Workers	101	x		44
5	291071	Physician Assistants	97	x		51
6	291171	Nurse Practitioners	94	x		51
7	251072	Nursing Instructors and Teachers, Postsecondary	83		x	
8	254021	Librarians	82	x		25
9	291122	Occupational Therapists	69	x		51
10	211014	Mental Health Counselors	67		x	51
11	211099	Community and Social Service Specialists, All Other	57	x		19
12	251121	Art, Drama, and Music Teachers, Postsecondary	57	x		13
13	291127	Speech Language Pathologists	57	x		51
Totals			1,176			

* Standard Occupational Classification (SOC)

Sources: WDWD; UWSA CDR (Central Data Request)

APPENDIX G

Projections for average annual openings of 50 or more for selected occupations in Wisconsin in 2012-22 requiring a doctorate or professional degree

	SOC* Code	Occupation Classification Title	Total Annual Openings	Availability of Academic Degree Program at UW Institutions		
				Yes	No	CIP Code
1	231011	Lawyers	290	x		22
2	291069	Physicians and Surgeons, All Other	245	x		51
3	251071	Health Specialties Teachers, Postsecondary	244		x	13
4	291051	Pharmacists	191	x		51
5	291123	Physical Therapists	176	x		51
6	291062	Family and General Practitioners	117	x		
7	193031	Clinical, Counseling, and School Psychologists	97	x		42
8	251199	Postsecondary Teachers, All Other	90			13
9	291131	Veterinarians	90			51
10	251011	Business Teachers, Postsecondary	88			52
11	291021	Dentists, General	78		x	51
12	191042	Medical Scientists, Except Epidemiologists	73	x		26
Totals			1,779			

* Standard Occupational Classification (SOC)

Sources: WDWD; UWSA CDR (Central Data Request)

APPENDIX H

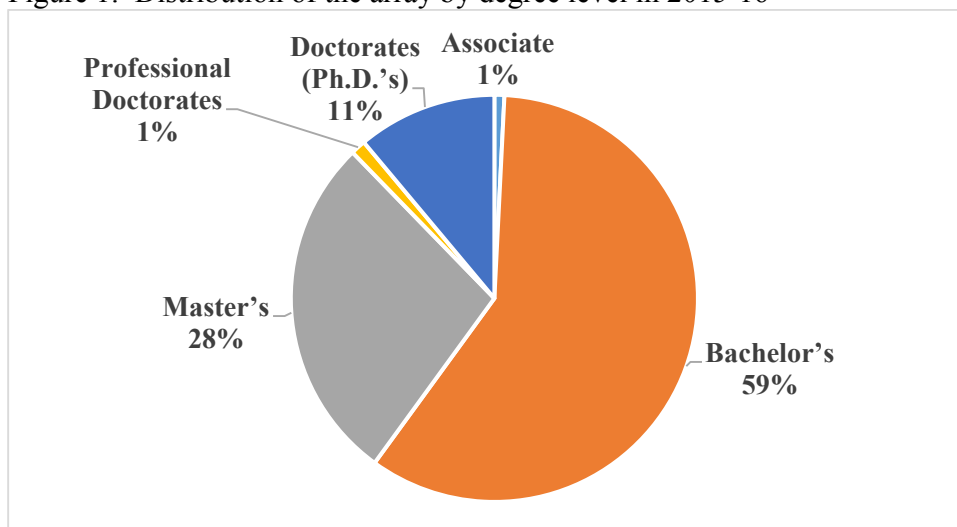
University of Wisconsin System Program Planning, Review, and Array Management 2015-16 Annual Report

The UW System's systemwide array consists of associate, baccalaureate, master's, doctoral, and professional degrees. As of June 30, 2016, the systemwide array consisted of 1,263 associate, bachelor's, master's, doctoral, and professional programs offered by its institutions. Associate of Arts, Associate of Sciences, and Associate of Arts and Sciences degrees were conferred primarily by the University of Wisconsin Colleges (UW Colleges) via its 13 two-year institutions. In addition, UW-Eau Claire, UW-Green Bay, UW-La Crosse, UW-Oshkosh, UW-Parkside, UW-Platteville, UW-Stevens Point, UW-Superior, and UW-Whitewater also conferred associate degrees. In terms of the distribution of degree programs, associate degrees accounted for one percent of the array, baccalaureate degrees 59 percent, master's 28 percent, and doctoral degrees 11 percent. Professional doctorates accounted for one percent of the array. Table 1 shows the number of degree programs in the UW System academic array in 2015-2016. Figure 1 depicts the distribution of the array by degree level in 2015-2016.

Table 1: The University of Wisconsin System academic array in 2015-16

Degrees	Number of Programs
Associate	10
Bachelor's	748
Master's	350
Professional Doctorates	15
Doctorates (Ph.D.'s)	140
Total	1,263

Figure 1: Distribution of the array by degree level in 2015-16

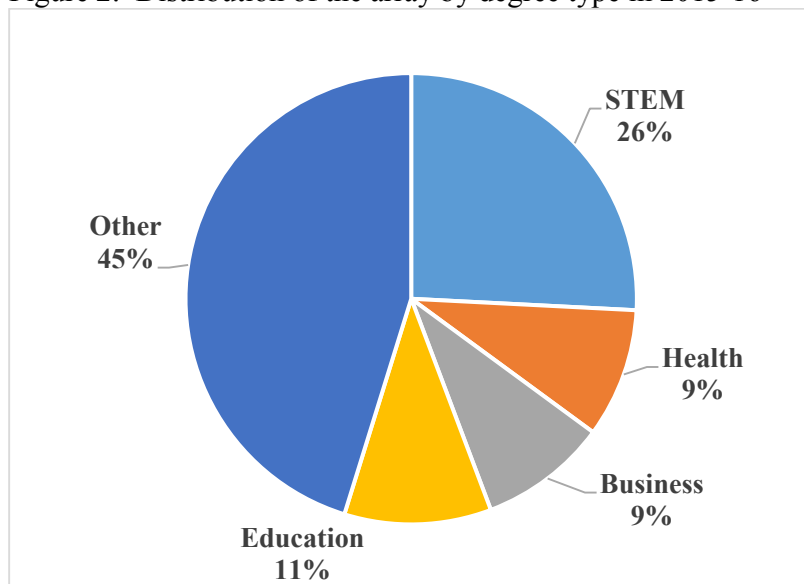


Of special interest is the role of STEM, health-related, business, and education degree programs in the array. In 2015-16, STEM programs accounted for 26 percent, while health-related programs, business programs, and education programs accounted for 9 percent, 9 percent, and 11 percent respectively. Table 2 shows the number of UW System programs in each of these fields. Figure 2 shows the distribution of each field in the array.

Table 2: Number of STEM, Health, Education, and Business Programs systemwide in 2015-16

Fields of Study	Number
STEM	326
Health	117
Business	116
Education	133
Other	571
Total	1,263

Figure 2: Distribution of the array by degree type in 2015-16



Program Planning Actions

In 2015-16, a total of 104 actions were taken regarding the program array. These actions included approvals to plan, authorizations, implementations, suspensions, and eliminations, as well as expirations/withdrawal of approvals to plan. In terms of implementations (when programs authorized by the Board are actually offered to students), 20 new programs took effect across the System. At the same time, nine programs were suspended and three programs were eliminated. Therefore, in 2015-16, the net addition of programs to the array was eight. Detailed information regarding program planning actions taken over the past five years, including the 104 actions taken in 2015-16, are found in Table 3.

Table 3: Systemwide program planning actions: 2011-2016

Planning Actions	Year					Total 2012-16
	2011-12	2012-13	2013-14	2014-15	2015-16	
Approved to Plan/ Pre-Authorized	19	16	21	28	24	108
Approved to Plan Expired/ Withdrawn	n/a	2	3	1	3	9
Authorized	16	19	16	15	26	92
Implemented	13	20	14	17	20	84
Renamed ²	n/a	8	10	11	16	45
Redirected ²	n/a	0	1	1	3	5
Suspended ³	3	6	0	3	9	21
Eliminated	6	9	5	7	3	30

¹ The name change from “Pre-Authorized” to “Approved to Plan” took place in May 2016.

² Approved to Plan Expired/Withdrawn, Renamed, and Redirected data began with 2012-13.

³ Two suspended programs were eliminated in 2014-15.

Monitoring the Academic Array for Unnecessary Duplication

Every proposed program is examined for unnecessary duplication prior to approval to plan. This approach ensures that the academic degree programs offered are necessary. Unnecessary duplication of programs in the UW System is defined as the addition of a program that is already offered by 50 percent or more of the institutions or when there is a lack of convincing evidence that sufficient additional student demand exists to financially support and sustain its addition.

Currently, about 60 percent of the System’s undergraduate degree array is not duplicated. The remaining 40 percent are considered necessary or are justifiable duplication. Programs that fall in the category of necessary duplication are listed in Table 4.

Table 4: Bachelor’s degree programs offered by 50 percent or more of institutions in 2015-16

Name of Degree	Institutions Offering Degree	Number
Psychology	EAU, GBY, LAC, MIL, MSN, OSH, PKS, PLT, RVF, STO, STP, SUP, WTW	13
Biological Sciences, Biology	EAU, GBY, LAC, MIL, MSN, OSH, PKS, PLT, RVF, STP, SUP, WTW	12
Accountancy, Accounting	EAU, GBY, LAC, MIL, MSN, OSH, PKS, PLT, RVF, STP, SUP, WTW	12
Art, Fine Arts, Studio Art, Visual Arts	EAU, LAC, MIL, MSN, OSH, PKS, PLT, RVF, STO, STP, SUP, WTW	12
English	EAU, GBY, LAC, MIL, MSN, OSH, PKS, PLT, RVF, STP, SUP, WTW	12
Mathematics	EAU, GBY, LAC, MIL, MSN, OSH, PKS, PLT, RVF, STP, SUP, WTW	12

Name of Degree	Institutions Offering Degree	Number
Chemistry	EAU, GBY, LAC, MIL, MSN, OSH, PKS, PLT, RVF, STP, SUP, WTW	12
Economics	EAU, GBY, LAC, MIL, MSN, OSH, PKS, PLT, RVF, STP, SUP, WTW	12
History	EAU, GBY, LAC, MIL, MSN, OSH, PKS, PLT, RVF, STP, SUP, WTW	12
Political Science	EAU, GBY, LAC, MIL, MSN, OSH, PKS, PLT, RVF, STP, SUP, WTW	12
Computer Information Systems, Computer Science, Computing	EAU, GBY, LAC, MIL, MSN, OSH, PKS, PLT, RVF, STP, SUP	11
Music	EAU, LAC, MIL, MSN, OSH, PKS, PLT, RVF, STP, SUP, WTW	11
Elementary Education	EAU, LAC, MSN, OSH, PKS, PLT, RVF, STP, SUP, WTW	10
Theatre, Theatre and Drama, Theatre Arts	EAU, LAC, MIL, MSN, OSH, PKS, RVF, STP, SUP, WTW	10
Geography	EAU, LAC, MIL, MSN, OSH, PKS, PLT, RVF, STP, WTW	10
Sociology	EAU, LAC, MIL, MSN, OSH, PKS, RVF, STP, SUP, WTW	10
Exercise & Sport Science, Health and Human Performance, Kinesiology, Physical Education, Physical Education for Teacher Certification	EAU, LAC, MSN, OSH, PLT, RVF, STP, SUP, WTW	9
French, French and Francophone Studies, French Studies	EAU, GBY, LAC, MIL, MSN, OSH, PKS, STP, WTW	9
German, German Studies	EAU, GBY, LAC, MIL, MSN, OSH, PKS, STP, WTW	9
Spanish, Spanish and Latin American Studies	EAU, GBY, LAC, MIL, MSN, OSH, PKS, STP, WTW	9
Philosophy	EAU, GBY, LAC, MIL, MSN, OSH, PKS, PLT, STP	9
Physics	EAU, LAC, MIL, MSN, OSH, PKS, RVF, STP, WTW	9
Business Administration, Management	EAU, GBY, LAC, PLT, RVF, STO, STP, SUP	8
Social Work	EAU, GBY, MIL, MSN, OSH, RVF, STP, SUP	8
Marketing	EAU, LAC, MIL, MSN, OSH, PKS, WTW	7
Information Science, Information Systems, Information Technology	EAU, GBY, LAC, MIL, MSN, OSH, PKS	7

Name of Degree	Institutions Offering Degree	Number
Management, Management Information Systems		
Communicating Arts, Communication, Communication Studies, Speech	LAC, MIL, OSH, PLT, RVF, SUP, WTW	7
Social Science, Social Science for Teacher Certification, Social Studies	EAU, LAC, OSH, PLT, RVF, STP, SUP	7
International Studies	MIL, MSN, OSH, PLT, RVF, STP, WTW	7
Committee- Interdisciplinary, Individual Major, Individually Contracted Major, Individually Designed Major, Individually Planner Major	GBY, MIL, OSH, PLT, STP, SUP, WTW	7

By requiring the UW System institutions to demonstrate that there is demand for a proposed degree program, the UW System Administration ensures that only needed programs are added to the array. Also, monitoring the productivity of existing programs by the UW System Administration and its institutions ensures that programs no longer needed are either suspended or eliminated.

The UW System's institutions and their faculty play the most critical role in ensuring the System's academic array remains relevant and robust.