CHANGING UNDERGRADUATE DEGREE REQUIREMENTS FOR AGRICULTURAL ECONOMICS IN THE NORTHEASTERN LAND GRANT UNIVERSITIES

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Since the early 1960's, educators writing in the *Journal of Farm Economics* and its successor, the *American Journal of Agricultural Economics,* have recommended three major curricular changes in agricultural economics programs. First, the curricula should be broadened and diversified, that is, offering more choice of electives of a general nature as opposed to more technical required couses [Hess, Kellogg, Sparks, Sledge, Spitze]. Second, more emphasis should be directed in terms of required formal courses in the written and oral communication skills [Kellogg, Koch, Mather, Sledge, Spitze]. Third, in support of broader curricula, an increase in courses in social sciences and humanities should be required [Hess, Koch, Manderscheid, Sparks, Spitze].

Perhaps the culmination of the appeal for a broader flexible program, at least in the social sciences, was the recommendations of the CEANAR report in 1968.[2] This committee reported on the social educational needs for undergraduates in agriculture and natural resource curricula and recommended that 15 to 20 percent of the programs of undergraduates in agricultural and natural resources be devoted to social sciences. Secondly, of the suggested social science courses, a set of courses should include depth in at least two of the six science disciplines.

This paper will attempt to evaluate the extent to which the recommendations in terms of broader and diversified curricula, greater emphasis in communication-english skills, and more requirements in the Social Sciences and Humanities have been implemented. This problem will be explored through two objectives: (1) to examine differences in current northeastern agricultural economics undergraduate programs in terms of: total degree credit requirements,[3] program options, and college[4] and department credit requirements,[5] (2) to examine major changes that have taken place in northeastern agricultural economics undergraduate programs in terms of degree credit requirements and in college and departmental credit requirments between 1961 and 1978.

METHODOLOGY AND DATA

In the fall of 1977, letters were sent to agricultural economics departments requesting their most recent undergraduate catalogues on degree requirements for agricultural economics and related programs.[6]

Each program was examined for total credit requirements at both the college and departmental or curricular level.[7] Initially, college level credit requirements were examined under 7 categories: communications and english; social sciences and humanities; math-statistics and computer sciences; biological and physical sciences, agricultural and resource requirements; other requirements and total required credits. At the departmental level, 9 categories were initially selected to classify credit requirements: agricultural and resource economics; economics; math-statistics and computer science; accounting and business administration; agriculture and resource economic electives; communication and english; management science, other requirements and total required credits.

In an effort to achieve the second objective of examining changes that have taken place over time, a point of reference was needed. Koch's article in 1961 on credit requirements in agricultural economics undergraduate programs was chosen as a initial reference point. Koch compared the college requirements (general education) and the departmental and agricultural required courses (agricultural education) for 36 agricultural economics curricula from Colleges and Universities in the United States.[8] Ten of the 12 Northeastern Land Grant colleges used by Koch provided a benchmark for the present study.

It was necessary to combine several credit categories at both the college and departmental levels, for example — humanities and social sciences, communications, science and mathematics, etc. because changes have occurred over the years that made individual credit categories noncomparable. The data were analyzed by credit hour, percentage changes, means, modes and ranges where these techniques seemed most revealing.

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[1] Northeastern Land Grant universities for this article are defined as follows: Connecticut, Cornell, Delaware, Maine, Maryland, Massachusetts, New Hampshire, Rhode Island, Pennsylvania State, Rutgers, Vermont and West Virginia.

[2] Commission on Education in Agricultural and Natural Resources, National Research Council, National Academy of Science appointed in 1968 and chaired by Carroll V. Hess, Dean of the College of Agriculture at Kansas State University.

[3] Total degree requirements are defined as the total number of credits needed for graduation.

[4] College requirements are defined as the credits required in specific categories by colleges for all departmental or curricular programs.

[5] Departmental or curricular requirements are required courses by categories of all majors.

[6] As listed in "Professional Workers in State Agricultural Experiment Stations and Other Cooperations State Institutions" (Agricultural Handbook No. 35, 1976-77).

[7] Several colleges no longer have agricultural economics departments but are incorporated under various broader curricula. Most traditional agricultural economics departments or curricula names were also found to have changed.

[8] Original journal article was supplemented with data that the author had by percent of total required credits in the general education categories of: communications, humanities, social sciences and basic sciences.

RESULTS

Comparisons of the current 12 Northeast Agricultural Economics department requirements can be found in Table 1. Two general factors are apparent from the table. First, many of the hypothesized credit categories at both the college and department levels could not be obtained because of noncomparable categories. Second, there is a large amount of variation in specific credit requirements among universities at the college level and even more so at the department level.

OVERALL CURRENT COLLEGE REQUIREMENTS

At the college level, four major observations were made. First, all 12 universities maintain college credit requirements and they range from 21 to 48 credits (17.5 to 37.5 percent of total degree required credits). Second, all schools required courses in communications and English or the passing of competency examinations in the subjects. Required credits ranged from 6 to 12 (5 to 9.4 percent) with 6 credits as the mode for most colleges. Third, all colleges require courses in the social sciences and humanities with a large variation in credits from 6 to 18 or 4.6 to 15.0 percent of total requirements.

Fourth, math-statistics and computer science and biological and physical science requirements as a combined category varied from 9 to 18 credits (7.5 to 13.8 percent). Three programs required no courses in the Biological and Physical Sciences and these requirements could be circumvented in two programs.

OVERALL CURRENT DEPARTMENT REQUIREMENTS

Departmental degree requirements were more difficult to generalize because of the large number of options used. Three departments, for example, (25 percent) do not list any requirements but require students to work out their entire programs with advisiors, others only list a few requirements and the bulk of the courses are to be selected with advisor approval. A second general credit evaluation problem is that in three programs (25 percent), there are no departmental programs but rather curricular programs that involve inputs from several departments. As a result of the above two problems it was found that department requirements varied from 0 to 50 credits or from 0 to 42.0 percent of degree requirements.

Of the 9 programs that do have required departmental courses, 8 require courses in agricultural and resource economics (3 to 21 credits); 8 require courses in economics (3 to 21 credits); 7 require courses in math-statistics and computer sciences (6 to 15 credits); and 4 require courses in accounting and business administration and 4 in agricultural and resource economics electives.

All of the departments offered a BS degree and one program also offered a BA degree. Total degree requirements varied from 120 to 136 credits with a mean for 13 different options at 125.4 credits. The most common graduating requirement was 120 credits by 46.2 percent of the departments.

The number of program options varied from one to five with a mean of 2.1 for the 12 schools. The most common option was agricultural economics being offered by 50 percent of the programs and second, was resource economics, being offered by 42 percent of the programs.

CHANGING CREDIT REQUIREMENTS

The changes in credit requirements at the college and department level between 1961 and 1978 can be found in Table 2. At the college level, comparisons could be made of total required college credits and within the college categories of Communication and English, Social Sciences and Humanities, and Math-Statistics and other sciences. At the departmental level, comparisons could only be made by total required credits in departmental courses. Finally, an overall comparison of total degree credit requirements was made.

CHANGING COLLEGE REQUIREMENTS

In terms of college requirements, four major changes seem significant. First, all colleges have shown a decline in the college required courses needed for graduation. The mean course credits decreased from 60.7 to 33.1 (45.0 to 26.7 percent). Second, overall credit requirements in communications and English have shown a slight decline from 10.7 to 7.5 (8.3 to 6.3 percent). Only one college program showed an increase in this category, and two departments have added an additional course. Third, on the average, overall college requirements in the social sciences and humanities have shown a decrease from 24.0 to 13.8 credits (19.2 to 11.0 percent). Fourth, in the math-statistics and other required sciences, category the average required credits also declined from 26.0 to 10.4 (19.6 to 9.6 percent). All colleges showed a decline in this category.

CHANGING DEPARTMENTAL REQUIREMENTS

Overall departmental requirements have also shown a downward trend from an average of 41.2 to 30.0 credits (30.9 to 21.7 percent) for those departments which have credit requirements (7 programs). Also of significance is the fact that three programs (30 percent) no longer require specific departmental requirements. Of the remaining programs, two showed an increase in credits, partially because the credit requirement for the departments were calculated as an average for several departmental options.

CHANGING DEGREE REQUIREMENTS

There has been an overall decline in the average total degree credit requirements for graduation from 131.9 to 124.7. Although one school did show a very slight increase in required credits, and two schools did not change, the trend has been fairly strong toward lower total degree credit requirements.

CONCLUSIONS

Based on the above data, at least five conclusions are justified for the agricultural economics programs in the land grant colleges in the Northeast:

(1) Over the past 17 years, credit hours and the percentage credit requirements at the college and departmental level have been reduced. This was true for all colleges in the aggregate as well as for all the average individual credit categories examined. NOTE: Care must be used in drawing implications from the reduction in credit in terms of educational quality, content or relevance, none of which were examined in this report.

(2) Even with the reduction in total required degree credits, larger reductions have taken place at the college and departmental levels. This implies that curricula have been given greater flexibility and students the opportunity for broadening in their scope. This change is consistent with suggested curricular changes over the past 17 years.

TABLE 1.
Current Credit Requirements for Agricultural Economics Programs in the Northeast Land Grant Colleges — 1978*

			College Requirements (in credit hours)[a]					Department Requirements (in credit hours)[1]				
University	Curriculum or Dept. Options	Degree Credit Required	Eng. & Comm.	SS & Hum.	Math.	Bio. & Phys.	Total Required	Agr. & Res. Eco.	Eco.	Statistics Math & Computer	Agr. & Bus.	Total Required[b]
Connecticut	Agr. Econ.	120	9	9		9	27		None listed			0
	Res. Econ.	120	9	9		9	27		None listed			
Cornell	App. Eco. & Bus. Mgt.	120	[c]	15	6	9	45		None listed			0
Delaware	Agr. Bus. Mgt.	130	9	9	3	8	38		None listed			0
	Agr. Eco.	130	9	9	3	8	38		None listed			
Maine	Agr. Bus. Mgt. & Mktg.	120	6	15			21	15	12	12	3	45
Maryland	Agr. Bus.	120	[c]	12	3	6	30	15	12	9	3	42
	Agr. Eco.	120		12	3	6	30	15	5	15	3	50
	Inter. Agr.	120		12	3	6	30	15	12	9	3	48
	Res. Eco.	120		12	3	6	30	15	15	9	3	48
Massachusetts	Agr. Eco.	120	6	18		9	33	12	6	6		39
	Food Mgt. Eco.	120	6	18		9	33	12	6	6		39
	Res. Eco.	120	6	18		9	33	12	6	6		39
New Hampshire	Agr. Eco.	128	6	12	6		24	21	6	9	3	39
Rhode Island[d]	Natural Res.	130	6	18	3	8	41	8	3			11
Pennsylvania	Agr. Bus. Mgt.	130	12	6	6	12	36	9	12	6	12	45
State	Agr. Eco. & Rural Soc.	130	12	6	6	12	36	15	6	6		29
Rutgers[d]	Economics	128	6	18	6	6	36	3	21	14	4	42
	Agr. Econ.	128	6	18	6	6	36		18	14	4	42
	Bus. Econ.	128	6	18	6	6	36		18	14	4	36
	Env. Econ.	128	6	18	6	6	36		18	14	4	36
	Inter. Econ.	128	6	18	6	6	36		18	14	4	36
Vermont	Agr. Econ.	120	6	12	6		24	12				12
West Virginia[d]	Res. Mgt.	128	12	12	6	6	36			18		18
	Agr. Res. Mgt.	136	12	12	6	6	36		3			3

*Data taken from most recent undergraduate catalogues (1977 or later).

[a] Several areas were combined using closest categories. Categories don't always equal 100 percent because of no included free electives.

[b] Total requirements did not include free electives.

[c] Examination in English and communication must be passed or courses taken.

[d] Curriculum programs not departments.

TABLE 2.
Comparison of Credit Requirement for Agricultural Economics Programs in the Northeastern Land Grant Colleges Between 1961 and 1978

State	College Requirements in Credits								Total Department Credits Required		Total Degree Credit for Graduation	
	1961				1978							
	Total	Comm. & Eng.	SS & Hum.	Math & Sci.	Total	Comm. & Eng.	SS & Hum.	Math & Sci.	1961	1978	1961	1978
Connecticut	54	9	20	25	27	9	9	9	16	0	124	120
Cornell	46	6	16	24	45	[a]	15	15	53	0	120	120
Delaware	70	12	35	23	38	9	9	11	29	0	128	130
Maine	48	10	12	26	21	6	15	0	58	45	144	120
Maryland	58	14	21	23	30	[a]	12	9	45	47	125	120
Massachusetts	44	8	12	24	33	6	18	9	[c]	39[b]	120	120
Rhode Island	86	13	49	24	41	6	18	11	29	11	140	130
Rutgers	69	9	23	37	36	6	18	12	36	38	144	128
Vermont	65	17	27	21	24	6	12	6	47	12[b]	130	120
West Virginia[d]	67	9	25	33	36	12	12	12	58	18	144	128
Average	60.7	10.7	24.0	26.0	33.1	7.5[e]	13.8	10.4[e]	41.2[e]	30.0[e]	131.9	123.6

Source: Data for 1961 taken from Koch article, **op. cit.** Several categories combined so comparisons could be made.

[a] Must pass English and communication test or take courses.

[b] Average credit used for several options.

[c] Mixed category — no comparison.

[d] Two programs offered — one used for comparison.

[e] Average based only on programs for which credit requirements are listed.

(3) There has been a decrease in the required technical and scientific requirements. This further suggests greater flexibility, diversity and breadth in the curricula programs but does not eliminate the possibility of specialization in a specific subject matter.

(4) Overall requirements in the communications and English categories have decreased only slightly. Although some departmental requirements have been increased, one would have to argue that less or equal, not more, required emphasis has been placed in this category. This finding would be in direct opposition to many of the recommendations of past program writers.

(5) In terms of required courses in the social sciences and humanities, again, the data indicates that overall requirements have been decreased. This finding is also in direct opposition to the suggested increases in these requirements of many past writers.

The major point is, the agricultural economics students today have the opportunity to select an educational program that is tailored to their individual needs. That is, from a broad liberal program to one that can be in depth and very technical. In doing so a large amount of individual choice is given to the students; on the other hand they must bear the opportunity cost of their choice.

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